Master Builders Response to the Discussion Paper

"Towards Sustainable Housing in Queensland" and Regulatory Impact Statement

Released by Government on 8 December 2004

Master Builders
Head Office

Master Builders House
417 Wickham Terrace
Brisbane Queensland 4000

Telephone (07) 3404 6444
Facsimile (07) 3832 2361

ask@qmba.com.au
www.qmba.com.au

EXECUTIVE SUMMARY

1. Master Builders does not support government proposals to ban electric hot water systems in all new homes and compulsorily require the use of solar, gas or heat pump hot water systems.

2. Master Builders does not support the banning of electric hot water systems based on the government's premise that it will dramatically reduce greenhouse gas emissions. The proposals based upon these grounds are fundamentally flawed and the stated policy objectives will not be achieved.

3. Regulating to ban electric hot water would see less than a 0.038% saving to total greenhouse gas emissions per annum i.e. less than 1% savings over a 25 year period

4. Master Builders does not support the notion that electric hot water in new homes will place pressure on energy infrastructure and that it will help to reduce the risks to performance of Queensland's electricity supply. Savings on electricity demand by imposing the proposals upon the community will be less than 0.14% per annum or 1.4% over a 10 year period.

5. Master Builders has demonstrated that the proposed measures will impose significant costs onto the community and dramatically affect housing affordability with little, if any, gain in greenhouse gas savings or a reduction of pressures on electricity infrastructure. The Regulatory Impact Statement acknowledges that gas hot water systems have higher capital and operating costs resulting in costs that are estimated to be greater than the value estimated for their greenhouse savings.

6. Master Builders believes that removing consumer choice, with little if any benefit being gained in achieving the stated objectives, cannot be justified.

7. Master Builders has major concerns with allowing local governments to opt to make the installation of water tanks mandatory, if they wished to, as it will create an uneven playing field and cause confusion within industry operating in many different local government jurisdictions

8. Master Builders is extremely concerned that some Local Governments have already influenced Land Developers to impose the proposals contained in the Discussion Paper upon consumers and builders through building covenants on the sale of land.

INTRODUCTION

Master Builders is the largest industry organisation in Queensland, representing over 10,000 members including builders, subcontractors, manufacturers, industry consultants, associates and students. More than 90% of all commercial building work and 85% of all housing construction is conducted by Master Builders members. For more than a century Master Builders has represented the building and construction industry and has provided government with valued and respected input into the development of policy at all levels which affect both the industry and the community

Master Builders supports the concept for more Sustainable Housing Development in Queensland.

This commitment is clearly demonstrated by Master Builders being a signatory to a Heads of Agreement with Government and other industry stakeholders, on 18 July 2004 to increase public awareness of the importance and value of more sustainable design and construction practices and increasing the uptake of sustainable housing practices by industry and the community. The Heads of Agreement will achieve these objectives by collaborative efforts with Local Governments and other stakeholders in establishing demonstration houses in selected Queensland centres regionally and on a statewide basis.

However, Master Builders **does not support Government proposals**, released in a Discussion Paper and Regulatory Impact Statement on 8 December 2004, to ban electric hot water systems in all new homes and compulsorily requiring the use of greenhouse efficient hot water systems. It also has concerns relating to local governments opting to make the installation of water tanks in their local government area mandatory. This will create an uneven playing field and cause confusion within industry operating in many different local government jurisdictions.

GOVERNMENT PROPOSALS FOR LEGISLATING EFFICIENT HOT WATER

One of the primary reasons given for banning electric hot water systems cited in the Regulatory Impact Statement (RIS) and Discussion Paper is that it will significantly reduce greenhouse gas emissions and reduce pressure on energy infrastructure.

The following are extracts from the RIS released by the Queensland Government (Local Government and Planning and Environmental Protection Agency) relating to proposed legislative measures to improve sustainability of new housing

[1]*Policy Objectives*

The primary objectives of the proposed legislation are to:

- *Increase water efficiency*

[1] Page 5 of Regulatory Impact Statement

- *Increase energy efficiency*
- *Reduce greenhouse gas emissions*

The increasing demand for more energy and water for use in homes is contributing to an increase in greenhouse gas emissions and is placing pressure on energy and water infrastructure.

The increasing greenhouse gas emissions attributed to household energy use poses risks in terms of potential impacts from global warming.

The growing population in Queensland, and associated demand for new housing, will lead to further increases in greenhouse gas emissions if housing does not become more energy efficient.

[2] *Increased levels of greenhouse gases are believed to be the major cause of global warming. …… The proposed regulations will help reduce growth in greenhouse gas emissions…..*

[3]*The measure proposed is the requirement that greenhouse efficient hot water systems (HWS) are used in new Class 1 buildings in Queensland. The greenhouse efficient HWS under consideration are:*

- *Solar electric*
- *Solar gas*
- *Efficient gas (here taken to mean either 5 star gas storage or instantaneous/continuous gas); and*
- *Heat pump*

To address this, government therefore has proposed to ban the use of electric hot water systems in all new homes.

MASTER BUILDERS RESPONSE

Greenhouse gas emissions

An analysis of the statistics cited in the Regulatory Impact Statement (see table) clearly demonstrates that if all new homes built per annum retained electric hot water systems, they would only contribute 0.038% to total greenhouse gas emissions in Queensland. The primary reasons for banning electric hot water are therefore fundamentally flawed and the stated policy objectives will not be achieved.

Regulating for greenhouse efficient hot water systems would only see a slight improvement on the 0.038% contribution to total greenhouse gas emissions.

[2] Page 13 Greenhouse Gas Emissions of Regulatory Impact Statement
[3] Page 29 of Regulatory Impact Statement

Analysis of Government Figures from Regulatory Impact Statement

Contributors to Greenhouse Gases	%Contribution to TOTAL Greenhouse Gas Emissions (QLD)
Total Electricity Generation in Queensland	26% [4]
23% [5] of electricity generated is for total housing stock (23% of 26%)	6%
Hot water is 34% [6] of household energy use (34% of 6%)	2%
New homes forecast growth to be 1.9% per annum [7] of existing total housing stock (1.9% of 2%) (1.48 million dwellings [8] of which 1.14 million are Class 1 detached [9]	0.038%
In other words, if all new housing stock built per annum all had electric or non-greenhouse efficient hot water systems then they would contribute **0.038% of total greenhouse gas emissions**	0.038%
Installing solar or greenhouse efficient hot water would generate **savings on the 0.038% p.a. contribution but would be negligible** in the big scheme of things (less than1% in 30 years)	Slightly less than 0.038% p.a. Less than 1% in 30 years
If all 1.48 million existing dwellings all switched to solar then there would only be a slight saving to the total 2% contribution to total greenhouse gas emissions	Less than 2%
The fear factor of global warming and greenhouse gas emissions, and therefore the proposal to eliminate electric hot water systems, is predicated upon an emotional response, not fact, and clouds the issue.	

[4] Page 1 Para 2 of Regulatory Impact Statement
[5] Page 1 Para 2 and Page 13 Para 3 of Regulatory Impact Statement
[6] Page 1 Table 1 of Regulatory Impact Statement
[7] Page 16 Para 4 of Regulatory Impact Statement
[8] Page 19 Table 6 of Regulatory Impact Statement
[9] Page 20 Table 7 of Regulatory Impact Statement

Master Builders therefore does not support the banning of electric hot water on the grounds that it will dramatically reduce greenhouse gas emissions. The proposals based upon these grounds in support of the policy objectives are fundamentally flawed as demonstrated in the above table.

New homes net increase on energy demand (caused by hot water)

Electricity demand caused by the installation of electric hot water systems in new housing stock per annum will increase total electricity generated by only 0.14% p.a. Over a ten year period, electricity demand caused by additional hot water systems in new housing will increase by 1.4% if total energy generation remains static (today's figures). Due to economic and industrial growth over 10 years, total electricity generation will undoubtedly increase to meet demand. Therefore hot water will place an additional load of much less than 1.4% of electricity generated over a 10 years period.

Electricity usage	**% of total electricity use**
Total electricity generation	100%
23% of electricity generated for total housing stock	23%
Hot water is 34% of household energy use (34% of 23%)	7.8%
New homes forecast growth to be 1.9% p.a. of existing total housing stock (1.9% of 7.8%)	0.14% p.a.
Electricity demand increase caused by hot water in new homes over **10 year period**	Less than1.4%

Master Builders therefore does not support the notion that hot water in new homes "*will place pressures on energy infrastructure"* and that "*they will help to reduce the risks to the performance of Queensland's electricity supply infrastructure posed by increasing household energy demand"*[10]

Cost increases for the community

It is acknowledged in the RIS that the proposed regulations *have the potential to result in significant costs to the community*[11] and that *the proposed amendments are likely to increase barriers to entry in the housing market. The proposed amendments will increase barriers to entry by imposing higher capital costs for prospective homeowners*[12] of new homes. These measures, together with other proposed energy efficiency requirements proposed for 2006 in the Building Code of Australia will impact on housing affordability.

[10] Page 13 of Regulatory Impact Statement
[11] Page 1 Para 1 of Regulatory Impact Statement
[12] Page 12 of Regulatory Impact Statement

It is acknowledged in the RIS that:

[13] *"The net capital cost of solar gas is about double the cost of a solar electric appliance, but the benefits in terms of greater greenhouse savings are not sufficient to outweigh the higher capital cost. Continuous natural gas hot water systems have higher capital and operating costs than conventional models, resulting in costs that are estimated to be greater than the value estimated for their greenhouse savings"*

"The cost benefit assessment of gas water heaters shows a strong net cost for natural gas hot water systems. This is due to a number of factors:

- *Capital costs for gas water heaters are greater than off-peak electric hot water systems, particularly in relation to plumbing costs for connection to gas reticulation works;*
- *Gas water heaters are typically less energy efficient than off-peak electric hot water systems and thus use more energy;*
- *The cost of reticulated gas in Queensland is high compared to the cost of off-peak electricity.....;*
- *It is assumed that LPG, at even higher prices than natural gas, is used in zones 1 and 3; and*
- *The only off-setting benefit is greenhouse gas savings"*

These figures and assumptions are supported by a study done by the Energex Institute in April 2003. Their report is included as Attachment A. From the Energex Institute's own figures there are negligible net savings (if any) to consumers over a 10 year period when taking into account running costs over the period, capital purchase and installation costs less Renewable Energy Certificates (RECs) and the state government solar hot water rebates.

Hot water system	***Total net costs over 10 years Energex***	***Smart Housing Publication Dept of Housing***
Solarhart 302 L [14]	*$2,666*	*$2,400*
Rheem Heat Pump	*$2,863*	*$2,400*
Storage electric tariff 31	*$2,872*	
Solarhart 302 J [15]	*$2,982*	
Heat Exchange tariff 33	*$3,203*	*$3,490*
Storage electric tariff 33	*$3,265*	*$3,590*
Continuous Flow Natural Gas	*$3,718*	*$3,880*
Storage Natural Gas	*$4,200*	*$4,430*
Continuous Flow LPG	*$5,885*	
Storage LPG	*$7,010*	

[13] Page 58 of Regulatory Impact Statement Para 6 and 7
[14] Referenced in Footnote page 27 of the Regulatory Impact Statement
[15] Referenced in Footnote page 27 of the Regulatory Impact Statement

Furthermore, net costs for similar various hot water systems highlighted in the Queensland Government, Department of Housing publication "Smart Housing – Towards Sustainable Housing - Cost Efficiency" published May 2004, also indicates negligible savings (if any) over a 10 year period and that gas hot water will add significant costs to the community.

Master Builders believes that the cost of capital purchase and installation is not truly reflected in the above figures. A quote from the Solar Centre (North Ipswich) for a Solarhart 302 L to be installed at a new house in Bardon was

Solarhart 302L	$3040
Roof-fit	$ 370 (does not include plumbing and electrical)
Hire Mobile Crane	$ 220
LESS RECs	$1080
Total	$2550

The cost of plumbing and electrical connection is not included, or the cost of strengthening the roof frame structure to accommodate additional weight.

Master Builders therefore believes that the proposed measures have the potential to impose significant costs onto the community, with little, if any, gain in greenhouse gas savings or a reduction of pressures on the electricity infrastructure.

Housing affordability, when taken in context with;

- the recent energy efficiency measures introduced via the Building Code of Australia on 1 September 2003;
- a recent increase in the Portable Long Service Leave Levy on 1 January 2005;
- a proposed Training Levy to be introduced possibly on 1 July 2005;
- proposed raising of the bar for energy efficiency for houses via the Building Code of Australia in 2006 (which will add significant costs, especially for North Queensland);
- proposed introduction of water tanks;

will be severely eroded, and will impact as a real barrier for entry into the new housing market. When all of these additional costs are added to a mortgage with a 25 year term, the total costs, especially in relation to interest on the loan, will be significant.

Master Builders has commissioned Reed Construction Data (formally Cordell), a highly respected and independent Construction Costing organization, to monitor on a quarterly basis the cost of construction of a typical dwelling (excluding land costs) in South East

Queensland and translate these costs into a Housing Affordability Index based on ABS data including information on Average Weekly Income and Consumer Price Index relating specifically to Queensland. The report clearly indicates that introduction of the governments proposals will have a significant impact on Housing Affordability. The Report is included as Attachment B.

There is a direct correlation between housing affordability and housing approval figures. The Housing Affordability graphs since February 2000, shown in Attachment B, can be compared to the building approval figures shown on the last page of the Attachment B report. The impact of GST on housing affordability shows the same downward trends on approval figures. The rise and falls in affordability since the introduction of GST are also reflected in the approvals graph. It could be anticipated that mandatory introduction of the proposals will directly affect building approvals.

Although many of the community, industry and government believe that industry is currently in a boom period, with resultant skill shortages being experienced, evidence shows that this is not the case. Current levels are nowhere near the housing booms in 1988 and 1994 (as shown in the graph). Historically, when there are periods of high activity in the housing sector the commercial (construction) sector is depressed. Labour operating in the commercial sector then migrate into the housing sector alleviating skill shortages in this sector. Over the past few years both the housing and commercial sectors have simultaneously been experiencing high activity levels, resulting in a severe skills shortage as trades-people do not need to migrate from one sector of the industry to the other to find work. It is expected that new energy efficiency measures to be introduced in both the housing and commercial sectors in May 2006 via the Building Code of Australia will have a significant impact on building costs and affordability. Any resultant fallout on building approvals, in both sectors, will have a devastating effect on the viability of the industry. The housing sector felt this effect following the introduction of the GST which increased the cost of housing. The commercial sector did not experience this effect as commercial approvals were not affected by the GST because clients (as businesses) could claim the GST cost increase back as an input tax credit. Home buyers could not do this.

Consumer Choice

By regulating the compulsory exclusion of electric hot water, choice for consumers is removed with little or negligible resultant impact on total greenhouse gas emissions or energy infrastructure.

There are many variables to be taken into account when making a hot water system purchase, such as energy availability and pricing. Presently the majority of domestic consumers do not have access to natural gas. The alternative gas supply (LPG) is the most expensive home energy alternative.

To optimize the use of solar energy, collector panels need to be facing true north, away from the shade of trees or neighbouring buildings and kept clean to best absorb solar energy. It is possible for solar hot water systems to rely heavily on their booster elements powered by electricity or gas to meet the hot water needs of the home's occupants.

Homeowner's choices are individual, indicating a need for a wide range of alternative products in the hot water category. Some families have limited funds available and are unable to consider perceived environmentally friendly choices at this time. Those choosing to use electric hot water systems have not only a choice of system sizes but economic tariff options.

Master Builders strongly believes that removing consumer choice, with little if any benefit being gained in achieving the stated objectives, cannot be justified.

Rainwater Tanks

It is acknowledged that water availability has the potential to be a major limiting factor for accommodating the anticipated population growth in Queensland unless actions are taken to address this issue. This is especially the case in South East Queensland, where planning for the future is vital for an ability to provide water to the one million extra people projected to live in SE Queensland by 2026.

The current Government proposal does not intend to make the installation of water tanks for garden use mandatory for all new houses built in Queensland, but wishes to leave it up to individual councils to mandate, through a State Model Code, if they chose to.

Master Builders has serious concerns with this approach as it will create an uneven playing field and cause confusion within industry operating in many different local government jurisdictions, some of which may adopt mandatory water tanks and others which will not. It has the potential to increase construction costs and timeframes in having to conform to inconsistent standards.

Although water tanks, for garden use, may take the pressure off water infrastructure, it is believed to be only a bandaid stop-gap measure and does not address the real issue. The Government, through its forecast projections of population growth and the recent SE Qld Regional Plan, must bite the bullet and plan for additional water infrastructure in the short to medium term.

Local Government and Land Developers

Master Builders is extremely concerned that some Local Government Councils have already influenced land developers to impose the proposals outlined in the Discussion Paper, together with additional requirements, upon consumers and builders through covenants on the sale of land. An example is the covenant on the sale of land for the Montruse Estate, Calamvale, which requires as an essential element, heating of water to be either solar, instantaneous gas or heat pump and that 3000 litre rainwater tanks must

be installed on every house. The building covenant also requires that solar panels must be located so they are not highly visible from the roadways. This creates a dilemma as many blocks are on the southern side of an East/West roadway. Solar panels, to be efficient, must face north. Proposed legislation would legitimize the practice of Local Governments influencing land developers to impose stringent building covenants on land. A copy of the covenant is included as Attachment C.

OPTIONS

Government has proposed four options to address the policy objectives stated in the Discussion Paper and Regulatory Impact Statement, being;

- Option 1 - No regulation
- Option 2 – State regulation
- Option 3 – State regulation with local government discretion
- Option 4 – Planning Schemes

Master Builders rejects Options 3 and 4 for the reasons stated in the Regulatory Impact Statement.

Master Builders does not support Option 2, even though this would result in a uniform standard across the state and the political process to establish the requirements need only be done once, at state level. The uniformity of requirements would make it easy for builders and buyers to know the minimum standards. This option is not supported as it would impose significant costs upon the community, create real barriers to entry into the home market by affecting affordability and would not achieve the stated objectives in the Regulatory Impact Statement in reducing greenhouse gas emissions or pressure on the electrical energy infrastructure, as demonstrated in this paper.

Master Builders supports Option 1. The no regulation scenario would see the continuation of a number of current initiatives for energy and water. These include rebates on solar water heaters (which could be removed if Option 2 was adopted), the promotion of AAA shower roses, information dissemination by the EPA, Department of Housing and industry, and the demonstration smart house project being implemented by industry and government.

Whilst Master Builders cannot see any justification of regulating new energy efficiency provisions at this time, there are numerous incentives and other options that will improve the energy efficiency of the industry whilst maintaining a maximum of consumer choice. The market is the most appropriate mechanism for handling this matter. Consumers are extremely concerned with the environment and energy efficiency of their homes. The Government and Master Builders need to increase the education and training of the public and industry to enable consumers to make the best choices for themselves. The benefits of introducing “compulsory” measures simply do not exist at the moment.

A voluntary compliance approach minimizes compliance costs, allowing homeowners or builders to choose the level of housing sustainability that suits their circumstances and reduces enforcement and management costs for local governments and private certifiers.

Attachment A

Energex Hot Water System
Life Cost Analysis

Hot Water System Life Cost Analysis

Calculation detail:

Running Costs based on Industry supplied formulas
(to determine energy used by a range of hot water system types producing the same amount of hot water delivered from the 'tap' using the various energy forms and tariffs available).
Daily electricity consumption figures for this example are between 8.2 and 9.5 kWh per day (depending on individual unit's intended performance)
Comparing:

. All storage type units [solar, gas and electric (including heat exchange)] - 105 litres hot water used per day.
. Continuous flow gas systems - 236 litres per day (estimated to be comparable with 105 litres delivered from storage system.)

Notes on flow rates and hot water delivery temperatures for this exercise:

Mains pressure water is delivered from storage type units at 50 degrees C above ambient temperature (usually 65 - 70 degrees C)
Electric heat exchange type units are designed to deliver hot water at a maximum flow of 9 litres per minute
Continuous Flow type Gas units are designed to deliver water at 25 degrees above ambient temperature at maximum flow rate of individual models
(I.e. 16 litres per minute @ 25 degrees above ambient temp; 24 litres per minute @ 25 degrees above ambient temp)

Notes on Solar System's booster energy requirement

Adequately sized Solar hot water systems, installed with their collector panels facing due north, are estimated to meet 80% hot water needs in SEQ (105 litres per day) met by the sun.
(Remaining 20% calculated at Tariff 11 electricity pricing)

Energy and estimated unit purchase pricing (including basic installation) current 10 April 2003

Solar hot water systems are individually represented with applicable solar rebate calculations deducted from total original purchase price

Electric and Gas hot water system pricing is averaged and current 10 April 2003

All calculations are approximations based on industry accepted formulas.
The information contained within this file is to be used as a guide only.
Individual household hot water use will vary depending on the following:

- The unit's thermostat setting
  The time spent showering
  The water flow rate of your shower rose (average between 9 - 24 litres per minute)
  Possible faulty leaking hot water system
  Leaking hot water taps
  Heat losses as a result of uninsulated piping from the hot water system to the hot water taps
  Normal daily heat losses for each particular hot water system
  Type and thickness of storage unit insulation

Anne Armansin - manager ENERGEX institute Ph (07) 3407 6010

life cost comparison 4 - 6 people

colour codes	solar w elec boost	elec heat pump	elec storage	elec heat exchange	gas cont flow	gas storage

4 - 5 people system type / energy	5 - 6 people system type / energy	unit size litres / flow	new unit average purchase price (installed)	running cost est. year 1	total est first year expenses	year 2	year 3	year 4	year 5	year 6	year 7	year 8	year 9	year 10
solahart	301 J Series (1 panel)	300	$ 1,943	$ 56	$ 1,999	$2,055	$2,111	$2,167	$2,223	$2,279	$2,335	$2,391	$2,447	$ 2,503
Rheem Solar Hiline	52S30005/2SCTNF	300	$ 2,000	$ 56	$ 2,056	$2,112	$2,168	$2,224	$2,280	$2,336	$2,392	$2,448	$2,504	$ 2,560
solahart	301 K Series (1 panel)	300	$ 2,086	$ 56	$ 2,142	$2,198	$2,254	$2,310	$2,366	$2,422	$2,478	$2,534	$2,590	$ 2,646
solahart	302 L Series	300	$ 2,106	$ 56	$ 2,162	$2,218	$2,274	$2,330	$2,386	$2,442	$2,498	$2,554	$2,610	$ 2,666
Rheem Solar Hiline	52S3005/2SCTFP	300	$ 2,117	$ 56	$ 2,173	$2,229	$2,285	$2,341	$2,397	$2,453	$2,509	$2,565	$2,621	$ 2,677
Rheem Solar Loline	51134005/2SCT	340	$ 2,300	$ 56	$ 2,356	$2,412	$2,468	$2,524	$2,580	$2,636	$2,692	$2,748	$2,804	$ 2,860
Rheem Heat Pump	55027500 (Tariff 33)	275	$ 2,203	$ 66	$ 2,269	$2,335	$2,401	$2,467	$2,533	$2,599	$2,665	$2,731	$2,797	$ 2,863
Rheem Heat Pump	55027500 (Tariff 33)	275	$ 2,203	$ 66	$ 2,269	$2,335	$2,401	$2,467	$2,533	$2,599	$2,665	$2,731	$2,797	$ 2,863
storage elec tariff 31		315	$ 1,222	$ 165	$ 1,387	$1,552	1717	1882	$2,047	2212	2377	2542	2707	$ 2,872
solahart	302 J Series	300	$ 2,422	$ 56	$ 2,478	$2,534	$2,590	$2,646	$2,702	$2,758	$2,814	$2,870	$2,926	$ 2,982
edwards	L 305 / 2 panel	300	$ 2,451	$ 56	$ 2,507	$2,563	$2,619	$2,675	$2,731	$2,787	$2,843	$2,899	$2,955	$ 3,011
Rheem Solar Loline	51127005/2SCT	270	$ 2,486	$ 56	$ 2,542	$2,598	$2,654	$2,710	$2,766	$2,822	$2,878	$2,934	$2,990	$ 3,046
edwards	DES 315 / 2 panel	315	$ 2,550	$ 56	$ 2,606	$2,662	$2,718	$2,774	$2,830	$2,886	$2,942	$2,998	$3,054	$ 3,110
edwards	LX 305 / 2 panel	300	$ 2,565	$ 56	$ 2,621	$2,677	$2,733	$2,789	$2,845	$2,901	$2,957	$3,013	$3,069	$ 3,125
storage elec tariff 31	storage elec tariff 31	400	$ 1,470	$ 169	$ 1,639	$1,808	1977	2146	$2,315	2484	2653	2822	2991	$ 3,160
heat exchange tariff 33		180	$ 823	$ 238	$ 1,061	$1,299	1537	1775	$2,013	2251	2489	2727	2965	$ 3,203
storage elec tariff 33		160	$ 1,035	$ 223	$ 1,258	$1,481	1704	1927	$2,150	2373	2596	2819	3042	$ 3,265
solahart	302 K Series	300	$ 2,803	$ 56	$ 2,859	$2,915	$2,971	$3,027	$3,083	$3,139	$3,195	$3,251	$3,307	$ 3,363
	heat exchange tariff 33	280	$ 929	$ 246	$ 1,175	$1,421	1667	1913	$2,159	2405	2651	2897	3143	$ 3,389
	storage elec tariff 33	250	$ 1,125	$ 235	$ 1,360	$1,595	1830	2065	$2,300	2535	2770	3005	3240	$ 3,475
cont flow natural gas		22	$ 1,485	$ 220	$ 1,705	$1,925	2145	2365	$2,585	2805	3025	3245	3465	$ 3,685
cont flow natural gas	cont flow natural gas	24	$ 1,518	$ 220	$ 1,738	$1,958	2178	2398	$2,618	2838	3058	3278	3498	$ 3,718
storage natural gas		130	$ 1,400	$ 280	$ 1,680	$1,960	2240	2520	$2,800	3080	3360	3640	3920	$ 4,200
storage natural gas	storage natural gas	160	$ 1,470	$ 288	$ 1,758	$2,046	2334	2622	$2,910	3198	3486	3774	4062	$ 4,350
solahart	302 BC12 Oyster Series	300	$ 3,838	$ 56	$ 3,894	$3,950	4006	4062	$4,118	4174	4230	4286	4342	$ 4,398
storage natural gas		135	$ 1,160	$ 375	$ 1,535	$1,910	2285	2660	$3,035	3410	3785	4160	4535	$ 4,910
storage electric tariff 11		160	$ 1,035	$ 389	$ 1,424	$1,813	2202	2591	$2,980	3369	3758	4147	4536	$ 4,925
storage natural gas	storage natural gas	170	$ 1,235	$ 389	$ 1,624	$2,013	2402	2791	$3,180	3569	3958	4347	4736	$ 5,125
	storage electric tariff 11	250	$ 1,125	$ 409	$ 1,534	$1,943	2352	2761	$3,170	3579	3988	4397	4806	$ 5,215
heat exchange tariff 11	heat exchange tariff 11	400	$ 1,240	$ 452	$ 1,692	$2,144	2596	3048	$3,500	3952	4404	4856	5308	$ 5,760
cont flow lpg		22	$ 1,485	$ 440	$ 1,925	$2,365	2805	3245	$3,685	4125	4565	5005	5445	$ 5,885
cont flow lpg	cont flow lpg	24	$ 1,518	$ 440	$ 1,958	$2,398	2838	3278	$3,718	4158	4598	5038	5478	$ 5,918
storage lpg		130	$ 1,400	$ 561	$ 1,961	$2,522	3083	3644	$4,205	4766	5327	5888	6449	$ 7,010
storage lpg	storage lpg	160	$ 1,470	$ 576	$ 2,046	$2,622	3198	3774	$4,350	4926	5502	6078	6654	$ 7,230
storage lpg		135	$ 1,160	$ 749	$ 1,909	$2,658	3407	4156	$4,905	5654	6403	7152	7901	$ 8,650
storage lpg	storage lpg	170	$ 1,235	$ 778	$ 2,013	$2,791	3569	4347	$5,125	5903	6681	7459	8237	$ 9,015

life cost comparison 4 - 6 people

Attachment B

Housing Affordability Cost Index

FEBRUARY 2005 REPORT

MASTER BUILDERS QUEENSLAND

& CORDELL HOUSING COST INDEX

Regulatory Impact Statement Costing

"Proposed amendments to building and plumbing regulations to improve sustainability of new housing"

CONTENTS

1 – BRIEF

The February 2005 Report has been commissioned by the Master Builders Queensland to provide a cost analysis of the proposed changes included within the regulatory impact statement for sustainability in new housing. The draft proposals include energy and water usage in new houses.

2 – METHOD

The cost analysis was performed using the current standard practice in new house construction as a base. The proposed changes were then introduced into the construction of the house, providing a variety of options and associated costs. The results have been tabulated in the Analysis Summary below. The various options were then analysed through the Affordability Index to view the different implementation costs.

3 – COST MODEL

The model chosen for this cost analysis is a single storey brick veneer home, typical of many constructed in today's market. At just over 200 square metres, the home consists of four bedrooms; a main bathroom, with an en-suite to the master bedroom; a double lock-up garage with internal access; a large family room, with formal lounge and dining rooms at the front of the home. All bedrooms have built-in wardrobes, with the main having a walk-in style wardrobe. There is a courtyard area flowing from the family room suitable for outdoor entertaining.

The Cost Model is produced by Reed Construction Data on behalf of the Master Builders Queensland to monitor changes that affect the cost of new housing within South-East Queensland. The Master Builders Queensland (QMBA) is the largest employer association in Queensland, and represents the interests of businesses operating within the building and construction industry. Reed Construction Data is Australia's market leader in construction-based information, providing authoritative costing information for construction projects. The extensive database breaks costs down into material, labour, plant costs, alongside professional and government fees and charges.

4 – VARIATIONS OF CONSTRUCTION

The Regulatory Impact Statement "Proposed amendments to building and plumbing regulations to improve sustainability of new housing" provides a number of options for consideration. These options relate specifically to energy use and water saving devices. All options outlined below contain the additional recommendations of

- AAA Rated shower roses
- Rainwater tank (3,000 litre)
- Dual-flush toilets
- Efficient lighting
- Water pressure limiting device

The options include

BASE – Standard current practice **Electric Storage HWS (Off-peak)**

OPTION 1 – Standard current practice with additional recommendations listed above

OPTION 2 – As for Option 1 with **Solar HWS (Electric boost)**

OPTION 3 – As for Option 1 with **Solar HWS (Gas boost)**

OPTION 4 – As for Option 1 with **Gas Storage HWS**

OPTION 5 – As for Option 1 with **Gas Continuous HWS**

OPTION 6 – As for Option 1 with **Heat Pump HWS.**

5 – DATA

5.1 - Reed Construction Data

The data used for construction costs associated with this cost analysis have been calculated using the Cordell Queensland Housing Building Cost Guide. The database of information is researched and updated on a daily basis, capturing movements in labour, material, plant hire and fees and charges. This information is published quarterly in the Cordell Building Cost Guide, and on the Internet via the Reed Construction Data e-Costing program. The database is also used for various insurance-based products, providing replacement costs for major insurance companies.

5.2 - Additional Data Sources

Data used for comparative analysis of affordability were sourced from the Australian Bureau of Statistics, including information on Average Weekly Income and the Consumer Price Index relating specifically to Queensland.

6 – ANALYSIS SUMMARY

6.1 – Implementation Costs

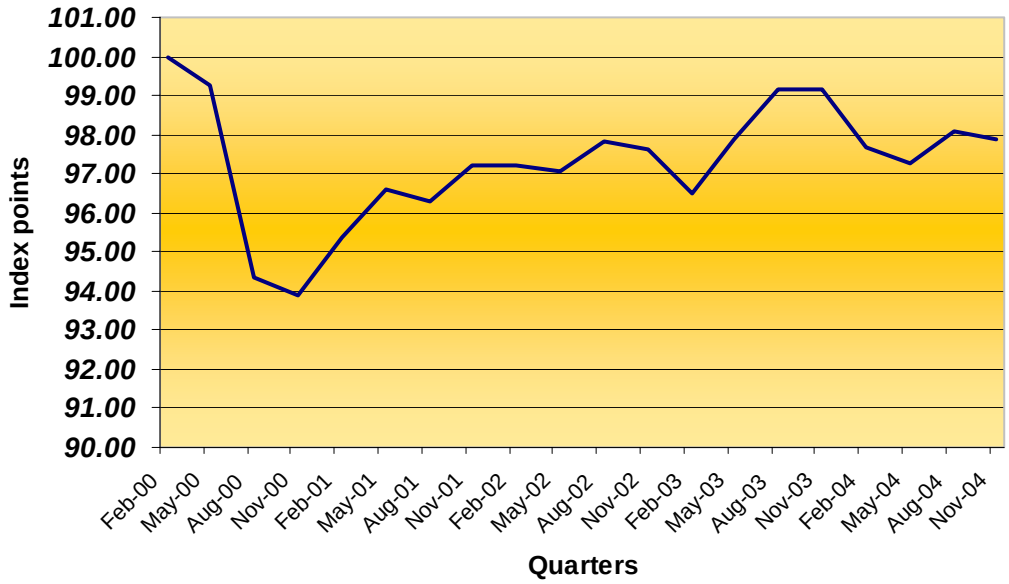
The implementation costs tabulated below reflect the current trade rates with the addition of the GST and builders margin. This is the additional end cost to the homeowner. The new totals are for including the option cost within the base house. These costs have been substituted into the affordability index for further analysis.

Option	Construction Method	HWS Cost	Implementation Cost	**New Total**
Base	Electric - Storage	$ 1,081.00	$ -	**$229,119.20**
Option 1	Electric - Storage	$ 1,081.00	$ 2,294.64	**$231,413.84**
Option 2	Solar - Electric	$ 4,375.00	$ 5,588.64	**$234,707.84**
Option 3	Solar - Gas	$ 5,722.00	$ 6,935.64	**$236,054.84**
Option 4	Gas - Storage	$ 1,309.00	$ 2,522.64	**$231,641.84**
Option 5	Gas - Continuous	$ 1,656.00	$ 2,869.64	**$231,988.84**
Option 6	Heat Pump	$ 4,851.00	$ 6,064.64	**$235,183.84**

6.2 - Affordability Index – Base

Quarterly Affordability Index of Building Costs and Weekly Earnings

Graph 1. (February 2000 to November 2004)



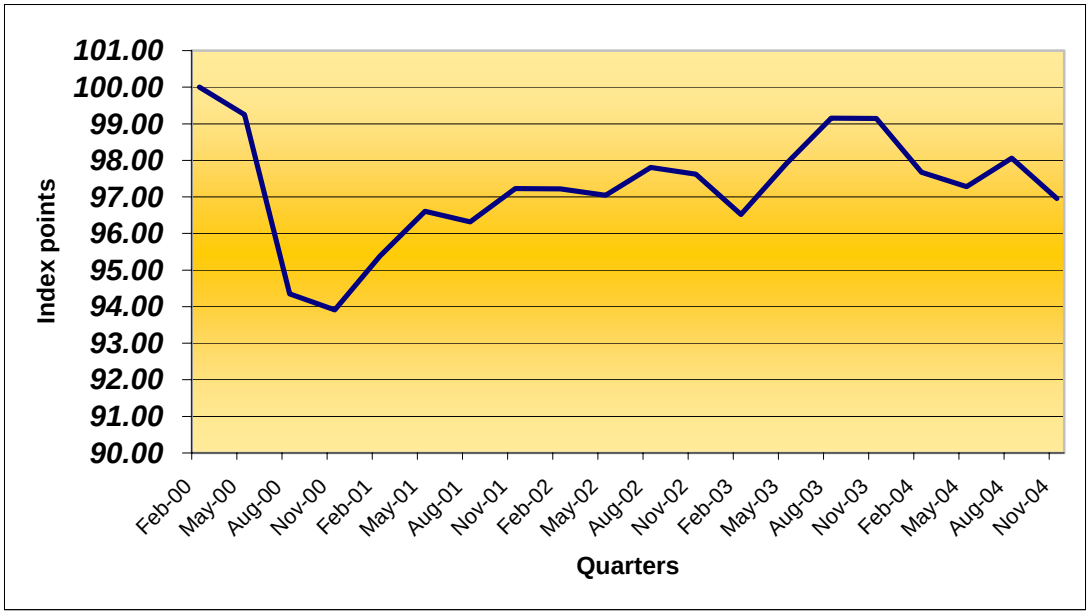
February 2000 = 100 index points.
Note: Forecast used for average weekly earnings for November 2004 index point.
Sources: Reed Construction Data; ABS catalogue No. 6302 August 2004.

The Affordability Index is based on the ratio of the total cost of building to average weekly earnings. The total cost of building was based on the cost of building a 200 square metre, 4-bedroom single storey brick veneer house in South-East Queensland. Average weekly earnings were based on the gross average weekly earnings in Queensland. Increases in the index represent the cost of building being more affordable to the average wage earner. Decreases in the index represent the cost of building being less affordable to the average wage earner.

6.3 - Affordability Index – Option 1 (Electric Storage)

Quarterly Affordability Index of Building Costs and Weekly Earnings

Graph 2. (February 2000 to November 2004)

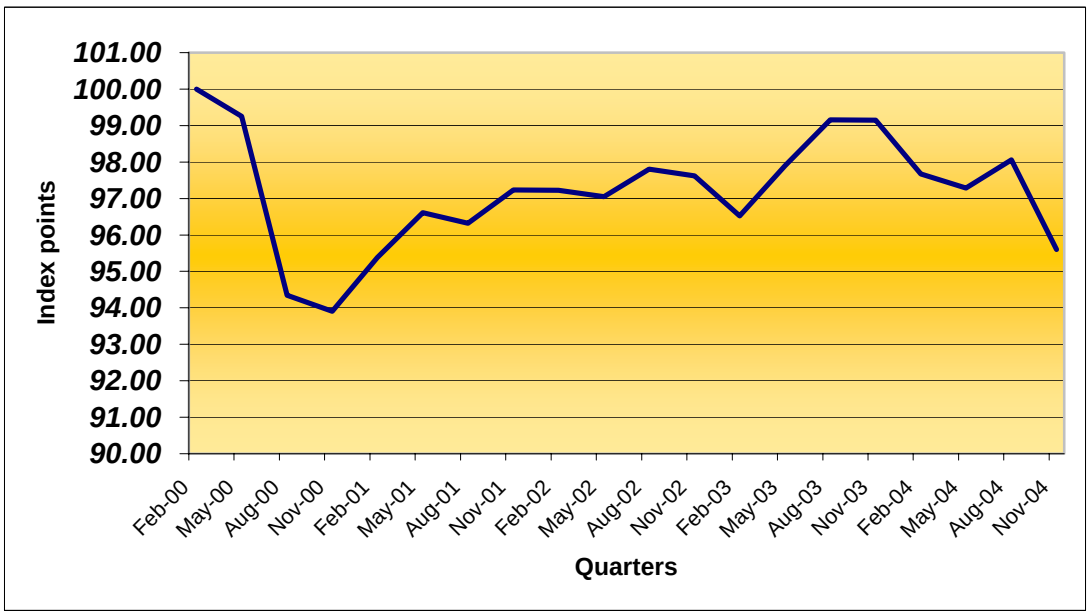


February 2000 = 100 index points.
Note: Forecast used for average weekly earnings for November 2004 index point.
Sources: Reed Construction Data; ABS catalogue No. 6302 August 2004.

6.4 - Affordability Index – Option 2 (Solar – Electric Boost)

Quarterly Affordability Index of Building Costs and Weekly Earnings

Graph 3. (February 2000 to November 2004)

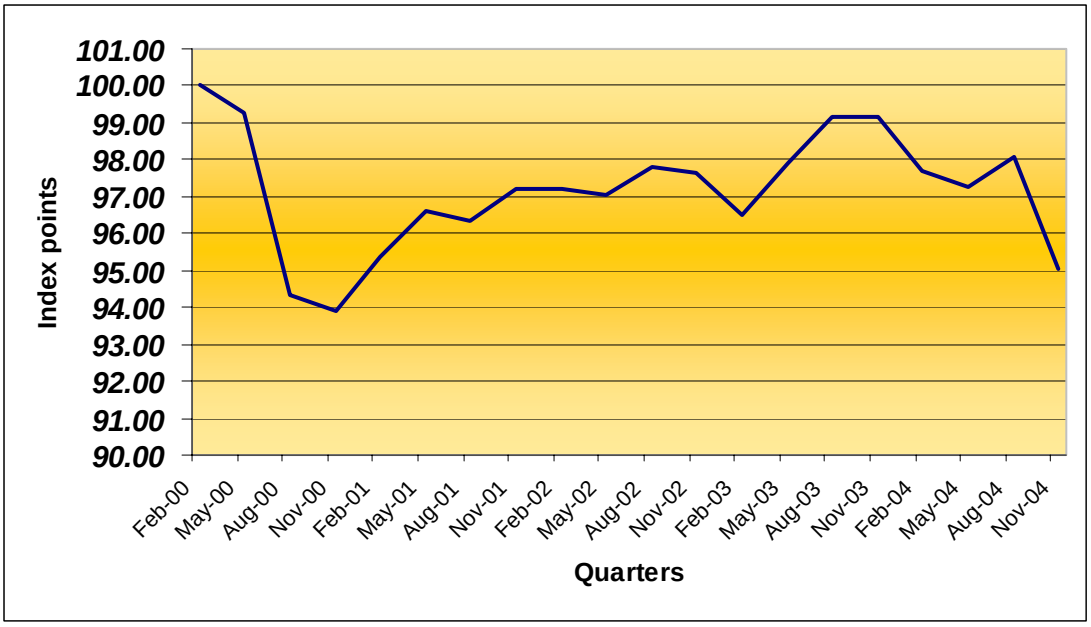


February 2000 = 100 index points.
Note: Forecast used for average weekly earnings for November 2004 index point.
Sources: Reed Construction Data; ABS catalogue No. 6302 August 2004.

6.5 - Affordability Index – Option 3 (Solar – Gas Boost)

Quarterly Affordability Index of Building Costs and Weekly Earnings

Graph 4. (February 2000 to November 2004)

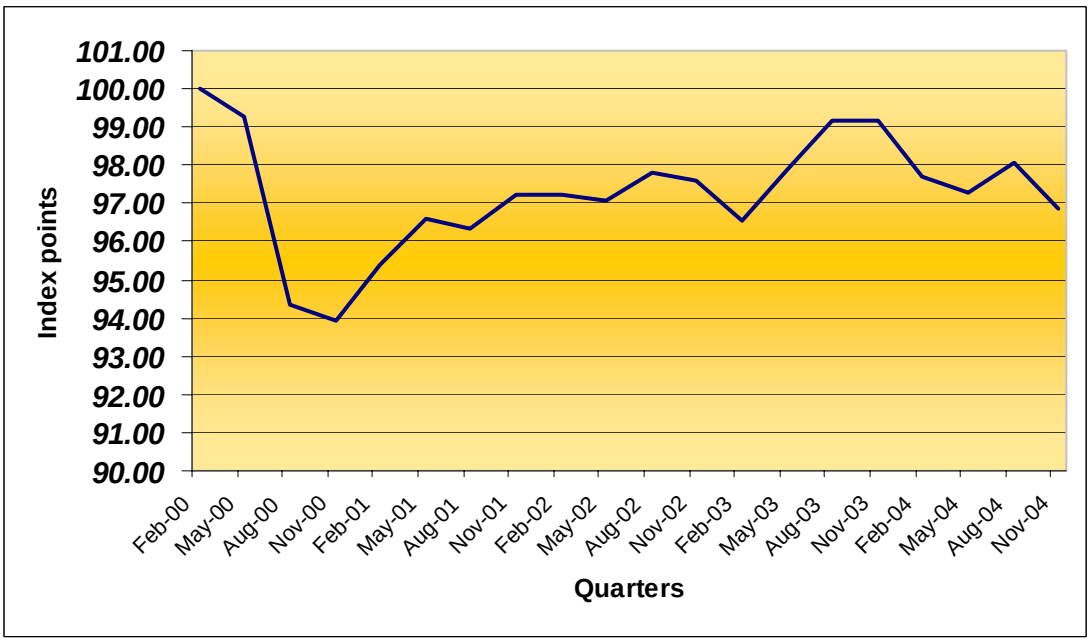


February 2000 = 100 index points.
Note: Forecast used for average weekly earnings for November 2004 index point.
Sources: Reed Construction Data; ABS catalogue No. 6302 August 2004.

6.6 - Affordability Index – Option 4 (Gas Storage)

Quarterly Affordability Index of Building Costs and Weekly Earnings

Graph 5. (February 2000 to November 2004)

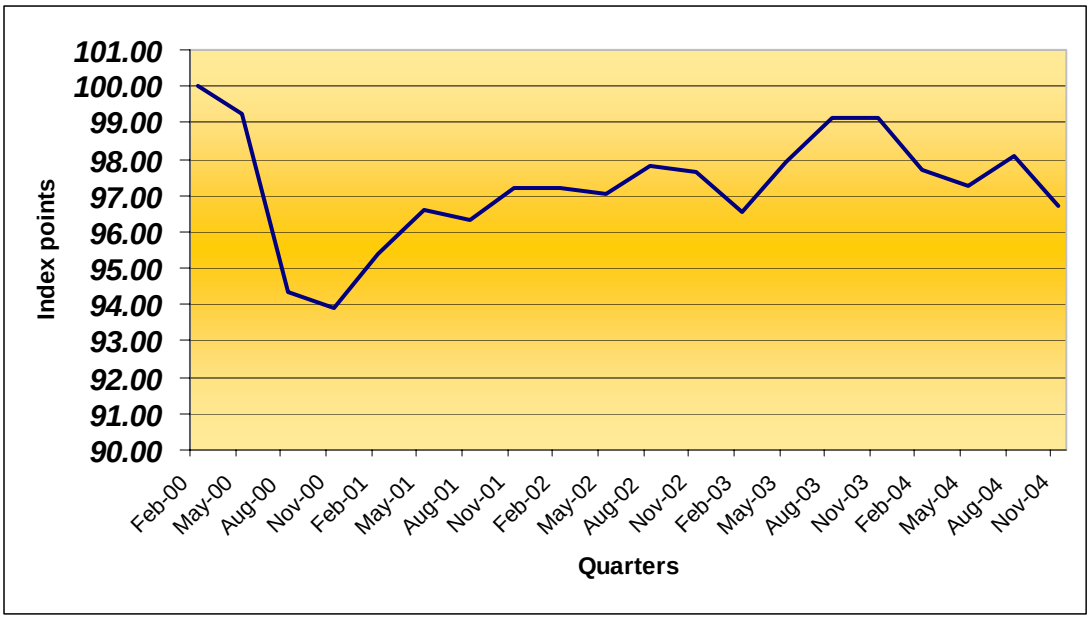


February 2000 = 100 index points.
Note: Forecast used for average weekly earnings for November 2004 index point.
Sources: Reed Construction Data; ABS catalogue No. 6302 August 2004.

6.7 - Affordability Index – Option 5 (Gas Continuous)

Quarterly Affordability Index of Building Costs and Weekly Earnings

Graph 6. (February 2000 to November 2004)

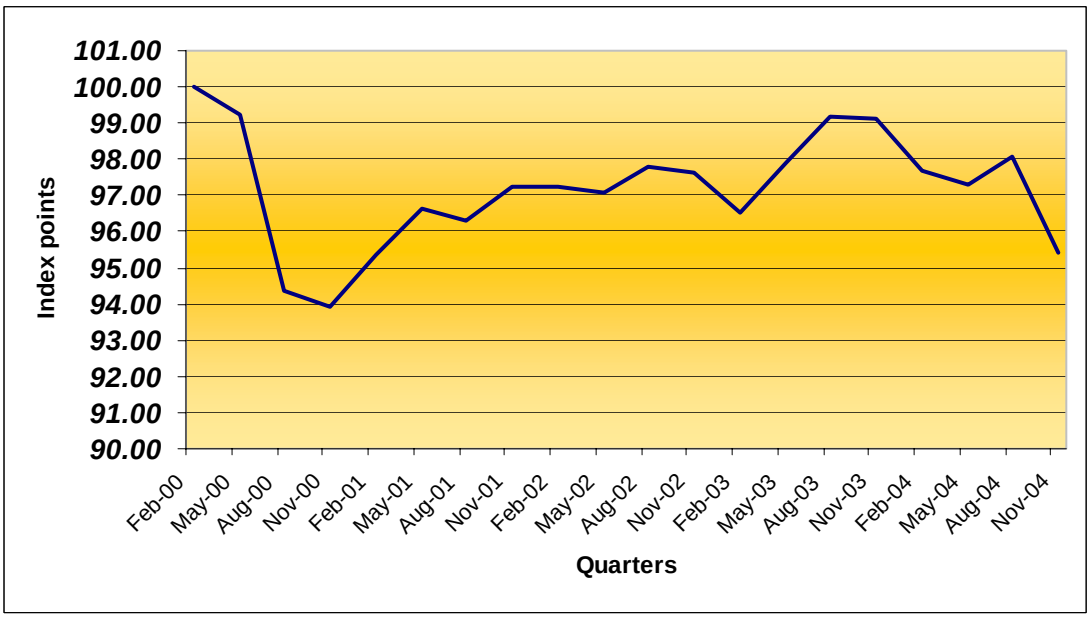


February 2000 = 100 index points.
Note: Forecast used for average weekly earnings for November 2004 index point.
Sources: Reed Construction Data; ABS catalogue No. 6302 August 2004.

6.8 - Affordability Index – Option 6 (Heat Pump)

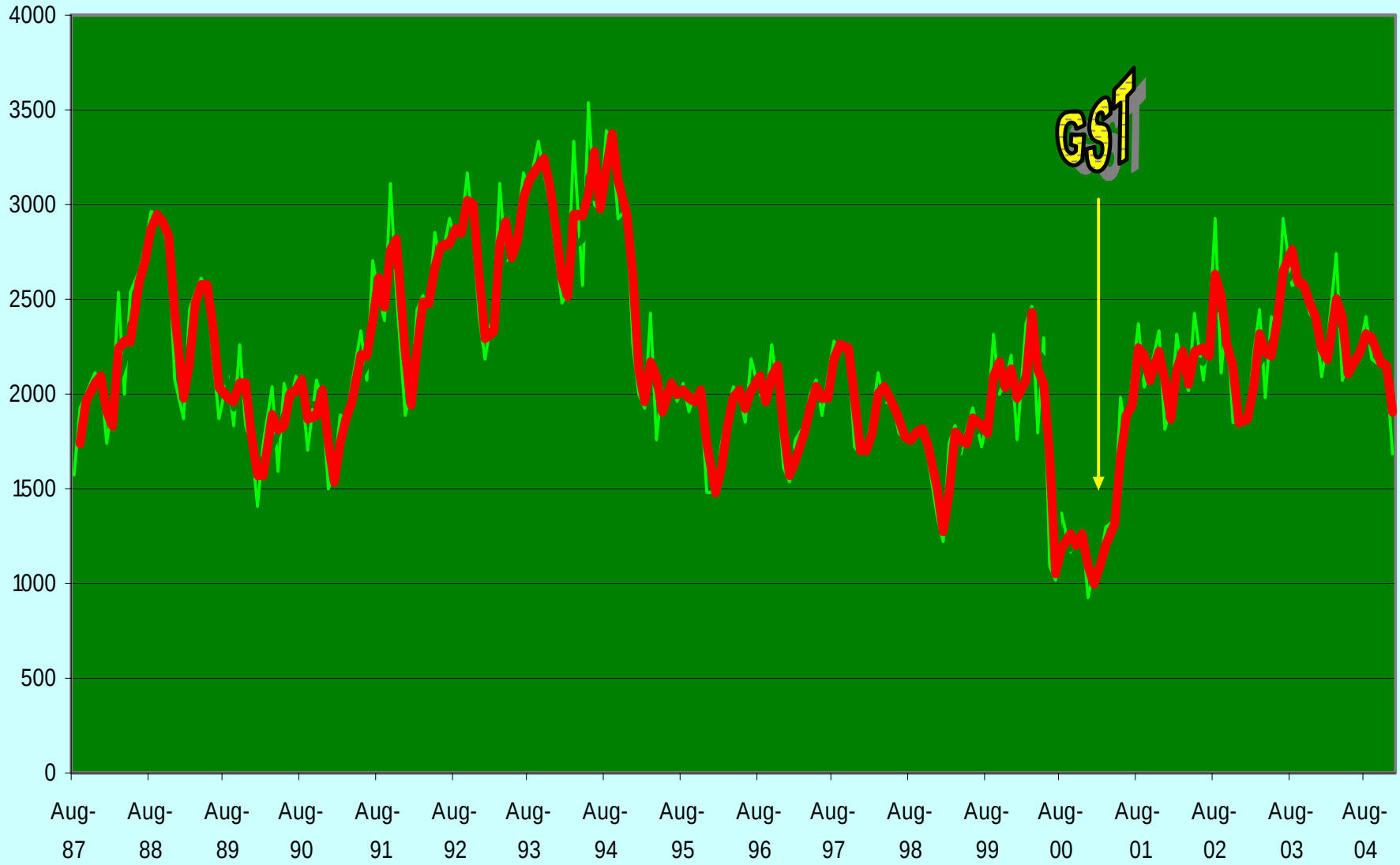
Quarterly Affordability Index of Building Costs and Weekly Earnings

Graph 7. (February 2000 to November 2004)



February 2000 = 100 index points.
Note: Forecast used for average weekly earnings for November 2004 index point.
Sources: Reed Construction Data; ABS catalogue No. 6302 August 2004.

Qld Building Approvals (houses) Aug 87 - Dec 04



Attachment C

Building Covenant
Montruse Estate

4.11 Building Materials Colours

(a) Vibrant primary colours are not preferred but may be used as features with the combined vibrant coloured external surface areas not representing more than 25% of the external surface treatments.

(b) Fascia boards, trim and exposed metalwork must be colour co-ordinated with the balance of the building on the Lot. Unpainted metalwork is not permitted.

(c) Fences that are to be painted, storage facilities and retaining walls will be colour co-ordinated with any other buildings on the Lot and will not be painted in vibrant primary colours.

(d) Highly visually reflective glazing treatments will not be permitted

4.12 Retaining Walls

(a) Retaining walls constructed of concrete blockwork and located on the front boundary or within the front boundary setback area must be treated with a bagged or rendered finish and colour co-ordinated with the Building Operations on the Lot.

(b) The Buyer acknowledges that the Seller may have caused the construction of a retaining wall on the boundary of the Lot. The Buyer or someone acting on its behalf shall not, when excavating or building on the Lot, interfere with or undermine the structural integrity of the retaining wall. The Buyer agrees to indemnify and keep harmless the Seller and any other affected person (eg. adjoining land owner) from any breach of this covenant.

4.13 Driveways

Driveways shall be of pavers or concrete with exposed aggregate or stamped or stencilled surfacing. Driveways shall be completed prior to habitation or completion of the dwelling house, whichever is the sooner.

4.14 Miscellaneous

ANTENNAE, AERIALS:	External TV antennae and other aerials be located so they are not highly visible from the roadways.
SATELLITE DISH:	Will only be approved if below the lower storey roofline and colour co-ordinated with adjacent material surfaces and located so they are not highly visible from the roadways.
SOLAR PANELS:	Must be integrated within a dedicated area of the roof and located so they are not highly visible from the roadways.
CLOTHESLINES:	Must be screened from view from public areas.
INCINERATORS:	Not permitted.
AIR-CONDITIONERS, POOL FILTERS AND MECHANICAL SUPPORT EQUIPMENT	Located well below eaves lines and concealed from view from public areas and neighbouring houses. All equipment must be noise attenuated and compliant with local noise regulations.

4.15 Additions and Extensions

Additions and extensions to the dwelling house, outbuildings and other structures, including new verandahs, pergolas, outbuildings, sheds, swimming pools and garden structures are subject to the same covenant requirements and application for approval must be made to the Seller in the same manner as the original building applications.

WISDOM Consulting
Building Organisations thru' Training

THE TVS PARTNERS

Green Housing Guidelines for Montruse Estate Calamvale
Prepared for the Pask Group

Preamble

The following guidelines are intended to provide a framework for all buildings in the Montruse Estate to consider Ecologically Sustainable Development principles and address good subtropical design. All designs should consider energy efficiency, water efficiency, waste minimization, low toxic materials and cost effectiveness.

Compliance

Each of the 6 Section contains elements that must be considered "Essential Elements" and a number of "Optional Elements". All Essential Elements and at least two optional elements must be addressed from each section.

SECTION 1

SITING AND ORIENTATION

Not withstanding the provisions of the BCA and local authority regulations the following considerations should be given to location of a house on its respective allotment.

Essential Elements	**Y**	**N**
1. Where possible, accommodation should be made, for the inclusion of a dedicated outdoor living area to the northern elevation of the home ensuring sufficient winter solar gain.	☐	☐
2. The dedicated outdoor living area must be easily accessed by means of a door (s) from a principal living area immediately accessible from the kitchen	☐	☐
3. Where cover is provided to this outdoor living area it must be constructed of a material and proportion that will allow winter solar access to a living area	☐	☐
4. Consideration should be given in the location of the home to ensure the maximizing of available cooling summer breezes	☐	☐
5. Minimize cut and fill and retaining walls	☐	☐

Optional Elements	**Y**	**N**
6. Location of home should maintain driveway and other hard surface areas at a minimum	☐	☐
7. Consideration should be given in the location of the home to ensure overshadowing of adjoining living spaces is minimized	☐	☐
8. The location of pools and other recreational water features should be an integral part of the home location	☐	☐

9. Natural overland flow paths should remain undisturbed where possible. Alternate natural routes should be optimized where disturbance is unavoidable ☐ ☐

10. Consideration should be given to the design of the home to ensure the distance Between entry and exit points for prevailing Summer breezes are kept to a minimum ☐ ☐

SECTION 2

ENERGY EFFICIENCY AND OPERATION ENERGY

Essential Elements Y N

1. Heating of water for domestic use should conform to the following requirements: ☐ ☐
   a. Solar
   b. Instantaneous gas
   c. High efficiency electricity (heat pump)

2. Fluorescent light bulbs should be adopted in preference to all other methods of artificial lighting in frequently used areas ☐ ☐

3. Low voltage halogen lighting, particularly 12V and similar, should be used solely for task lighting and kept to a minimum ☐ ☐

4. Where renewable energy generation is to be employed in the home, roof mounted, non obtrusive photo voltaic panels should be used and be located to the north to maximize efficiency. ☐ ☐

5. Layout of the home design should be such that it encourages: (Three or more features must be met)

   a. Good ventilation ☐ ☐
   b. The introduction of natural light where possible ☐ ☐
   c. Offer an open / accessible indoor, outdoor living style ☐ ☐
   d. Heat evacuation in the most direct and energy economical way ☐ ☐
   e. Layout should be such that it compliments the site layout ☐ ☐
   f. Where pool heating is included it should be sourced from (1) solar or (2) gas ☐ ☐

Optional Elements Y N

6. Additional bulk insulation should be included on unprotected walls where solar impact is likely to adversely effect living conditions to the adjoining room ☐ ☐

7. 5 star energy appliances should be used ☐ ☐

8. Gas cooktop and oven with externally vented rangehood should be adopted ☐ ☐

9. Where additional conditioned heating is likely to be required, gas heating is the preferred option ☐ ☐

10. Not withstanding the desired winter solar passive principle, total solar protection by means of shading should be provided to all windows and doors in preference to any other method of solar control ☐ ☐
11. 2700mm and greater ceiling heights are encouraged with ceiling fans to optimize air movement and interior comfort ☐ ☐
12. Light coloured roofs reduce solar gain to buildings and are preferred. ☐ ☐

SECTION 3

WATER CONSERVATION

Essential Elements

	Y	N
1. Rainwater tanks totaling 3000 L minimum, should be installed in a manner that will maximize the aesthetic value of the house, to service Landscape requirement.	☐	☐
2. Certified 'AAA' or better water conservation rating fittings should be fitted to all taps, shower heads etc	☐	☐
3. All showers should have thermostatic mixers fitted	☐	☐

Optional Elements

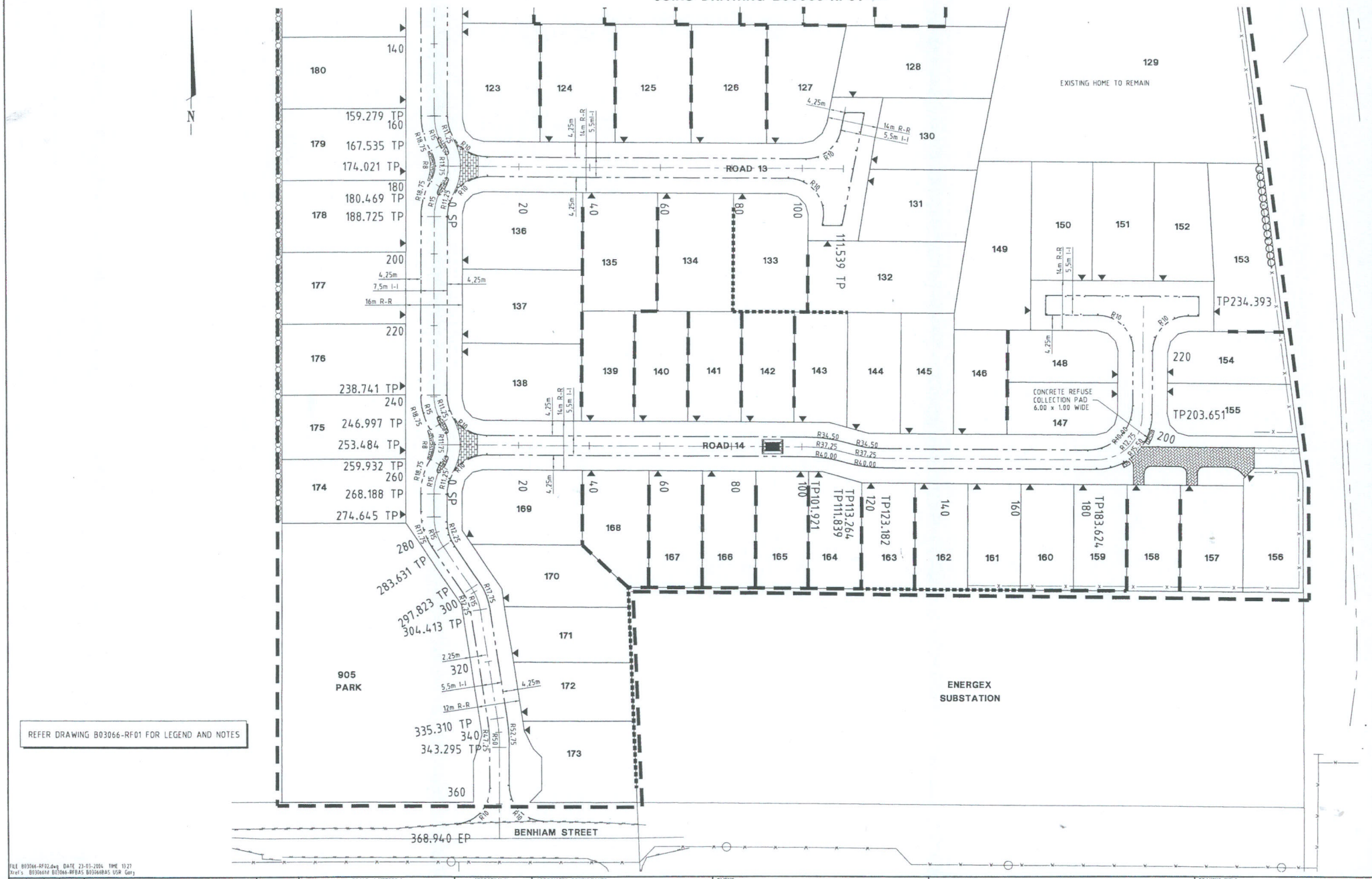
4. Dedicated area for car washing to be provided and drained	☐	☐
5. When selecting dishwasher ensure low water rating and energy usage	☐	☐
6. Sub surface irrigation systems form the preferred method of garden watering	☐	☐
7. Additional Rainwater tanks with trickle feed supply should be installed in a manner that will maximize the aesthetic value of the house and should be of a volume sufficient to service.		
a. Toilet flushing	☐	☐
b. HWS	☐	☐

SECTION 4

MATERIALS

Essential Elements

	Y	N
1. Low toxic low embodied energy insulation should be used	☐	☐
2. Construction waste recycling should be implemented on all sites	☐	☐



FILE B03066-RF02.dwg DATE 23-03-2004 TIME 13:27
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AMENDMENTS	FIRST ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
	A	PJE	VPP	02.12.03	
	B	PJE	PMB		DRIVEWAY ACCESS, ROAD 11 CHAINAGES
	C				
	D				
	E				
	F				

DESIGN CHECK

DRAWN CHECK

SCALE (METRES)
1:500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.

PROJECT No. B03066

ASSOCIATED CONSULTANTS
SURVEYOR Wolter Consulting Group
Level 12, 97 Creek St Brisbane Q 4000
Ph (07) 3211 3133 Fax (07) 3211 3492

APPROVED
FOR & ON BEHALF OF W.P. BROWN & PARTNERS PTY LTD RPEQ 2026

CLIENT NEV PASK DEVELOPMENTS

PROJECT MONTRUSE ESTATE - STAGE 2
CALAMVALE

W P BROWN & PARTNERS PTY LTD
ENGINEERS AND MANAGERS
Level 3, 410 Queen St Brisbane Q 4000
Telephone (07) 3231 5555
Facsimile (07) 3231 5500
email brisbane@wpbrown.com.au
BRISBANE CAMBERRA MELBOURNE
SYDNEY SUNSHINE COAST SINGAPORE

DRAWING TITLE
PROPOSED ROAD FUNCTIONAL LAYOUT SHEET 2 OF 4

DRAWING NUMBER B03066-RF02

ISSUE A