TITLE: [CNR-OC] [EO-OC] Tweed District Long Term Water Supply - Demand Management Strategy

ORIGIN:

Water

SUMMARY OF REPORT:

Council resolved at its meeting of 19 December 2006 to adopt the Integrated Water Cycle Management Context Study and Strategy Report incorporating 26 Strategy Actions. Action 1 was to develop a Demand Management Program and Action 3 was to Explore Demand Substitution Options such as effluent and stormwater reuse. As a result of that resolution a Demand Management Strategy (DMS) is being prepared in two (2) stages.

Stage 1 has now been prepared which deals with residential development in existing developed areas (Brownfield sites) and new development areas (Greenfield sites). It recommends a range of measures for the residential Brownfield and Greenfield sites including mandating the use of 5kL rainwater tanks. The DMS report also recommends the review of both the tariff structure and potable water design standards and suggests developing several programs including an extensive active leakage control and pressure management program, rainwater tank education programs, on-going communication programs and options for a non-residential demand management program.

Stage 2 of the strategy which deals with non-residential development is yet to be developed.

To progress the strategy Stage 1 now needs to be placed on public exhibition to seek public and stakeholder comments and Stage 2 needs to be commenced.

After reviewing public submissions a further report will be presented to Council for the recommended adoption of stage 1

RECOMMENDATION:

That Council places the draft Water Supply Demand Management Strategy - Stage 1 on public exhibition for a period of six weeks.

REPORT:

Background

Council resolved at its meeting of 19 December 2006 to adopt the Integrated Water Cycle Management Context Study and Strategy Report incorporating 26 Strategy Actions. Action 1 was to develop a Demand Management Program and Action 3 was to Explore Demand Substitution Options such as effluent and stormwater reuse. In response to that resolution Council engaged MWH Australia Pty Ltd to develop the Demand Management Strategy (DMS) which includes assessments and recommendations for both demand management and reuse.

The Strategy is being developed in two stages, Stage 1 being demand management and reuse for Greenfield sites and residential Brownfield sites. Stage 2 being demand management and reuse in commercial and industrial areas.

It was planned that Stage 1 of the strategy would be developed and public and stakeholder input sought. In parallel to the seeking of public input, Stage 2 of the Strategy would be developed. At the completion of Stage 2 and after further stakeholder and public input the two stages would be brought together and the overall DMS would be finalised for consideration by Council.

Stage 1 of the DMS has been completed by MWH Australia Pty Ltd. The Strategy is presented to Council as a draft and as a basis on which community consultation will be undertaken.

OBJECTIVE

As resolved at Council's meeting of 19 December 2006 a DMS was undertaken to determine an effective strategy to manage water demand which is consistent with the organisation's overall water strategy and compliant with DWE Best Practise Management Guidelines (May 2004). The objective of the Strategy is to reduce per household consumption of water thereby delaying augmentation of water supplies.

DEMAND MANAGEMENT ASSESSMENT

The Strategy is being prepared in two stages. Stage 1 of the strategy is based on identifying and analysing the costs and benefits of implementing demand management measures in the existing 'Brownfield' areas and the future growth areas, Greenfield areas, of Cobaki Lakes, Bilambil Heights, Terranora Area E and Kings Forest. The assessment of Kingscliff West has not been finalised in the Strategy as it is anticipated that this area will be developed predominately as a non-residential area which will be covered in the future Stage 2 of the DMS.

Brownfield Areas

Scenarios

There were four scenarios developed for the Brownfield areas. The scenarios comprise a range of water efficiency measures, source substitution and water loss management options. These scenarios are defined as follows:-

- Scenario 1 – BASIX with a 5 kL rainwater tank serving external, cold water for washing machines and toilets combined with the WELS program.

- Scenario 2 – Scenario 1 and a Water Loss Management Program to reduce losses to less than 10%.
- Scenario 3 – Extension of Scenario 2 with selected Demand Management Options including a range of measures to reduce water demand in the residential sector.
- Scenario 4 – Extension of Scenario 3 with Enhanced Demand Management Options plus non-residential sector measures.

Note: BASIX is the NSW Government Building & Sustainability Index that ensures homes are designed to use less potable water and be responsible for fewer greenhouse gas emissions

WELS is the National Water Efficiency Labelling & Standard Scheme, WELS is Australia's new water efficiency labelling scheme, which allows consumers to compare the water efficiency of different products.

Program costs

Cost assessments were undertaken on individual components of Brownfield scenarios

Measure Description	Annual Potable Water Savings (ML/a)			Annualised Cost ($/kL)
	2016	2036	Avg.	
BASIX Fixtures and WELS	219	532	290	$0.02
BASIX - Internal/External Rainwater Tank (5 kL)	827	2,611	1,277	$4.42
Inclining Block Tariff	33	60	36	$0.04
Residential Education Program	76	73	70	$0.88
Landscape Use Efficiency Awards	62	71	57	$1.17
Residential Rebate Program - Showerheads	29	10	20	$0.51
Residential Rebate Program - Washing Machines	16	4	11	$14.23
Residential Rebate Program - Rainwater Tanks	91	104	85	$4.64
Pressure and Leakage Management Program	532	813	556	$0.94
Residential Retrofit	77	65	68	$1.34
Residential Audit Program	54	64	50	$1.56
Total	**1,900**	**3,993**	**2,328**	

Based on the results of the above assessment the majority of the proposed demand management measures assessed are likely to be cost effective. The exceptions were the rebate programs for rainwater tanks and washing machines, which were not included in the program.

Assessment

A Triple Bottom Line Assessment (social, environmental, economic) was undertaken for the Brownfield scenarios. The results of the assessment are summarised as follows:-

- Rainwater tanks would need to be 5,000 L (5 kL) in size and would save around 80 kL/a for the average household if connected internally to toilets, cold water laundry and external taps.
- Reduction of potable water use was determined to be approximately 16 %, 20%, 21% and 23% for Scenarios 1, 2, 3 and 4 respectively for the Brownfield areas within Tweed Shire.

- Scenario 3 has the highest savings potential at the lowest cost per kL saved to the community as a whole. This cost is however higher than the marginal cost of potable water due mainly to the overall cost of rainwater tanks. Scenario 4 includes water savings from a non-residential program that has not been evaluated, but is expected to result in savings of around 10% at a similar cost to the residential program.
- The majority of the capital cost and on-going costs are the responsibility of the householder. Council will need a management plan including regular inspections to ensure that health and water quality aspects are addressed through regular maintenance.
- From an environmental perspective Scenario 4 is the best performer, with reductions in river extractions due to the additional reductions in demand.
- Scenario 4 would have broad community acceptance as it involves all sectors of the community and council contributing to achieve a water reduction target.

Recommendations

For Brownfield sites the Strategy recommends that Scenario 4, with a key focus on developing an extensive active leakage control and pressure management program, be adopted.

Greenfield Areas

Scenarios

Five scenarios, comprising a range of water efficiency measures, source substitution and water loss management were developed. These scenarios are defined as follows:

- Baseline – assumes that demand increases as per historic trends. The replacement of fittings and fixtures with more efficient units is assumed to occur at an unassisted rate through repairs and refurbishment.
- Scenario 1 – BASIX with a rainwater tank serving external, cold water for washing machines and toilets.
- Scenario 2 – BASIX with dual reticulation serving external and toilets.
- Scenario 3 – BASIX with both dual reticulation (external and toilets) and rainwater tanks (serving cold water to washing machines and showers).
- Scenario 4 – BASIX with rainwater tanks (serving external and toilets) and indirect potable reuse. This combination will increase the level of source substitution and reduce the reliance on the current dam supply.
- Scenario 5 – BASIX with 4th pipe network (separated greywater collection and reuse, and blackwater collection and disposal) as proposed by LEDA for development of Cobaki Lakes.

For all scenarios the use of Reduced Infiltration Gravity Sewers (RIGS) was considered to increase the efficiency of collecting sewage. This had the effect of reducing the overall size and costs of the system through reduced wet weather flows.

Costs

Greenfield Development	Scenario	Capital Cost NPV			Operational Cost NPV			Total NPV	$/kL saved
		NPV - Council	NPV - Customer	Total Capital Works NPV	NPV - Council	NPV - Customer	Total Opex NPV		
Cobaki Lakes	Baseline	$12,069,585	$13,070,927	$25,140,512	$920,627	$0	$920,627	$26,061,139	
	Baseline (RIGS)	$10,474,767	$10,487,421	$20,962,188	$0	$0	$860,797	$21,822,985	
	Scenario 1	$9,946,978	$14,982,092	$24,929,070	$252,733	$1,297,723	$2,256,010	$27,185,080	2.14
	Scenario 2	$17,684,750	$12,669,596	$30,354,346	$1,573,247	$0	$2,257,376	$32,611,722	3.86
	Scenario 3	$17,684,750	$17,164,267	$34,849,017	$1,825,980	$1,297,723	$3,717,775	$38,566,792	3.98
Bilambil Heights	Baseline	$10,631,749	$8,663,705	$19,295,454	$497,615	$0	$497,615	$19,793,068	
	Baseline (RIGS)	$9,223,750	$6,916,608	$16,140,358	$0	$0	$448,900	$16,589,258	
	Scenario 1	$8,842,210	$9,878,205	$18,720,415	$199,682	$855,055	$1,474,976	$20,195,391	2.09
	Scenario 2	$14,781,202	$8,284,578	$23,065,780	$827,043	$0	$1,247,282	$24,313,062	4.14
	Scenario 3	$14,781,202	$11,246,175	$26,027,377	$1,026,725	$855,055	$2,260,130	$28,287,507	4.22
Terranora Area A	Baseline	$2,965,760	$3,741,999	$6,707,759	$199,206	$0	$199,206	$6,906,965	
	Baseline (RIGS)	$2,578,085	$3,050,373	$5,628,458	$0	$0	$185,641	$5,814,099	
	Scenario 1	$2,512,492	$4,361,436	$6,873,927	$132,779	$378,580	$668,340	$7,542,267	2.10
	Scenario 2	$6,097,398	$3,783,590	$9,880,989	$423,929	$0	$565,359	$10,446,348	4.22
	Scenario 3	$6,097,398	$5,094,653	$11,192,051	$556,709	$378,580	$1,050,379	$12,242,430	4.18
Kings Forest	Baseline	$9,230,183	$13,615,549	$22,845,732	$720,898	$0	$720,898	$23,566,629	
	Baseline (RIGS)	$6,798,165	$8,391,258	$15,189,423	$0	$0	$702,351	$15,891,774	
	Scenario 1	$6,952,936	$15,606,346	$22,559,281	$259,560	$1,351,795	$2,125,511	$24,684,792	3.22
	Scenario 2	$15,446,079	$13,197,496	$28,643,575	$1,266,068	$0	$1,772,484	$30,416,060	5.01
	Scenario 3	$15,446,079	$17,879,445	$33,325,524	$1,525,627	$1,351,795	$3,305,558	$36,631,083	4.75
West Kingscliff	Baseline	$421,538	$611,722	$1,033,260	$120,931	$0	$120,931	$1,154,191	
	Baseline (RIGS)	$421,538	$611,722	$1,033,260	$0	$0	$120,931	$1,154,191	
	Scenario 1	$385,737	$1,781,871	$2,167,608	$139,352	$337,764	$556,969	$2,724,576	2.41
	Scenario 2	$1,950,902	$987,193	$2,938,095	$411,031	$0	$489,722	$3,427,817	3.40
	Scenario 3	$1,950,902	$2,157,342	$4,108,244	$550,382	$337,764	$946,985	$5,055,229	4.00
Total Greenfield	**Baseline**	**$35,318,814**	**$39,703,902**	**$75,022,717**	**$2,459,276**	**$0**	**$2,459,276**	**$77,481,993**	
	Baseline (RIGS)	$29,496,305	$29,457,382	$58,953,687	$0	$0	$2,318,620	$61,272,307	
	Scenario 1	$28,640,351	$46,609,950	$75,250,301	$984,106	$4,220,918	$7,081,805	$82,332,106	2.45
	Scenario 2	$55,960,331	$38,922,453	$94,882,784	$4,501,318	$0	$6,332,224	$101,215,009	4.28
	Scenario 3	$55,960,331	$53,541,883	$109,502,213	$5,485,424	$4,220,918	$11,280,828	$120,783,041	4.29

Assessment

A detailed assessment of the infrastructure and demand impacts was undertaken for Scenarios 1 to 4. Scenario 5 was not considered in detail due to the number of operational issues and higher capital and on-going costs associated with such a system.

The results of the assessment for the major Greenfield development areas can be summarised as follows:

- Rainwater tanks would need to be 5,000 L (5 kL) and would save around 80 kL/a for the average household as for Brownfield sites.
- Reduction of potable water use was determined to be approximately 36%, 42% and 61% for Scenarios 1, 2 and 3 respectively for all Greenfield developments except West Kingscliff, where development is likely to be predominately industrial.
- Significant savings in infrastructure will accrue from the introduction of smart sewers aimed at the reduction of infiltration and inflow.
- Scenario 1 has the lowest cost to the community. The majority of the capital cost and on-going cost for this scenario are the responsibility of the householder as a result of the legislative requirement to achieve savings under the BASIX program.
- Scenario 1 has the best return on investment with savings of 34 to 38% of the baseline demand forecasts. This scenario also has the lowest cost per kilolitre of savings.
- The cost of the recycled water scenarios (Scenario 2 and 3) is significantly higher than Scenario 1 due to the high cost of providing a third pipe network and establishing membrane treatment.
- From an environmental perspective Scenarios 2 and 3 reduce return effluent flows to the waterways by more than 10%. Scenario 1 will have a modest impact on urban water quality through the reduction of pollutants to waterways.
- The assessment of Scenario 4, involving Indirect Potable Reuse through pumping recycled water to the Clarrie Hall Dam, indicated that by 2036 a total volume of 28 ML/d or 10,220 ML/a could be provided. However the total cost of implementing the scheme would be in excess of $184m.

The assessment also indicated that a dual reticulation scheme for Cobaki Lakes would be more cost beneficial if the treatment plant was located at the development. This option should be further pursued if the developer proposes a third pipe approach.

Recommendations

For Greenfield sites the Strategy recommends Scenario 1 be adopted for the Cobaki Lakes, Bilambil Heights, Terranora and Kings Forest developments. This should include the adoption of BASIX with 5,000 L (5 kL) rainwater tanks (minimum of 160 m^2 roof area) connected to external uses, toilet flushing and cold water to washing machines. In addition new dwellings will have dual flush toilets as well as 3 star showerheads and taps.

For West Kingscliff the Strategy recommends recycled water be made available to future industrial land use areas where demand is identified.

The Strategy recommends rainwater tank education programs be developed, focused on the correct use and maintenance including a regular program of inspections.

The Strategy recommends an on-going communication and education program be developed as part of the preferred program to ensure that savings are maintained in future.

For both Brownfield and Greenfield sites the Strategy recommends the inclining block tariff structure be maintained and enhanced to provide a price signal for high users.

The Strategy recommends a review be undertaken of the potable water design standards based on the demand assessment undertaken in this report. A regular assessment should then be undertaken to review the adopted design standards.

COMMUNITY CONSULTATION

The Community Consultation Strategy proposed for the DMS is:-

- Consultation with developers on water management within new developments (ongoing)
- Exhibition of a draft Stage 1 DMS for a period of six weeks
- Receive public comments on draft Strategy
- Review of comments and amendment of Stage 1 DMS and submit to Council for adoption
- Liaison with industry during the drafting of Stage 2 DMS
- Exhibition of a draft Stage 2 DMS for a period of six weeks
- Review of comments and amendment of Stage 2 DMS Combine with Stage 1 and submit to Council for adoption
- Finalisation of DMS
- Public notification of adoption of the DMS including how comments were addressed.

LEGAL/RESOURCE/FINANCIAL IMPLICATIONS:

If implemented there will be a requirement to mandate the identified measures for Greenfield developments.

If implemented there will be an ongoing resource requirement for the implementation and monitoring of Demand Management. This will include items ranging from the administration of programs such as the residential rebate and retro fit programs, to managing the pressure and leakage management program. There will be a significant expansion of the management of Rain Water Tanks (RWT) to ensure that health and water quality aspects are addressed through regular maintenance and inspections. It will also include continued liaison with developers and ensuring the requirements of the Strategy are fulfilled.

The cost impact to Council on the Greenfield program will be small as the cost of most of the major items will be met by developers of households. Council will however need to consider expenditure on the Brownfield Programs with the extent of expenditure being determined by the level of implementation.

POLICY IMPLICATIONS:

There will be little impact on the present requirement for an augmented water supply. The main impact of the implementation of the DMS will be in delaying further the augmentation of the supply and improvement of drought security if delayed further.

If the recommendations on the DMS are, after the community consultation, adopted by Council there will be a requirement of Council to mandate 5 kL rainwater tanks with a minimum of 160 m^2 of roof area connected and the use of reduced infiltration gravity sewers (RIGS) in new development.

Council will also need to continue to liaise with developers in respect to water infrastructure in new developments where developers wish to enhance the mandated requirements.

UNDER SEPARATE COVER/FURTHER INFORMATION:

*To view any **"non confidential"** attachments listed below, access the meetings link on Council's website www.tweed.nsw.gov.au or visit Council's offices at Tweed Heads or Murwillumbah (from Friday the week before the meeting) or Council's libraries (from Monday the week of the meeting).*

1. Tweed Shire Council, DMS – Stage 1. MWH Australia Pty Ltd, February 2008. (DW 1827032)

WATER M'MENT - PLANNING

WATER M'MENT - INTEGRATED WATER CYCLE

Patricia Baldwin CNR

From: Richard Murray [rwmy125@tpg.com.au]
Sent: Monday, 4 August 2008 3:34 PM
To: Corporate Email
Cc: Richard Hagley; Max Boyd
Subject: Re: Tweed Shire Council Draft Water Supply Demand Management Strategy - Stage 1, PRINTED FOR REGO BY TRISH
Attachments: oledata.mso; image001.png; WATERSupplyStratStage1TSC2008.doc

The General Manager
Tweed Shire Council
PO Box 816
Murwillumbah NSW 2484

Attention Anthony Burnham

Re: Tweed Shire Council Draft Water Supply Demand Management Strategy - Stage 1, Project Number A1067401 8/2/08

Dear Sir,

I refer to our telephone conversation of 4 August 2008 during which you advised me that you are prepared to accept our submission as not being late provided that it was emailed prior to 12 August 2008.

Tweed Heads Environment Group Inc makes the following submission in response to Tweed Shire Council's Draft Water Supply Demand Management Strategy - Stage 1.
Copy of our submission is attached
Tweed Heads Environment Group submits that the Strategy contains significant flaws and omissions, which we believe restricts its ability to provide ecologically sustainable water supply to the Tweed Shire.
We request that you consider our comments in this submission.
Please acknowledge receipt of this submission.

Yours sincerely

Richard W Murray
Secretary

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31 July 2008

The General Manager
Tweed Shire Council
PO Box 816
Murwillumbah NSW 2484

Re: Tweed Shire Council Draft Water Supply Demand Management Strategy - Stage 1, Project Number A1067401 8/2/08

Dear Sir,

Tweed Heads Environment Group Inc makes the following submission in response to Tweed Shire Council's Draft Water Supply Demand Management Strategy - Stage 1.

Introduction

Stage 1 of the above draft strategy deals with residential development in existing developed areas (Brownfield sites) and new development areas (Greenfield sites).
Stage 2 of the Strategy deals with non-residential development is yet to be developed.

Based on the assessment of options in this report 8 interim recommendations relative to this Strategy have been recommended by Tweed Shire Council which include the following:

1. Brownfield Scenario 4 be adopted for the Tweed Shire existing and infill development areas, with a key focus on developing an extensive active leakage control and pressure management program.

2. Greenfield Scenario 1 be adopted for the Cobaki Lakes, Bilambil Heights, Terranora and Kings Forest developments. This will include the adoption of BASIX with 5,000 L rainwater tanks (minimum of 160 m2 roof area) connected to external uses, toilet flushing and cold water to washing machines. In addition new dwellings will have dual flush toilets as well as 3 star showerheads and taps.

3. For West Kingscliff, recycled water be made available to future industrial land use areas, where demand is identified.

The Terranora Inlet ecosystem environment

Stormwater and Water quality

We are disappointed by the Strategy's lack of recognition that maintaining healthy waterways in the Terranora Inlet is essential. Tweed Shire Council is forging ahead with plans to continue dumping its treated wastewater from two major sewage treatment plants at Banora Point and Tweed Heads West sewage treatment plants into the already 'sick' Terranora system.

Terranora Inlet is central in the sewage of three future major Greenfield sites (Bilambil Cobaki Lakes and Terranora E) and to the infill areas of suburbanised Tweed Heads, where it is critical that the ecosystem health of the Terranora Inlet System is improved and not allowed to further deteriorate.

The assessment of environmental damage to the Terranora Inlet from proposed increased discharged wastewater has not been included in this strategy, mainly because an ecosystem health monitoring study for the Terranora and Cobaki Inlet System, planned to be repeated in 2005, has still not been completed.

Council has advised that the Final Ecosystem Health Report for this Terranora System study will not be available until 2009 and therefore is making this long term water Strategy not knowing whether health of the Terranora ecosystem will further deteriorate.

The previous Report on the Ecosystem Health Monitoring Program in (2000-2001) by The University of Queensland cites disturbing findings that the Terranora ecosystem is heavily polluted with nitrogen from sewage effluent.
The isotopic nitrogen methodology used by the University of Queensland was unequivocal in this conclusion.

We are very concerned about the Strategy's is being built on a foundation, that is likely to cause irreversible environmental degradation to the Terranora Inlet System where it is known that stormwater flows presently add to a 70-90% of the variation in quality.
Para 3.3.1, Stormwater and Water Quality-page 12, Doc.A1067401.

The future addition of discharged sewage nitrogen to the to the already 'high' stormwater nutrient load in the Terranora Inlet system will further adversely affect its deteriorating eco health system.

At the Community Reference Group Meeting of July 24, the nutrient data presented in a Comparisons Schedule (power point presentation number 38), 2003 shows that with the Preferred Strategy "Enhanced Effluent Quality to Terranora Creek" the discharge of sewage effluent nitrogen will almost double.
The current level of 77 kg Nitrogen/day (28 Tonnes per year) will substantially increase to 143 kg Nitrogen/day (52 Tonnes per year, or 1 tonne per week) by 2031.
This is the nitrogen equivalent of dumping 2 one tonne bags of urea per week into Terranora Inlet.

This added discharge of 52 tonnes per year (1 tonne per week) of sewage effluent nitrogen is similar to the discharge nitrogen from all the sugar cane lands in the Tweed Shire (69 tonnes N/Year).
(Source Table 3.1 p.7 of Tweed Nutrient Management Plan Volume 1, prepared for NSW Department of Land and Water Conservation by Patterson Consultants Pty Limited Grafton July 2002.)

Tweed Heads Environment Group Inc. and attending community workshop groups have continually requested that Tweed Shire Council does not proceed with the preferred discharge of wastewater strategy into the Inlet because of the adverse impact on the Terranora Ecosystem.

The consultant of this Stage 1 Strategy reports on the general poor health of the Tweed River:

"*In regard to existing water quality in the region, based on information presented in the Tweed Integrated Water Cycle Management Context Study and Strategy Report (TSC, 2006) the following comments can be made:*

• *Water quality in the Tweed Estuary is generally poor with high concentrations of nutrients, suspended sediments and faecal coliforms. Water quality objectives for concentrations of faecal coliforms, total nitrogen and total phosphorus are generally exceed in the lower, mid and upper Tweed Estuary.*

• *The poor water quality in the Tweed catchment is a general reflection of the anthropogenic activities in the catchment:*
- The Upper Tweed catchment is characterised by elevated levels of nutrients and suspended solids as a result of poor management of agricultural and modified rural runoff containing fertilisers and animal waste;
- The Mid to Upper catchment and Rous River are impacted by wastewater discharges and agricultural runoff;
- The Mid Estuary is impacted by wastewater discharges; and
- The Lower to Mid Estuary is heavily impacted by urban runoff processes;
- Water quality at the mouth of the Estuary is generally good as it is well flushed by tidal sea waters.

• *Water quality processes are dominated by point source loading during the dry months (e.g. wastewater discharges) and diffuse loads from the whole catchment during wet periods (e.g. rural and urban runoff). This leads to a strong seasonal variation with a water quality dropping significantly during wet periods" Para* 3.3.1, Page 13.

Comment

Tweed Heads Environment Group Inc considers that the matter of assessing reclaimable wastewater in Stage 1 of The Draft Water Supply Demand Management Strategy is unsatisfactory from an environmental perspective and as a waste of a valuable resource.
While neighbouring water authorities are either purifying recycled wastewater or planning to do so Tweed Shire Council seems only to be concerned about cost and with little concern about environmental degradation to the Terranora ecosystem. .
Greenfield sites
We are particularly concerned about the assessment of recycled water opportunities at new Greenfield sites at Bilambil and Cobaki Lakes.
Even before the new Cobaki Lakes concept plan for the development of the already approved subdivision has been lodged with either the Council or the NSW Planning Minister, Council could be assuming or overlooking suitable dry land reuse other than sewer mining in these Greenfield areas.

The Council consultant for Stage1of this Strategy notes:

"On the other hand there are savings related to the reduction in water use.
resulting from substitution of existing potable end uses with recycled water. On the balance, costs of provision of recycled water to customers in the development will be higher than that of potable water. The benefits to the environment do need to be considered. Nutrient mass loads discharged to the Tweed River will be lowered as a result of the approach.
Para 5.7 Assessment of Cobaki Lakes Development Options Pages 75/76 A1067401."

We are very concerned that optimising environmental outcomes to ensure ecological health and resilience will take second place to ensuring urban water supplies are delivered.

Other Issues

Tweed Heads Environment Group Inc has identified the following additional issues of concern not adequately addressed in regards to the Tweed Shire Council's Draft Water Supply Demand Management Strategy - Stage 1:

Total Water Cycle planning

Tweed Heads Environment Group Inc supports the recognition that sustainable management of the water cycle is crucial to good ecological health, and therefore vital to ensuring long term reliability of urban water supplies, which are sourced from natural environments.
We consider that Total Water Cycle planning in an integrated manner and management is not adequately addressed as part of the Tweed Shire Council Water Supply Demand Management Strategy.

It is considered that the Strategy does not fully recognise the potential amount of water that can be sourced from stormwater harvesting from drainage, all types of roof rainwater collection, ground water aquifers, stormwater and waste water recycling.

Comment
We recommend that Total Water Cycle planning, which identifies and integrates non traditional supply options, must be one the Strategy's key measure in delivering ecologically sustainable water supplies to the Tweed Shire and that the above options should be considered in the Stage 1 Strategy.

Population growth

The Strategy's objective to provide water for a predicted 73185 persons in 2006 but is said to diminish to 64854 in 2041, while the overall population of the Tweed Shire will expand to 163,714 in 2041.
It is interesting to note that the South East Queensland's predicted population growth is expected to top the 6 million plus mark by 2056.
It is likely that the population overflow from our neighbouring Gold Coast region will migrate to the Tweed Shire and this factor needs to be taken into consideration in the supply of drinking water.
There are already signs of stress in the supply of drinking water where in other Australian states the population is expanding through increased fertility and migration.

Comment

We consider that it is essential that Tweed Shire's sustainable population carrying capacity needs to be independently determined by somebody outside Council's paid consultancy, and that this action is a crucial step towards establishing the long term ecological sustainability of Tweed Shire's water.

Gold Coast Bulletin 18 July 2008 page 5 reports: "**No room at the inn for a million coasters** – There is no room left at the inn, and the Gold Coast faces a million person overload and the death of the backyard shed. A new 2031 target has estimated the city's population will swell to 937,000 leaving it with little breathing space. Experts have told The Bulletin that the city could become like a 'can of sardines, even if the State Government releases more land on the northern patch."
Apart from the predicted normal local growth one could expect Gold Coast's overflow population to move to the neighbouring Tweed Shire placing strain on future water supplies.

Climate change

Tweed Heads Environment Group Inc notes that the Tweed Shire Council's consultant climate correction of historic data (rainfall records of less than 125 years) does not provide a climate change impacts assessment, as this was not part of the terms of reference for this project.
Para 4.2 – Historic Demand assessment, page 16 Doc. A1067401.

Tweed Shire Council's Draft Water Supply Demand Management Strategy - Stage 1 is significantly vulnerable to climate change by its reliance on the climate dependant river source with river flows being recorded for less than sixty years.
Council's present policy of not encouraging existing Brownfield sites to harvest roofed rain will also impact adversely upon future supplies of drinking water.

Comment

Although some provision for climate change may have been allowed in the estimation for the supply of drinking water Tweed Heads environment Group Inc considers that the Draft Stage 1 Strategy still inadequately addresses the climate change vulnerability of Tweed Shire's proposed water supply options.

Level of Service objectives

Tweed Heads Environment Group considers the Strategy's inclusion of Levels of Service objectives needs to be determined with public consultation. This consultation is now occurring in the Draft South East Queensland Water Strategy where the proposed level of usage per person/d ranges from 140 to 230 litres from various submissions.
These levels of drinking water supply include sources from water from ground aquifers, purified recycled and desalinated water sources.

Tweed Shire Council should take into consideration the vulnerability of water supply sources that their Strategy is based on supplies from Clarrie Hall Dam, river. and tank water from new Brownfield sites. Any proposed 'Level of Service' may not be attainable due to the Strategy's inherent reliance on climate dependant water sources.

Tweed residents could be encouraged to reduce their daily water consumption to below 140 l per person. This encouragement could be in the form of providing council subsidy for installing rain water tanks in existing Brownfield sites, thus reducing or delaying the demand for expensive dam infrastructure

We strongly believe the Strategy should capitalise on the community's willingness to change behaviour to conserve water, rather than undermining it by allowing the use water at unsustainable levels.
By permanently applying a daily consumption cap across the Tweed Shire region should be the Strategy's primary measure to meet future water requirements.

Comment
Tweed Heads Environment Group submits that since the Tweed Shire Council does not have a population cap for the Shire and with the likely uncertainty of rainfall due to climate change it would not be prudent to generally allow the maximum daily consumption of drinking water to unsustainable limits.
We consider that the current assessment of water supply is inadequate and that it is no longer advisable to rely on our short 125-year history of rainfall and 50 years of stream flow records without considering the potential for droughts worse than those on record.
To continue the drinking water consumption to the 2005 average usage 231 litres per person daily would only:

- encourage wasteful usage of drinking water beyond the community target level,
- diminish stocks and harm the health of stored drinking water,
- discourage the suitable reuse of grey water in approved dry land reuse opportunities,
- increase the income stream from water sales to Council.

Rainwater tanks and stormwater harvesting

Coastal urban areas of Tweed Shire generally receive high rainfall. In light of this, we believe the potential volume of water that roof rain and storm water harvesting will contribute towards Tweed Shire Council's water requirements has been under estimated.

Consequently, we believe the Strategy has adopted a narrow view on the volume that rain and storm water harvesting can contribute towards meeting future water requirements.
The Strategy also fails to embrace that, if our dam catchment becomes increasingly drier due to climate change, this will result in even less water entering our dam and storage areas.
Therefore, due to predicted rainfall reductions over the dam catchment, we believe these reductions will necessitate a much greater emphasis being placed on harvesting water from the roof's and hard surfaces of coastal suburban areas where more regular rainfalls occurs.
This Draft Strategy currently fails to do so.

In addition, the paper prepared for the Australian Conservation Foundation, Nature Conservation Council [NSW] and Environment Victoria by Marsden Jacobs and Associates: MJA, 2007. The economics of rainwater tanks and alternative water supply options April 2007, clearly demonstrates that rainwater harvesting and storage is cost effective.

Comment
Tweed Heads Environment Group Inc considers that at far least cost stormwater harvesting schemes than manufactured drinking water should be further investigated by Tweed Shire Council.
In coastal areas of Tweed Shire there have been regular annual high rain events, where only a fraction of the stormwater rain is being captured in tanks and ground water storage.

While there is insufficient stormwater storage capacity in some nearby dams and weirs to collect stormwater Tweed Shire Council should further investigate the following water storage options:

(a) Survey for storage aquifers similar to the one located at Norwell, Gold Coast (1000 megalitres capacity)

(b) Construct at new Greenfield developments stormwater storage ponds which could harvest clean water from subdivision drainage, thereby saving the use of drinking water.

(c) The construction of underground water storage tanks under new buildings could be made mandatory so as to collect stormwater for approved household/commercial use.

(d) Construct wetlands/artificial lake storages to capture stormwater runoff.

(e) Investigate the feasibility of pumping captured stormwater to dam storages such as former dam sites, coastal farm dams and other water storage areas.

(f) Tweed Heads Environment Group recognizes that "water is a very heavy product to move around the region. The challenge for water planners is to secure new supplies and increase the climate resilience of the shires water supply while minimising the growth in electricity consumption per megalitre of water delivered ".(SEQ Water Strategy March 2008)

There is likely to be rising energy prices of 30% attributable to the introduction of carbon trading and the capture of local stormwater locally could be a lower cost and environmentally friendly option.

Application of the above measures could reduce the need for further dams and permanent weirs that are environmentally damaging to our rivers in this warming climate.

Groundwater

Groundwater resources in the Tweed Shire are unassessed water and such information should be known as an emergency supply.

Purified recycled water

We are supportive of PRW schemes as an option to provide urban water supplies, which fits within a hierarchy of water supply options

Energy

Tweed Heads Environment Group considers that the delivery of drinking water must be powered by renewable energy.

General Comments

Additionally we urge the Strategy must incorporate mechanisms that assist the public to reduce the water dependency of their gardens by transition to native and drought resistant species.

Conclusion

Tweed Heads Environment Group submits that the Strategy contains significant flaws and omissions, which we believe restricts its ability to provide ecologically sustainable water supply to the Tweed Shire.

We request that you consider our comments in this submission.

Please acknowledge receipt of this submission.

Yours sincerely

Richard W Murray
Secretary

Guideline to the BASIX SEPP

This guideline outlines the provisions contained in State Environmental Planning Policy—Building Sustainability Index (BASIX) 2004, and explains in detail for consent authorities and others how other planning provisions are affected by the introduction of BASIX in Sydney from 1 July 2004 and in regional NSW from 1 July 2005

Important notice: This practice note does not constitute legal advice. It is only intended to provide a general overview of its subject matter. Users are advised to seek professional advice, as necessary, before taking action in relation to any of the matters covered by this practice note.

Background

State Environmental Planning Policy—Building Sustainability Index (BASIX) 2004 (the BASIX SEPP) operates in conjunction with the Environmental Planning and Assessment Amendment (Building Sustainability Index (BASIX)) Regulation 2004 to introduce BASIX as a mandatory component of the development approval process for residential development in NSW. The amending Regulation amends the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation). Both the SEPP and amending Regulation commenced on 1 July 2004.

The amended EP&A Regulation is the primary mechanism for incorporating BASIX into the development approval process, under the Environmental Planning and Assessment Act 1979. The Regulation ensures that applications for certain residential development proposals must be accompanied by a BASIX certificate which indicates compliance with prescribed sustainability targets before those applications can be considered and development consent granted.

The BASIX SEPP seeks to ensure that BASIX serves as the only system of assessment with respect to certain aspects of sustainable residential design. The SEPP provides that other development standards or provisions which seek to achieve the same objectives as BASIX have no effect in relation to development to which BASIX applies. The SEPP also provides that SEPP 1 cannot be used to vary development standards arising under BASIX.

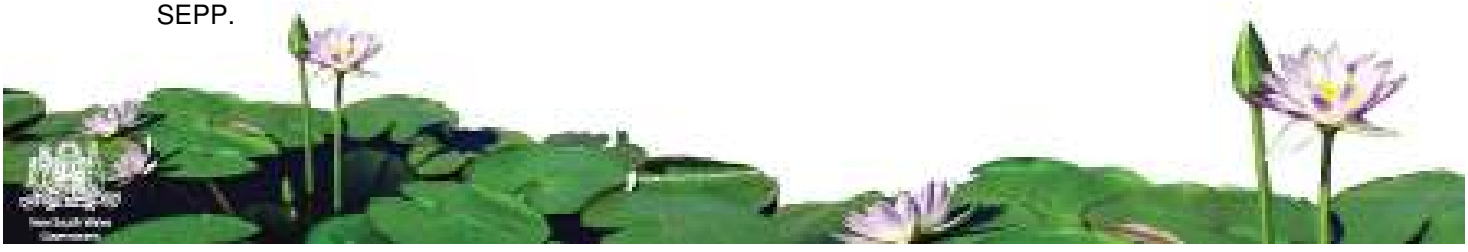
Why is it necessary to override other planning provisions?

The establishment of mandatory targets to reduce potable water consumption and greenhouse gas emissions in relation to residential development indicates the critical importance of water and energy management across NSW. These issues are of concern to the State as a whole and the NSW Government believes it is appropriate that these issues are addressed by a state wide sustainability policy.

In the absence of such a policy for residential development in the past, local government has taken the initiative, introducing a range of provisions aimed at ensuring that sustainability is a key consideration when development proposals are assessed. The BASIX tool has been developed with reference to this existing experience, drawing together best practice standards and procedures and incorporating them into a single assessment tool.

The interactive format of the BASIX tool enables a comprehensive assessment of how a proposed development will perform against specified sustainability indices. At the same time it provides developers with flexibility to achieve compliance through a variety of means tailored to the particular development.

Development proposals which have satisfied a BASIX assessment have successfully demonstrated that they will achieve the prescribed savings in mains-supplied potable water consumption and greenhouse gas emissions, and an appropriate thermal performance level, if constructed in accordance with commitments made during the BASIX assessment. These proposals should not be subject to further requirements relating to these aspects of building design: ensuring consistency in the implementation of BASIX is the primary aim of the BASIX SEPP.



The establishment of one set of consistent sustainability standards across the state will provide certainty for developers in terms of how homes must be designed, greatly reducing the time and costs associated with the development approval process. The task of consent authorities will also be simplified due to the reduced need to develop complex planning provisions and to apply such provisions to individual development proposals.

The importance of reducing water consumption and greenhouse gas emissions justifies the NSW Government's decision that SEPP 1—Development Standards has no application with respect to BASIX development standards. SEPP 1 ordinarily enables applicants to seek to have a development standard varied where its application would be unreasonable or unnecessary in the circumstances. The fact that BASIX targets can be readily achieved if reasonable, well-established sustainable design features are incorporated into housing proposals, as well as the fact that developers have a degree of choice as to how targets are to be met, is considered sufficient to ensure adequate flexibility associated with BASIX.

Planning provisions which are overridden

The BASIX SEPP states in clauses 8 and 9 that 'competing provisions' in an environmental planning instrument or development control plan are of no effect in relation to a residential development proposal required to be assessed by BASIX, "to the extent to which they aim:

- to reduce consumption of mains-supplied potable water, or reduce emissions of greenhouse gases, in the use of a building to which this Policy applies or in the use of the land on which such a building is situated, or
- to improve the thermal performance of a building to which this Policy applies."

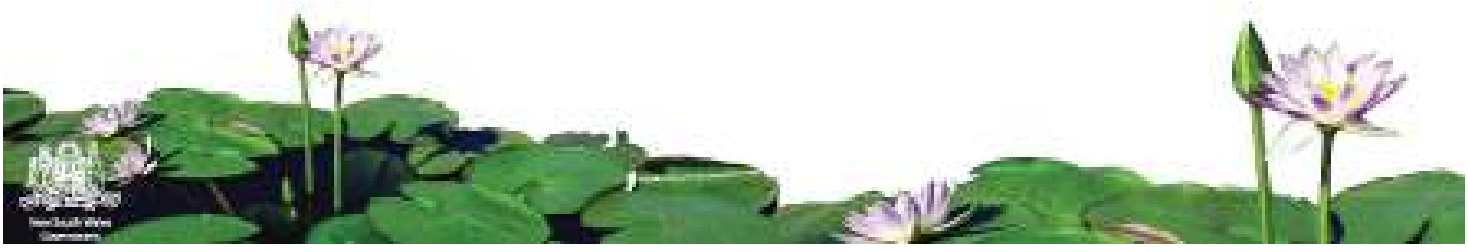
A 'competing provision' is defined in clause 4 as "a provision:

- that establishes development standards, or
- that requires a consent authority to have regard to, or take into consideration, any matter when considering or determining an application for a development consent, or
- that requires a consent authority to be satisfied as to any matter before it grants a development consent, or
- that requires a consent authority to impose a condition on a development consent, or
- that affects the granting of a development consent or the conditions on which a development consent is granted,

other than a provision that encourages, or offers incentives for, the adoption of measures beyond those required by provisions of the kind referred to in paragraphs (a)–(e)."

These provisions have no effect because BASIX constitutes the one assessment system for the specified aspects of residential building design. Consent authorities must not impose additional requirements on developers in relation to these things. A provision merely offering incentives for a development proposal to include measures to achieve enhanced performance is not regarded as a 'competing provision'.

'Consumption of mains-supplied potable water', 'emissions of greenhouse gases', and 'thermal performance' are addressed in the following section to explain the effect of these clauses of the SEPP.



Consumption of mains-supplied potable water

Any provision other than in BASIX aimed at reducing consumption of mains-supplied potable water in the use of a building or land on which it is situated is overridden and has no effect in relation to development to which BASIX applies.

Specific provisions of this nature which have no effect include provisions relating to:

- alternative water sources such as rain water tanks or other recycled water systems;
- the water efficiency of tap fittings and/or flow regulators;
- the water efficiency of showerheads;
- the water efficiency of toilets and their flushing mechanisms;
- the volume of and covering of swimming pools;
- the water efficiency of washing machines and dish washers;
- garden irrigation systems.

For example, a consent authority cannot require a rain water tank or AAA-rated showerhead to be installed for the purpose of reducing mains-supplied potable water consumption. Many applicants will elect to incorporate one or more of these types of measures into their proposal as part of their BASIX assessment, however the applicant will retain the freedom to select the most appropriate measures in order for the development proposal to meet the prescribed water target.

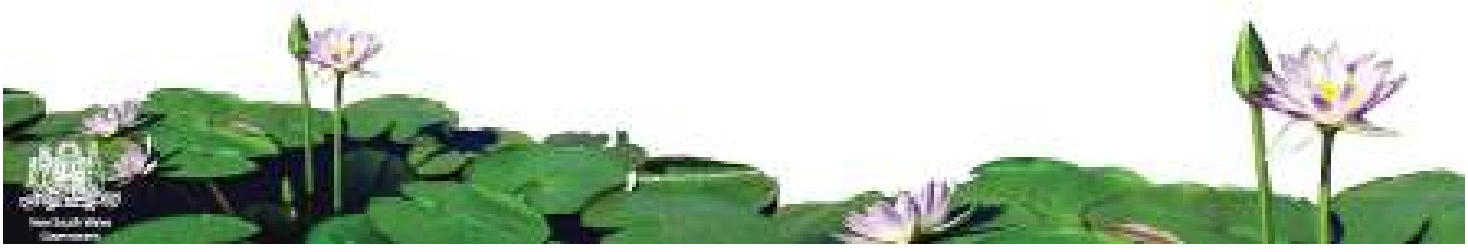
Emissions of greenhouse gases

Any provision other than in BASIX aimed at reducing emissions of greenhouse gases in the use of a building or land on which it is situated, specifically the amount of electricity and gas used by the dwelling, is overridden and has no effect in relation to development to which BASIX applies.

Specific provisions of this nature which have no effect include provisions relating to:

- hot water systems;
- cooling and heating systems;
- fixed lighting;
- cooking systems;
- swimming pool pumping and heating systems;
- design enhancements such as ventilated refrigerator spaces and fixed clothes lines;
- alternative energy supply;
- the energy efficiency of refrigerators, clothes dryers, washing machines and dish washers.

For example, a consent authority cannot require the installation of ceiling fans or the use of a particular type of hot water system for the purpose of reducing the greenhouse gas emissions of a dwelling. Again, many applicants will elect to undertake measures of this type in their BASIX assessment, however they will retain the flexibility to determine how to most appropriately design their home to meet prescribed targets.



Thermal performance

Any provision other than in BASIX which is aimed at improving the thermal performance of a building, specifically by reducing the cooling and heating loads of the building envelope, is overridden and has no effect in relation to development to which BASIX applies

Specific provisions of this nature which are overridden and have no effect include provisions relating to:

- a minimum 3.5 star House Energy Rating using NatHERS or equivalent;
- floor, wall and ceiling type;
- area and orientation of glazing;
- window and door glazing type;
- shading of glazing;
- floor, wall, ceiling and roof insulation;
- roof colour.

For example, a consent authority cannot require a 3.5 star NatHERS rating, a dwelling's windows to be shaded in a particular manner or a dwelling to be insulated in a particular manner for the purpose of improving the thermal performance of the dwelling. These matters are addressed by BASIX and all applicants are required to incorporate relevant thermal performance measures into design proposals in order to satisfy a BASIX assessment.

Incentive arrangements allowed

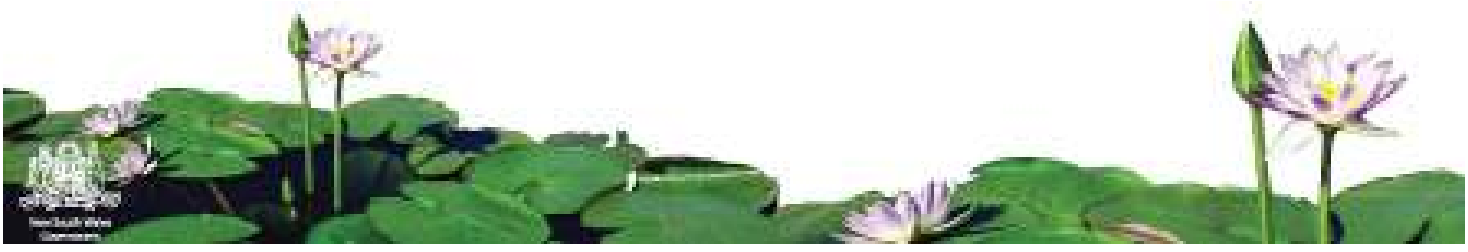
Consent authorities should note that they are not precluded from offering incentives which are aimed at encouraging a reduction in the consumption of mains-supplied potable water, a reduction in the emission of greenhouse gases, or an improvement in the thermal performance of a building, for any development assessed by BASIX.

For example, councils are able to offer rate reductions or section 94 (of the EP&A Act) contribution concessions for high sustainability performance buildings.

The aim of the SEPP is to ensure that development consent is not conditional on an applicant meeting requirements of this nature given that they have already demonstrated compliance through the completion of a BASIX assessment. Consent authorities may however allow applicants to undertake additional commitments to encourage performance that goes beyond compliance with the prescribed targets in BASIX.

Provisions which are not overridden

All provisions in environmental planning instruments and development control plans which are not specifically overridden by the BASIX SEPP continue to have effect in relation to the assessment of development proposals whether or not those applications are required to be submitted with a BASIX certificate.



Provisions applicable to non-BASIX developments

The BASIX SEPP only applies with respect to development for which a BASIX certificate is required. The EP&A Regulation provides that initially a BASIX certificate is only required in relation to development:

- comprising a single-dwelling house or dual occupancy building;
- which is being erected or built;
- on land for which a development application or an application for a complying development certificate is lodged on or after 1 July 2004 in Sydney and 1 July 2005 in regional NSW.

This means that other provisions continue to apply with respect to:

- other types of developments, including other types of residential developments;
- development for which development consent is not required; and
- development for which an application is lodged before 1 July 2004 in Sydney and before 1 July 2005 in regional NSW.

Aspects of sustainable building design not addressed by BASIX

At this stage the NSW Government has only prescribed targets in relation to Water and Energy. Dwellings must also achieve a pass in Thermal Comfort.

This means that provisions in environmental planning instruments and development control plans which address these other aspects of sustainability continue to have effect in relation to development proposals assessed by BASIX, as well as other development proposals.

Specific aspects of residential building design which are not affected by the BASIX SEPP therefore include:

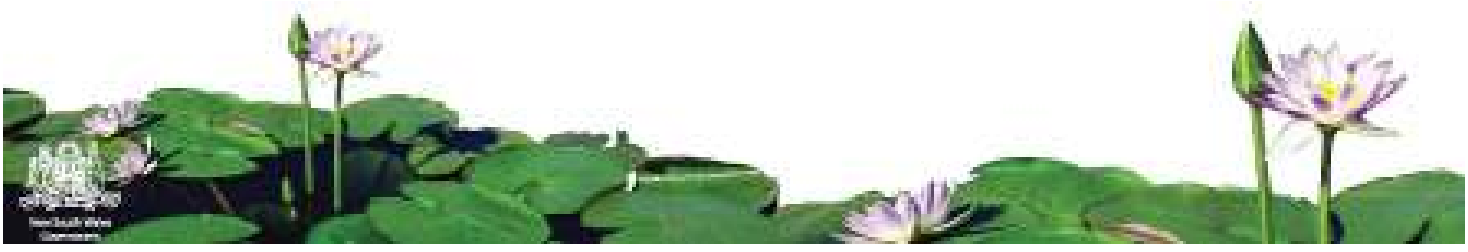
- landscaping;
- stormwater management;
- building materials, waste and recycling;
- accessibility, adaptability, affordability;
- orientation and solar access other than for thermal performance objectives;
- visual amenity.

Provisions in environmental planning instruments and development control plans addressing these matters are not ‘competing provisions’ and continue to apply in relation to development to which BASIX applies.

Local planning controls for siting

BASIX offers applicants choice in relation to the measures which they incorporate into the design of their homes in order to meet prescribed targets. BASIX does not seek to dictate local planning controls relating to issues such as boundary setbacks, height provisions and view lines. Applicants are required to incorporate BASIX commitments into their designs within the parameters established by councils’ local planning controls.

Some measures selected by applicants in BASIX assessment will only be effective if they adhere to particular design or installation standards. Regulations and Australian Standards may already exist in relation to some of these things, and they will continue to apply to BASIX commitments.



Provisions which serve more than one purpose

In some instances, provisions may exist within environmental planning instruments or development control plans which have more than one purpose. A provision may be aimed at serving a mains-supplied potable water consumption, greenhouse gas emission, or thermal performance purpose, but may also serve some other objective relating to something such as amenity, heritage, bushfire or stormwater.

Examples include:

- a provision requiring the installation of a rain water tank for both water conservation and bushfire or stormwater management purposes;
- a provision requiring a dwelling to have particular wall types or insulation for both thermal performance and noise absorption purposes.

Where a provision serves some other legitimate purpose, it is not overridden by the BASIX SEPP. Such provisions continue to have effect to the extent to which they seek to address the alternative purpose.

In these instances, the provision may still be applied to relevant development proposals, however consent authorities should consider whether other measures are available for fulfilling the alternative purpose.

Provisions which conflict with BASIX commitments

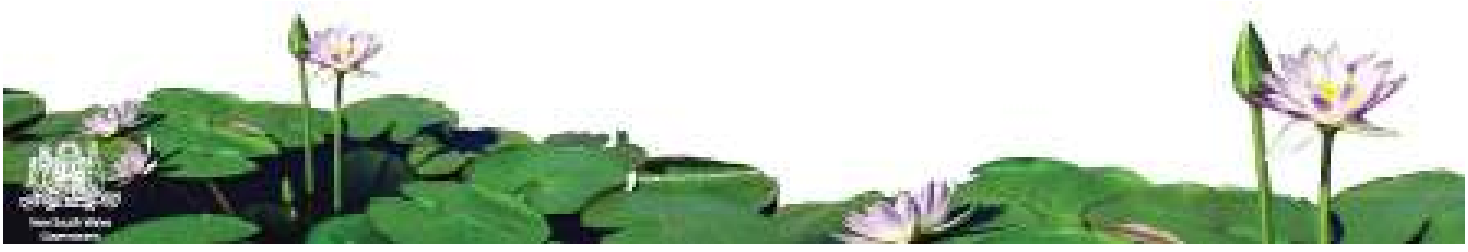
A provision may exist within an environmental planning instrument or development control plan that limits an applicant's ability to incorporate certain BASIX commitments into their design proposal because consideration is being given by that provision to some alternative purpose unrelated to mains-supplied potable water consumption, greenhouse gas emission, or thermal performance.

Examples include:

- a provision preventing the installation of a rain water tank or solar panels for amenity or heritage purposes;
- a provision preventing a roof from being a particular colour for amenity or heritage purposes.

Provisions of this nature are not overridden by the BASIX SEPP. Consent authorities have the ability to require an applicant to amend their BASIX commitments if some legitimate reason exists for disallowing one or more commitments to form part of the consent. In most instances, the flexibility of BASIX will enable applicants to meet prescribed targets by some other combination of measures.

In these instances the provision may still be applied to relevant development proposals however consent authorities should consider whether the alternative purpose can still be fulfilled without disallowing the BASIX commitments.



Relationship between BASIX and existing policies

The introduction of BASIX has implications for a number of existing policies. The main ones are addressed below:

SEPP 1—Development Standards

SEPP 1—Development Standards enables applicants to seek to have a development standard varied where its application would be unreasonable or unnecessary in the circumstances. As already discussed, SEPP 1 does not apply in relation to development standards arising under BASIX. Applicants are unable to seek a variation in relation to the prescribed BASIX targets or any commitments made in order to achieve those targets. The BASIX targets are fixed and may not be varied under any circumstances. The BASIX assessment provides sufficient flexibility for applicants to design their homes to meet the prescribed performance targets.

SEDA Energy Smart Homes Policy

The Energy Smart Homes Policy (ESHP) was developed by the Sustainable Energy Development Authority (SEDA) to assist councils in NSW to adopt and implement model standards relating to the energy efficiency of housing. The ESHP established a star rating system for new homes, assessed by use of the National House Energy Rating Scheme (NatHERS).

The contents of the ESHP have been expanded upon and enhanced in the development of the Thermal Comfort and Energy indices in BASIX. In the Thermal Comfort index of BASIX, applicants have the choice of completing a NatHERS assessment in order to demonstrate compliance with the thermal performance requirement. The performance requirements for the Energy and Thermal Comfort indices of BASIX throughout NSW ensures that minimum requirements previously encouraged under the ESHP are retained and in fact strengthened under the mandatory BASIX assessment scheme. Some elements of the ESHP have been incorporated into the Building Code of Australia, with which all development must comply.

The ESHP has no application in relation to development for which a BASIX certificate is required. The exception to this is the Solar Design provisions of the ESHP, which are not addressed within BASIX and which continue to provide useful guidance to councils on aspects of residential building design such as site analysis, building orientation and solar access.

SEPP 60—Exempt and Complying Development

SEPP 60—Exempt and Complying Development provides for exempt development and complying development in certain local government areas that have not provided for those types of development through a local environment plan. In relation to complying development, SEPP 60 identifies development that is to be complying development and specifies the development standards for that development.

Provisions in SEPP 60 identifying the achievement of a certain star rating under the House Energy Rating Scheme (NatHERS) Scheme as a development standard for complying development have no application in relation to development for which a BASIX certificate is required. As already discussed, the star rating system under the SEDA Energy Smart Homes Policy will be superseded by BASIX.

Advice to councils on modifying and/or developing LEPs/DCPs

Many councils will have provisions in their local environmental plans and/or development control plans which no longer have any application in relation to development to which BASIX applies.

Councils are not under any immediate obligation to amend these local environmental plans and/or development control plans. It is recommended however, that councils amend their local environmental plans and development control plans in accordance with the BASIX SEPP when they are periodically updated. In most instances this is likely to involve the removal of provisions which no longer have any effect following the introduction of BASIX.