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Colin Reid  
Review of Metropolitan Water Agency Prices  
Independent Pricing and Regulatory Tribunal  
PO Box Q290  
QVB Post Office NSW 1230

By email: [ipart@ipart.nsw.gov.au](mailto:ipart@ipart.nsw.gov.au)

21 December 2004

Dear Colin

**Re : Review of Metropolitan Water Agency Prices 2005**

Please find following this letter a submission from the Public Interest Advocacy Centre to this review. We trust it will assist the Secretariat and the members of the Tribunal.

PIAC looks forward to the chance to discuss our views further at the public hearing. As always, we are happy to receive any requests for clarification or further information.

Yours sincerely  
Public Interest Advocacy Centre

A handwritten signature in black ink, appearing to read "Elissa Freeman", with a long horizontal flourish extending to the right.

Elissa Freeman  
Policy Officer

## 1 INTRODUCTION

The Public Interest Advocacy Centre Ltd (PIAC) is an independent, non-profit legal and policy centre based in Sydney. Established in 1982 it strives to foster a fair and just society by empowering disadvantaged citizens, consumers and communities through strategic legal and policy intervention in public interest issues.

The Utility Consumers' Advocacy Program (UCAP) was funded in 1998 by the NSW Government to develop policy and advocate in the interests of residential consumers, particularly low-income consumers, in the NSW energy and water industries. The project is based at the Public Interest Advocacy Centre (PIAC). UCAP staff receive broad policy direction from a community based Reference Group. This includes representatives from the following organisations/population groups:

- Council of Social Service of NSW (NCOSS)
- NSW Council on the Ageing (COTA)
- Combined Pensioners and Superannuants Association of NSW (CPSA)
- Australian Consumers' Association (ACA)
- Park and Village Service (PAVS)
- rural and remote consumers
- Bourke Family Service
- Institute of Sustainable Futures, University of Technology, Sydney

This submission to the Independent Pricing and Regulatory Tribunal (the Tribunal) is supported by these organisations. This submission considers the regulated pricing arrangements in Sydney Water Corporation (Sydney Water), Hunter Water Corporation (Hunter Water), Gosford City Council (Gosford Council) and Wyong Shire Council (Wyong Council). We have addressed a broad range of social concerns including social equity, consumer protections and operational efficiencies, within the context of ongoing drought across New South Wales.

## 2 NEW PRICING STRUCTURES

All four agencies are seeking price increases and/or changes. Currently only Sydney Water has indicated that they will implement an inclining block tariff and Hunter Water has, appropriately, committed to eliminating its declining block tariff. However, we have concerns about consistent price increases above CPI. Increases in prices above CPI should be treated with extreme caution as higher water prices mean higher costs of living and they come on top of increases in electricity and other essentials.

### ***2.1 Implications of the Inclining Block Tariffs***

PIAC has been highly critical of the implementation of inclining block tariffs (IBTs) to reduce the demand for water. The level of consumption in a particular household cannot be used as a guide to the capacity to pay higher prices, nor the household's ability to reduce water usage. As a

result of increasing industry interest in IBTs as a demand management tool, PIAC has undertaken a detailed analysis of the water consumption profile of vulnerable water-users who would be impacted under such a price structure. The policy paper (see attachment 1) aims to assist in understanding the barriers facing low income and high usage households in responding to inclining block tariffs. The paper utilises data from the Tribunal's 2003 survey of residential water use in the Sydney, the Blue Mountains and the Illawarra.

The paper identifies a number of disturbing trends among low-income, high water usage households. Households with a total income of less than \$31,200pa account for 16.2% of all households using more than 400kLpa. The social characteristics of this group reveal that 40.3% of these households have five or more residents. As well as being predominantly large households, our analysis indicates that a 40.1% of the households are public housing tenants.

In addition to examining social characteristics, we looked at a sample of water-using activities and compared them across low income, high usage households and high usage households generally.

**Table 1: Water-using Activities: Comparison of low-income, high usage households and all high usage households**

<b>Characteristic</b>	<b>Low-income, high usage households</b>	<b>All high usage households</b>
<b>&gt;5 indoor water-using amenities</b>	55.6%	82.0%
<b>Own a dishwasher</b>	25.7%	60.6%
<b>Have one or more single-flush toilets</b>	75.5%	60.8%
<b>Water the garden one hour or more per week during warmer months</b>	45.1%	65.1%
<b>Own a washing machine</b>	96.5%	99.2%

Note: Consumption data were not available for 183 survey cases; this is equivalent to an estimated 100,095 households. Of the cases for whom consumption data were not available, 97 were low-income households (< \$31,200); this is equivalent to an estimated 36,651 low-income households. Income data were not available for 161 survey cases; this is equivalent to an estimated 180,949 households.

Source: IPART, unpublished data, 2004.

The data suggests that low-income households have a more limited discretionary water usage (lower levels of garden watering and fewer indoor amenities) and face infrastructure-based limitations in managing water use (high levels of single flush toilets, fewer dishwashers). Together, it paints a picture of a group of households that will incur a financial penalty resulting from the new pricing structure. Sydney Water has outlined a range of social programs to be implemented at the same time as its proposed new tariff and these are discussed below.

## **2.2 Implications of rebalancing fixed and variable tariff components**

The low elasticity of demand in water and sewerage services means that price restructuring can have a significant impact at the household level. Of particular concern is the equity impact of rebalancing fixed and variable tariffs. In the case of residents in the Sydney and Central Coast regions, most households have had to decrease their water consumption substantially through water restrictions and have a more limited opportunity to respond to new price increases. We are concerned by the lack of analysis by agencies seeking to rely on increased variable charges.

Hunter Water has stated in its submission that “in broad theoretical terms, [a Two Part Tariff] achieves the most efficient social outcome when the fixed service charge covers fixed capital-related costs and the usage charge covers costs related to the level of use of the service” (page

32). Hunter Water and Sydney Water are moving towards substantially different tariffs, without seeming to meet the efficient social outcome criteria.

PIAC is also keen to understand any additional risk premium that would be placed on the water businesses as a result of new pricing structures. Clearly, an increased reliance on variable charges has significant impacts on how the water agencies operate. For example, Wyong Shire Council has indicated that an inappropriate demand forecast in the current regulatory period resulted in an inadequate income stream, especially as tighter water restrictions were introduced. Given that tighter water restrictions are likely in the Sydney metropolitan and Central Coast regions, how have the businesses factored tighter water restrictions into their pricing structures and demand forecasts? Furthermore, what regulatory uncertainty is being created by the increasing reliance on variable charges?

### ***2.3 Understanding long-term impacts on consumers***

In the case that new price structures are granted to the water agencies, we would urge the Tribunal to commit now to a study on the impacts of both the inclining block tariff and the rebalanced fixed and variable charges. In particular we would urge the Tribunal to track the impacts on low-income, large and private & public rental households, as well as water usage levels more generally. The community sector is keen to understand how new price structures are experienced over the course of the regulatory period. It may be useful for the Tribunal to investigate the impact on householders and water corporations' income if the balance between fixed and variable charges changes substantially.

## **3 CUSTOMER IMPACTS**

Sydney Water has outlined a detailed response to manage the customer impacts of the proposed new pricing structure, addressing its pensioner rebates, residential retrofits, assistance with purchase of water efficient appliances and its Payment Assistance Scheme (PAS).

PIAC's research has confirmed the low levels of discretionary water use by low-income households and the presence of infrastructure-based limitations. We support Sydney Water's effort to provide an equitable solution that assists low-income consumers to address the infrastructure-based impediments to reducing water usage. The funds allocated to assist households in financial hardship to purchase water efficient appliances will be an important contribution to achieving this and eligible households should not be restricted to customers who receive a bill directly. Large households, people with health needs and low-income public & private tenants, will require assistance to reduce water usage.

A broader issue arising from the current review, as both tariffs and concession policies are re-shaped, is the geographical and horizontal inequalities facing consumers in NSW. The introduction of an inclining block tariff in Sydney Water would see large households penalised for their water use, while the same household in the Hunter region would avoid such a penalty. The current drought has had a widely varying impact on communities throughout NSW and the costs associated have been similarly varying. Past efforts to align water costs would be displaced by the planned tariff restructuring. There is also a growing inequality between concessions and other assistance programs available to households eg. Pensioners who own their own home benefit from pensioner rebates, while those pensioners who face higher rents through increased water prices over time remain unable to avoid a price penalty.

In considering the customer impacts, it is important for stakeholders to understand the extent of vulnerability in communities where substantial price increases for an essential service are being considered. Tony Vinson's study "Community Adversity and Resilience", released earlier this year, measures the concentration of disadvantage according to postcode areas in NSW<sup>1</sup>. The study maps disadvantage by looking at a broad range of social & economic indicators, and ranks the degree of general disadvantage across NSW postcode areas.

As a case study, the postcodes 2259 and 2261-2263, which together account for a population of approximately 129,000 people, cover the bulk of Wyong Shire Council.

Postcode	Disadvantage quintile ranking	Postcode population
2259	25-30%	43,822
2261	20-25%	45,328
2262	10-15%	17,962
2263	5-10%	21,790

Source: Vinson, T., 2004, *Community Adversity and Resilience*, Jesuit Social Services

The suburbs of Wyong Shire Council feature consistently within the third of the State suffering from the greatest degree of disadvantage. In the instance of the 2263 postcode, it ranks in the second quintile, or the 5-10<sup>th</sup> percentile of disadvantage in the State. Given the degree of disadvantage experienced by residents of Wyong Shire Council, PIAC considers the price rises being sought in this community are unacceptably high. There is inadequate modelling of the impacts on vulnerable households and the required level of assistance to these households.

The practical implication of this is that price rises should be restrained and broad-ranging social programs to assist the community should be factored into the business' service delivery planning. Price increases of CPI + 10% pose an unreasonable burden on households. Gosford and Wyong councils have given no details about customer assistance. We would like to data on their "hardship committee".

The Vinson report aims to identify communities requiring additional, directed policy assistance. Sydney Water has indicated they will use this study to assist in their targeted residential retrofit program. We urge other water agencies and the Tribunal to make similar use of the report by targeting assistance to communities in need and considering social disadvantage when making pricing decisions.

## 4 EXPENDITURE PROGRAMS AND THE COMMUNITY

The community relies on the Tribunal's assessment of prudent capital expenditure to gauge whether businesses are spending funds appropriately. A factor to consider is the hierarchy of project funding. It would seem that Hunter Water's capital program contains some spending for programs outside of compliance requirements. Programs outside of regulatory standards are acceptable only to a point. Some of the expenditure on sewerage overflow might attract a community willingness to pay, however it is unclear just how much is considered appropriate. We are, however, pleased to note that Hunter Water has continued its commitment to the Hunter

<sup>1</sup> Vinson, T., 2004, *Community Adversity and resilience: the distribution of social disadvantage in Victoria and New South Wales and the mediating role of social cohesion*, Jesuit Social Services, Richmond

Sewerage Project; Improving services for those getting a lower level of service and sharing the costs is an important initiative.

Wyong Council has referred to a customer survey undertaken in September 2002 that supports their customer's willingness to pay for water supply investment. We would like IPART to review this research and findings to ensure that the data is being appropriately applied to revenue and expenditure claims.

We are concerned by the large amounts of funds that have been committed to the Metropolitan Water Plan (MWP) without any consultation with the community. The community's willingness to pay for the MWP is intimately linked to the real demand management outcomes it will achieve. Sydney Water has suggested that the MWP will contribute 0.8% price increase to Sydney consumers and yet the plan is a government policy that is weighted towards supply initiatives and leakage reduction. Given that the plan is being driven from government, we question whether passing on the costs through water prices is the most equitable way of achieving the government's policy objectives. We would like a clearer picture of what capital expenditure is being driven by licence requirements and by the Metropolitan Water Plan.

Efficiency gains are also an important part of the community's expectation of the water businesses' expenditure. Given that energy costs will be increasing over the regulatory period, an important aspect of business planning would, presumably, incorporate some energy efficiency programs within all of the agencies. Another concern related to prudent expenditure is this increasingly large amount of funds being earmarked for leakage reduction programs. Without wanting to detract from the importance of this activity, we would look to the Tribunal to confirm that the amounts being spent represent an appropriate cost-benefit reward.

We are also concerned to note that the government's policies around best practice guidelines for local water businesses has imposed a resource cost on Wyong and Gosford Councils. We are interested in the costs & impact these activities are introducing to the businesses.

## **5 DEMAND MANAGEMENT ACTIVITIES**

As price rises are sought by all the agencies, we are concerned by the perverse impact this may have on consumers who face continuing pressure to reduce their water usage. There is a potential scenario whereby consumers reduce their usage by substantial amounts and yet continue to pay more for their water charges. We are concerned by the prospect of four years of consistently rising prices, matched with the community facing four years of pressure to reduce water use. Water Agencies and the Tribunal need to demonstrate that the price increases being sought over the four year period take into consideration expectations of consumer behaviour and plan price increases accordingly. It is unreasonably to ask consumers to change their behaviour without translating that into a tangible cost outcome. The type of analysis undertaken by Gosford Council should be undertaken by the other water agencies.

It should be noted that PIAC does not support the use of price itself as a mechanism for achieving improved demand management or water conservation. For this reason PIAC has in the past supported programs that may require greater expenditure from customers but provide real assistance in reducing water use. However, further attention needs to be paid to people with health needs, public housing tenants and low-income renters. Water restrictions have been instrumental in reducing water usage in an equitable manner; a fact acknowledged by the water

agencies in their submissions. Yet there is limited indication as to how restrictions will interact with the agencies water management plans.

Wyong Council has listed a number of demand management activities in their submission to the Tribunal but has not given details about the costing for these, how they will be implemented/targeted or how much reduction in demand will be generated. This information is required before assumptions about reduced demand and the impact of price rises can be modelled and before the community can endorse the activities.

## **6 RATES OF RETURN AND DIVIDENDS**

Hunter Water has argued for an increased rate of return based on failure to recover in the 2003 period and by comparing similar rates of return in regulated NSW electricity businesses. In relation to the first point, we acknowledge that some incremental adjustments may be warranted to enable Hunter Water to meet its WACC range of between 5.2% and 6.7%, particularly to reach the bottom of the range. However, Hunter Water is seeking an increase substantially in excess of that. Consumers should be informed whether price rises are being driven by rates of return or efficient costs.

The comparison with NSW electricity distribution businesses is not, in our view, a suitable way of judging the appropriate and efficient rate of return. Water businesses and electricity businesses face different risks in managing their businesses, and risk is an important component of return on assets. The return set for the electricity distribution business should not be used to drive increased returns in water businesses. We recommend that the rates set by the Tribunal should not be changed.

## **7 MISCELLANEOUS CHARGES**

It seems unreasonable for Sydney Water to introduce a late payment fee when large price increases can be expected in the next regulatory period. Sydney Water is already asking the community to understand and respond to a new tariff structure and to change their behaviour (often at their own cost) to reduce water use. It is unacceptable at the current time to force a new late-fee payment structure on the community in addition to this. Consideration of a late payment fee should be deferred until government, Sydney Water and the community know the impact of the new tariff structure. The proposed charge is also opposed on the grounds that late payment fees tend to have a disproportionate impact on low income households, as they are more likely to make a late payments.

Hunter Water has proposed increases in a large number of miscellaneous charges. We are concerned that there does not appear to be adequate justification for these increases and no consideration of the equity impacts these may incur. The increases in “Water reconnection after restriction” charge seem particularly unwarranted. PIAC will be releasing a report in the new year that analyses the social impact of water restriction on households. The report should be reviewed before any further financial penalties are placed on our most vulnerable citizens. Similarly, an increase to the “Water Meter Re-Read” charge presents a challenge and further consideration should be given to the proposed charge.

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Public Interest Advocacy Centre  
Utility Consumers Advocacy Program  
Occasional Policy Paper No 7

ISSN 1443-9514

# **Water pricing and vulnerable customers: profiling low-income households**

**November 2004**



## Foreword

This paper is the seventh in a series of occasional papers produced by the **Utility Consumers Advocacy Program (UCAP)** of the **Public Interest Advocacy Centre Ltd (PIAC)**.

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# Water pricing and vulnerable customers: profiling low-income households

Utility Consumers Advocacy Program, Public Interest Advocacy Centre  
Occasional Policy Paper No 7  
November 2004

## 1. INTRODUCTION

The recent dramatic fall in the levels of Sydney's water storages has highlighted the difficult and critical task of managing water supply and demand. The NSW Government's Metropolitan Water Plan detailed a number of options to address Sydney's unsustainable use of water. The Government also requested the Independent Pricing and Regulatory Tribunal (IPART) to review alternative water pricing strategies to address the water supply/demand imbalance. These include the use of a step price for wholesale and retail water supply.

A step price, also referred to as an "inclining block tariff", would establish a price for consumption up to a pre-determined threshold. Any water consumed above that limit would be priced at a higher rate. It is commonly asserted that this tariff structure provides a signal to customers to restrict their consumption where it is likely to be in excess of the threshold.

Such price strategies are intended to target high-consumption households. However, inevitably they will impact on a number of low-income households. PIAC is particularly concerned that vulnerable households experiencing a price rise may not be able to respond to price signals, ie. they have little discretionary demand that can be reduced in response to price changes. The problem of Sydney's water use exceeding supply must be tackled by a combination of physical programs perhaps including a subsidised demand management program, better appliances, mandatory restrictions on use and education, as well as price.

IPART surveyed households in the Sydney Water catchment in 2003 to collate data on households' water use and the factors driving consumption.<sup>1</sup> PIAC asked IPART to further interrogate the results from its 2003 survey. The goal was to obtain a sharper focus on customers who are potentially vulnerable under IPART's pricing scenarios. In particular, PIAC wanted to understand how and why some households would be more vulnerable to price increases. IPART provided the additional data in September 2004. This paper reports on the findings of this further analysis and the implications for price strategies to tackle the issue of supply/demand balance.

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<sup>1</sup> Independent Pricing and Regulatory Tribunal of New South Wales, *Residential water use in Sydney, the Blue Mountains and the Illawarra: results from the 2003 household survey*, Research Paper RP 26, IPART, Sydney, 2004.

## 2. VULNERABLE CUSTOMERS

A focus on vulnerable customers is a tacit acknowledgment that access equity is a good principle in public policy.<sup>2</sup> The principle is particularly cogent for a product or service that is essential to human life, to the sustainability of the human body itself. Yet, access to water can and indeed sometimes must, be rationed because of its finite nature over space and time. Access to water for households therefore raises issues similar to other finite goods. As Weimer and Vining note:

Respect for human dignity seems to justify public policies that ensure some minimal level of consumption to all members of society. Most of us would agree that the minimum level should be high enough to ensure the commonly recognized needs for dignified survival. The level is absolute but not fixed. It is absolute in the sense that it does not explicitly depend on the wealth, income or consumption of others in society. It is not fixed because the collective assessment of what constitutes dignified survival will undoubtedly reflect the aggregate wealth in society.<sup>3</sup>

The social policy literature offers a number of approaches to measuring or benchmarking equitable access to goods and services for people disadvantaged in the marketplace. In the social security system the level at which the ordinary-rate pension is set, and its relationship (25%) to male total average weekly earnings, can perhaps be seen as reflecting a notion of adequacy, at least on the part of the provider (government) if not the consumer (social security recipient).

Dissatisfaction with the concept of adequacy as a test for the appropriate level of social security payments saw the emergence of research into living standards and budget standards in the 1990s. The idea was that assistance to poorer Australians would be more effective if such assistance was not based on a relational measure, like the Henderson poverty line or male average weekly earnings, but on an assessment of what it costs to have a “low cost” or a “moderate but adequate” standard of living, determined by reference to a defined basket of goods and services.

Box 1 indicates a range of approaches to addressing adequacy of social security payments identified by the Commonwealth Government in 1995.

### Box 1: Approaches to assessing the adequacy of social security payments

The **budget standards approach**, which sets a benchmark based on the cost of a defined basket of goods and services. This approach builds upon the common understanding of being poor, but takes a narrow view of well-being. Budget standards are resource intensive, both in initial development and in ongoing updating.

The **deprivation standards approach**, which would see benchmarks set in relation to the actual (rather than possible) living standards of clients. However, the choice of items about which data are gathered can be criticised as arbitrary. Also, deprivation standards are resource intensive, both in initial development and in ongoing updating.

The **subjective (or consensual) approach** would result in benchmarks set by public opinion as to the minimum level of income required to achieve a prescribed living standard. This would be ascertained through surveys. While the method is relatively simple to implement, respondents are often commenting on situations or income levels about which they have little experience.

The **relative (or statistical) approach**, under which benchmarks would be expressed as a proportion of some indicator of economic well-being, such as income. This method is simple and can reflect changes in community living standards. However, as implied in its name, this method is essentially relative and lacks a developed notion of adequacy.

Source: Leanne Chafer, Chris Harrington, Robert Holbert, Jane Maher and Loucas Nicolaou, *Developing a framework for benchmarks of adequacy for social security payments*, Department of Social Security policy discussion paper 6, Australian Government Publishing Service, Canberra, 1995.

<sup>2</sup> Organization for Economic Cooperation and Development, *Social issues in the provision and pricing of water services*, Paris, 2003.

<sup>3</sup> David Weimer and Aidan Vining, *Policy Analysis*, 2<sup>nd</sup> edn, p100.

A major spin-off from the Commonwealth's interest in adequacy benchmarks has been the development of a budget standards project by the Social Policy Research Centre at the University of NSW. The project does not have much to say about who might be a vulnerable water customer; rather it set the budget standard for a household's water cost as the average annual water usage for an average dwelling household at the price set by the water authority.<sup>4</sup>

The notion of deprivation as a measure of poverty led to further research into "financial stress" and how this might be gauged in relation to the essentials of life. In the case of water, these essentials were an indoor toilet, a bath and a washing machine.<sup>5</sup> This appears to be the approach taken by IPART in its consideration of inclining block tariffs for water in the Sydney region.

Deprivation approaches can draw on data about customers who have had goods and services withdrawn, disconnected or restricted because of non-payment of bills. However, there is little public-domain socio-economic data on water customers who might be in this situation, such as recipients of Sydney Water's Payment Assistance Scheme vouchers or complainants to the Energy and Water Industry Ombudsman (EWON).

Whether low-income consumers can afford to pay for a valuable resource like water will depend on choices between various expenditure options and the price of those alternatives as much as "spare capacity", that is, the size of their discretionary spending. The differing approaches to understanding "vulnerability" suggest it has a contingent and relational nature.<sup>6</sup> Low-income customers bring their relative lack of economic endowments to the table. However, water pricing policy itself can construct a consumer as vulnerable.

### 3. VULNERABLE CONSUMERS AND WATER PRICE

Following its investigation of price structures to reduce demand for water, IPART concluded:

... larger households are likely to use more water to meet basic, non-discretionary needs and so have less ability to respond to price signals by reducing their consumption. IPART believes that, ideally, the retail price structure should not expose a high number of vulnerable customers to higher water bills, should target discretionary water use, and should be set to minimise the extent to which larger households are required to pay higher charges for efficient or non-discretionary water use.<sup>7</sup>

IPART identified that a vulnerable group of customers under an inclining-block tariff pricing regime were those with low incomes, high usages and large households. Its identification of vulnerable groups suggested that if the size or quantum of the first "step" in an inclining-block tariff (the step quantum) was set at 400 kL a year, some 1.1% or about 16,667 low-income households with five or more persons would be adversely affected.<sup>8</sup>

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<sup>4</sup> Saunders, P. et al, *Development of indicative budget standards for Australia*, Research paper 74, Budget Standards Unit, Social Policy Research Centre, University of NSW, 1998, p.142.

<sup>5</sup> Mack and Lansley, cited in J Rob Bray, *Hardship in Australia: an analysis of financial stress indicators in the 1998-99 Australian Bureau of Statistics Household Expenditure Survey*, Department of Family and Community Services occasional paper 4, Department of Family and Community Services, Canberra, 2001, p.78.

<sup>6</sup> In an OECD report on water affordability in 22 OECD countries, the authors reported that their Australian informants perceived Australia to have no affordability problems, on the basis of the existence of price concession systems (*Social issues in the provision and pricing of water services*, p.31). The report authors suggested that the existence of affordability measures is an indication that there is an affordability problem.

<sup>7</sup> Independent Pricing and Regulatory Tribunal, *Investigation into price structures to reduce the demand for water in the Sydney basin*, p.5.

<sup>8</sup> Independent Pricing and Regulatory Tribunal, *Residential water use in Sydney, the Blue Mountains and the Illawarra*, p.27. The preferred option has three components: a usage charge applying to each kL of water used up to a certain volume a year (the first tier); a higher usage charge applying to each kL of water used in excess of the volume set for the first tier (this charge being the second tier); and a relatively low, fixed, yearly service charge to collect the balance of Sydney Water's revenue requirement.

IPART noted the existence of vulnerable customers, in particular those who:

- are least able to afford to afford price increases because they already face financial hardship; and
- might not be able to reduce their water demand.<sup>9</sup>

To minimise potential adverse effects on these customers, the report recommended that the step quantum be high enough to ensure that the bulk of households could meet their basic, non-discretionary needs without going over that level.<sup>10</sup>

“Discretionary” uses are swimming pools, gardens, washing driveway/footpath, washing a car, and some indoor water-using activities, including long showers and a large spa. Discretionary use is directly related to the number of indoor amenities possessed. (Indoor amenities include toilets, baths, showers, spas, dishwashers, and washing machines.) Discretionary uses account for 24% of households’ water use.

“Non-discretionary” uses are drinking, cooking, bathing, house cleaning, clothes washing, and toilet flushing. Non-discretionary uses generally account for 66% of households’ water use.

The recommended step quantum was 400kL, a relatively high level considering that average residential household water use in 2003 was 249kL; an average that has been fairly constant over the last decade.<sup>11</sup> It indicated that most households, including large households, would be able to meet non-discretionary needs at this volume, but that the option could adversely affect those 5.4% (or so) of households who have five or more residents and use more than 400kL of water a year.

## 4. THE IPART SURVEY, 2003

IPART’s 2003 household survey involved 2,604 respondents, with 2,004 randomly selected from across the three regions in the Sydney Water catchment (Sydney, Blue Mountains, and the Illawarra), and 600 drawn from 120 Australian Bureau of Statistics census districts with a high proportion of low-income households. The aim of the second sampling frame was to ensure a reasonable number of low-income households in the total pool of respondents.<sup>12</sup> Results were weighted to overcome sampling bias: weights were calculated for each household surveyed based on average household income for the statistical local area.

IPART’s survey revealed that low-income households tended to use less water than high-income households generally<sup>13</sup>, but that there were low-income households among high water users. Income was less significant an indicator of water usage than other household characteristics, and analysis of the data suggests that the most important determinants of water use by households were:

- household size, i.e. the larger the household the higher the amount of water used by the household – households with five or more people used 398 kL, compared with 193 kL by households with one or two people, and comprised 47% of high-usage households; and
- whether the household received a water bill, i.e. customers who do not pay for their household water themselves use more water: an average of 19% more water compared with households that directly pay for water use.

The results for the survey population in general were reflected among low-income households. Within this group, the high-usage customers were more likely to be in large households, more likely to be in public housing and less likely to pay water usage charges directly.

<sup>9</sup> IPART, *op cit* p.13, and pp.55-56.

<sup>10</sup> IPART, *ibid*, p.10. The IPART indicated that it was not trying to eliminate the possibility that customers least able to pay more for water might face a bill increase (p.55).

<sup>11</sup> See Independent Pricing and Regulatory IPART, *Residential water use in Sydney, the Blue Mountains and the Illawarra*, p.5.

<sup>12</sup> Low-income households were defined as those households earning less than \$31,200 a year, a threshold figure for low income used by the ABS.

<sup>13</sup> High-income households were defined as those households earning more than \$104,000 a year.

- A high water-using household was one that used more than 500 kL a year. Seven per cent of households were high water users.
- Most high water users (93%) lived in houses <sup>14</sup>, rather than flats/units.
- High water users had an average of six indoor water-using amenities, compared with an average of four among low-income households and an average of five among all households.
- Large households made up 18% of the total households in the catchment.
- Large households comprised 47% of high-usage households.

## 5. FURTHER ANALYSIS, 2004

In view of IPART's survey findings and investigation, PIAC was interested in knowing more about those low-income and vulnerable customers who could be adversely affected by such pricing structures. It approached IPART with a request for further interrogation of the 2003 survey data. IPART agreed to do this.

There were a number of variables that seemed important, particularly discretionary and non-discretionary water-using activities associated with higher water consumption. This includes infrastructure-based activities such as dishwashers and single-flush toilets, which IPART found contributed 3.3% and 5% respectively to total household water consumption. It also includes garden water use, which IPART found contributed 22.8% to Sydney's total household water consumption. PIAC was interested in how these variables were represented in low-income and vulnerable households.

In addition, the 2003 survey questionnaire had asked respondents questions about their health status. It had asked whether anyone in the household had serious health problems that required greater water usage, and what extra needs the person had. PIAC was interested in the responses to those questions.

The survey questionnaire had asked respondents whether they could easily reduce the amount of water currently used. Two-thirds did not believe they could, but higher water users were more confident they could than low water users. PIAC was interested in the responses to this question from low-income households.

Finally, the survey questionnaire had asked respondents whether they had ever had any difficulty paying a water bill or had water restricted in the previous three years. Some 7% of all respondents reported they had experienced difficulty paying a bill; while the figure was nearly 8% for high water users<sup>15</sup> and 10.6% of low-income households reported difficulty paying a bill in the previous three years.<sup>16</sup> Again, PIAC was interested in the responses to this question from low-income, high-consumption households and large households.

PIAC therefore asked IPART to interrogate the 2003 survey for low-income households with high water consumption against a range of other variables:

- certain amenities and practises, eg, one or more single-flush toilets, washing machine, dishwasher, watering a garden for more than an hour per week in warmer months, and the number of indoor water-using amenities;
- household size, eg, households with five or more residents;
- residence in a house, where a house includes separate houses, combined dwellings/non-dwellings, semi-detached dwellings, and townhouse;
- living in public housing;
- health-related problems requiring additional water use;
- difficulty in paying water bills;
- ease in reducing water consumption.

The next section reports on the data provided by IPART.

<sup>14</sup> Houses include separate houses, combined dwellings/nondwellings, semi-detached dwellings, and townhouses.

<sup>15</sup> Independent Pricing and Regulatory Tribunal, *Residential water use in Sydney, the Blue Mountains and the Illawarra*, p.41.

<sup>16</sup> *ibid.* p.55.



## 6. FINDINGS

Sections 6.1 and 6.2 below report data for low-income households with high water usage. High water usage in this and the following sections is defined as using more than 400kL of water a year.<sup>17</sup> Section 6.1 uses the definition of low-income as an annual household income of less than \$31,200, as defined above. Section 6.2 uses a looser definition of moderate/low-income, that is, an annual household income of less than \$52,000, on the basis that this might be a more realistic income threshold for defining low income for large households.

The numbers of households and respondents for all households and for low-income households who are high water users are given in Table 1.

**Table 1: High-usage Households Population Estimate**

Household income type	Number of households	Number of high usage households (<400kL/p.a.)	Percentage with high-usage
All income households <sup>a</sup>	1,522,574	273,610 <sup>b</sup> 4.2%	18.0%
Low -income households <\$31,200	426,799	44,262 <sup>c</sup> 10.8%	10.4%
Moderate/Low-income households <\$52,000	696,736	84,500 <sup>d</sup> 7.8%	12.1%

<sup>a</sup> 161 survey cases refused to provide their income category; this is equivalent to an estimated 180,949 households.

<sup>b</sup> Consumption data was not available for 183 survey cases; equivalent to an estimated 100,095 households.

<sup>c</sup> Consumption data was not available for 97 survey cases; equivalent to an estimated 36,651 low-income households.

<sup>d</sup> Consumption data was not available for 127 survey cases; equivalent to an estimated 54,627 low-middle income households.

Source: IPART, unpublished data, 2004.

The tables below show the estimates of the number of households that fall into each category. Tables should be read left to right. For example, the survey data indicates that of the 1,522,574 households in the catchment, 273,610 consume more than 400kL. The population size relates to the survey population of the Sydney Water catchment, extending from the greater Sydney to the Blue Mountains and the Illawarra. Numbers in italics are relative standard errors.<sup>18</sup> Estimates with large relative standard errors (larger than 25%) are considered unreliable. A dash indicates that there was insufficient sample size to provide a reliable estimate.

### 6.1 Low-Income Households with High Water Usage

This section examines in detail the water-consumption profiles of those households with a total income less than \$31,200 (low-income) and consuming more than 400kL of water a year (high usage). Low-income households account for 16.2% of all households consuming over 400kL per annum. Table 1 estimates this to be a population of 44,262 households in the catchment area. Unless these households can make a significant demand response to the new tariff structure it is possible that for many, their vulnerability will be translated into immediate problems with affordability. Sydney Water provides a Payment Assistance Scheme to customers experiencing difficulty with paying bills. However, it is not clear that this program has the capacity to meet the increased needs of low-income customers arising from an inclining block tariff.

<sup>17</sup> Note that this threshold is lower than the 500 kL used in the IPART report on the 2003 survey, and treats more households as high users (18% overall, rather than 7%). The 400 kL is defined by the first tier volume threshold in IPART's proposal for an inclining-block retail tariff for Sydney Water.

<sup>18</sup> The relative standard error is a measure of an estimate's reliability obtained by dividing the standard error of the estimate by the estimate itself. This quantity is expressed as a per cent of the estimate.

Table 2 provides data on low-income, high water usage households for a number of social characteristics.

**Table 2: Social Characteristics of Low-Income, High-Usage Households**

Characteristic	Household population estimate	Relative standard error	Proportion of low income, high usage households <sup>a</sup>
Household size ≥ 5	17,815	14.1%	40.3%
House	41,201	3.2 %	93.1%
Renting - public	17,731	14.2 %	40.1 %

<sup>a</sup> Indicates proportion of low-income (< \$31,200) households with high water usage with the characteristic. Note: Consumption data was not available for 97 survey cases of high-consumption low-income households; this is equivalent to an estimated 36,651 low-income households.  
Source: IPART, unpublished data, 2004.

Some 40% of low-income households who were high water users had a household made up of five or more people. Nearly all lived in a house and more than a third were public housing tenants. The sample size was too small to give an accurate estimate of the number of these households with health needs requiring extra water usage.

Table 3 below compares discretionary and non-discretionary water activities in low-income, high usage households with all high usage households. The low-income households were much less likely to have five or more amenities, less likely to water the garden for one or more hours per week during warmer months, and very much less likely to own a dishwasher. But they were more likely to have one or more single-flush toilets. The proportion of low-income households who had a washing machine was similar to the proportion of all households.

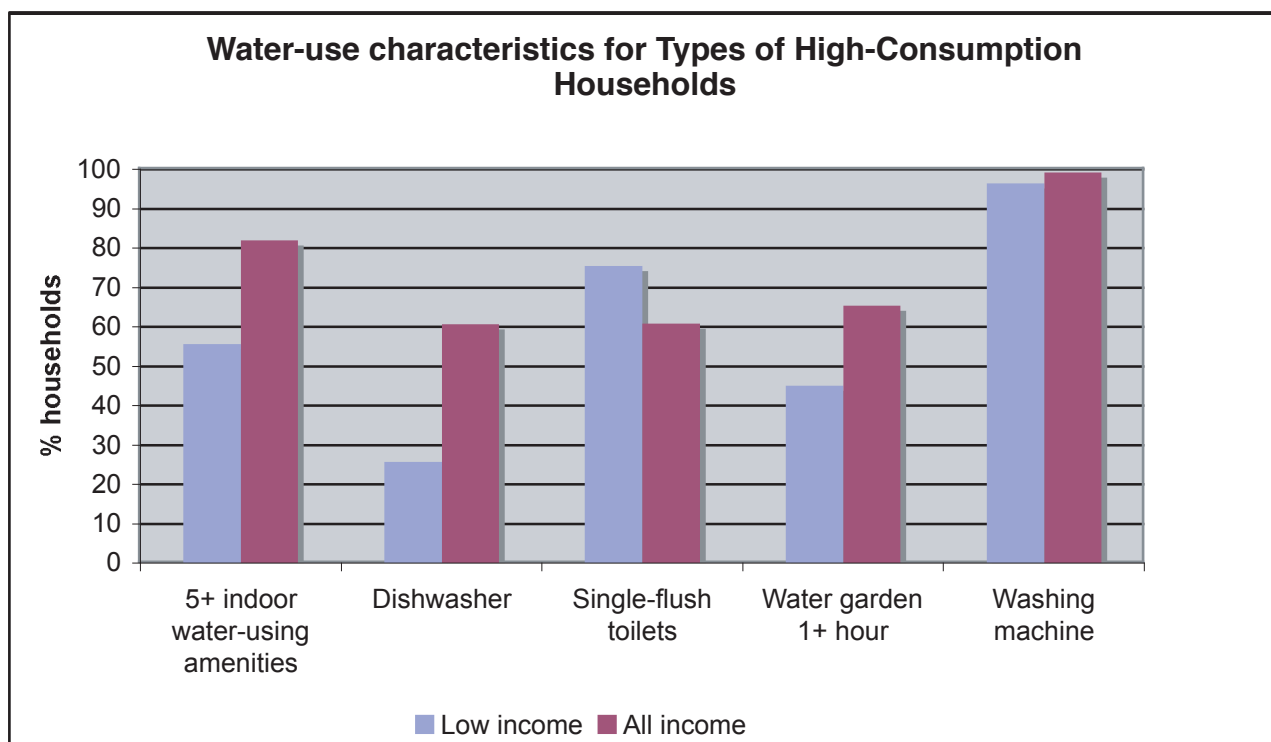
**Table 3: Water Using Activities by Household Income Type**

Characteristic	Low-income, high usage households	All high usage households
>5 indoor water-using amenities	55.6%	82.0%
Own a dishwasher	25.7%	60.6%
Have one or more single-flush toilets	75.5%	60.8%
Water the garden one hour or more per week during warmer months	45.1%	65.1%
Own a washing machine	96.5%	99.2%

Note: Consumption data was not available for 183 survey cases; this is equivalent to an estimated 100,095 households. Of the cases for whom consumption data was not available, 97 were low-income households (< \$31,200); this is equivalent to an estimated 36,651 low-income households. Income data was not available for 161 survey cases; this is equivalent to an estimated 180,949 households.  
Source: IPART, unpublished data, 2004.



Figure 1: Water Using Activities by Household Income Type



IPART reported in the 2003 survey that it found that the additional water use associated with single-flush toilets accounted for 5% of Sydney’s total annual water use. On average, households with single-flush toilets use 21kL per year more for toilet flushing than those with dual-flush toilets.<sup>19</sup> Single-flush toilets give less discretion to poorer households to reduce water use. The costs of replacement pose an obstacle for households seeking to implement water savings to respond to higher water prices. So, too, does the fact that many poorer families live in rental accommodation – which means that those consuming the water do not make decisions about which toilets are installed. In addition, the lower level of garden watering means that, again, poorer households have less scope for reducing water usage.

These findings challenge the notion that an inclining block tariff for water consumption is ‘fair’ or can be implemented in an equitable manner.

Affordability of water is an integral part of the “contingent” approach to vulnerability. Low-income customers bring their relative lack of economic endowments to the table. Data on low-income, high usage households who had experienced difficulty in paying a water bill in the past three years is provided in Table 4. While it indicates that 12.8% of low-income, high usage households had experienced a difficulty in paying a water bill, this data is not statistically reliable because of the large relative standard error. This number is higher than the 10.6% for all low-income households, suggesting that there is an additional financial stress on high-usage households. The sample size was too small to give an estimate of the number of these households that had five or more people.

<sup>19</sup> Independent Pricing and Regulatory TRIBUNAL of New South Wales, *Residential water use in Sydney, the Blue Mountains and the Illawarra*, pp.36-37

**Table 4: Affordability in Low-Income, High-Usage Households**

Characteristic	Number	Proportion of low income households
Difficulty paying water bills	5,655 29.7%	12.8% <sup>a</sup>
Households who had difficulty paying bills that had ≥5 people	–	–

<sup>a</sup> Indicates proportion of low-income (< \$31,200) households who are high water users who reported a difficulty in paying a water bill in the previous three years.

Note: Consumption data was not available for 97 survey cases of high-consumption low-income households; this is equivalent to an estimated 36,651 low-income households.

Source: IPART, unpublished data, 2004.

Data on the self-reported capacity to reduce usage by low-income households with high water consumption revealed that more than a third of low-income, high water users indicated that they could easily reduce their water usage. The proportion of customers overall (irrespective of income and water usage) who thought they could reduce their usage was 32.5%.<sup>20</sup>

This figure does not reveal the extent to which households would be prepared to reduce their demand. However, it suggests that many residential water-users would be prepared to participate in programs of retrofitting water saving devices in their homes. Sydney Water has attempted such a program. Currently Hunter Water is undertaking its own program of subsidised retrofitting in conjunction with the electricity provider EnergyAustralia. This scheme builds on an earlier pilot program, REFIT, which targeted low-income households in private rental accommodation.<sup>21</sup> The experience of the pilot REFIT supports the claim that low-income households have a significant level of willingness to engage with water efficiency programs. This is reflected in the survey data by the relatively high proportion (41.1%) of low-income households who reported they could easily reduce their usage.

### Large Households

As indicated in Table 2, there is estimated to be 17,815 low-income households that are high water consumers and living in a household of five or more people in the survey catchment area. This represents 40.1% of all low-income, high-usage households. Table 5 provides data on this group of households for a number of activities/uses of a discretionary and non-discretionary nature, and the respondents' self-assessment of whether they could easily reduce water usage.

All large, low-income households who were high water-users had a washing machine (confirming an assessment that a washing machine should be recognized by policy-makers as a non-discretionary amenity). Over half of them had five or more indoor water-using amenities. Three-quarters had one or more single-flush toilets. And less than half watered the garden for an hour or more per week during warmer months. The relative standard error is too large to reliably report the proportion that had a dishwasher.

<sup>20</sup> Independent Pricing and Regulatory Tribunal, *Residential water use in Sydney, the Blue Mountains and the Illawarra*, p.57.

<sup>21</sup> Trish Benson, *REFIT: a social justice and environmental pilot project*, paper presented to the Australian Social Policy Conference, University of NSW, Sydney, July 2002.

**Table 5: Characteristics of Large, Low-Income and High-Usage Households**

Activity	Households (estimate)	Relative standard error	Proportion of households <sup>a</sup>
>5 indoor water-using amenities	9,864	16.5%	55.4%
Own a dishwasher	3,826	35.2%	21.5%
Have one or more single-flush toilets	13,690	10.1%	76.8%
Water the garden one hour or more per week during warmer months	7,186	21.5%	40.3%
Own a washing machine	17,815	0.0%	100%
Could easily reduce use	10,163	16.0%	57%

<sup>a</sup> Indicates proportion of low-income (< \$31,200) households who are high water users and have a household size of five or more who have this characteristic.

Note: Consumption data was not available for 97 survey cases of high-consumption low-income households; this is equivalent to an estimated 36,651 low-income households.

Source: IPART, unpublished data, 2004.

Some of these households could be expected to be most vulnerable to rises in water prices or the introduction of inclining block tariff structures. Over half of these large, low-income households indicated they could easily reduce their water usage. As noted above, while reporting a willingness to reduce water use, these households have a limited capacity to respond to price rises due to low discretionary usage, the high cost of new appliances and the responsibility for these decisions often resting with landlords.

### Public Housing Tenants

Table 6 provides data on the low-income, high usage households living in public housing, representing an estimated 17,731 households in the catchment area. It gives data for a number of uses of water, both discretionary and non-discretionary.

**Table 6: Characteristics of Public Housing, Low-Income and High-Usage Households**

Activity	Households	Relative standard error	Proportion of households <sup>a</sup>
>5 indoor water-using amenities	4,591	31.3%	25.9%
Own a dishwasher	–	–	–
Have one or more single-flush toilets	13,606	10.2%	76.7%
Water the garden one hour or more per week during warmer months	7,102	21.0%	40.1%
Own a washing machine	16,966	3.9%	95.7%

<sup>a</sup> Indicates proportion of low-income (< \$31,200) public housing households who are high water users who have this characteristic.

Note: Consumption data was not available for 97 survey cases of high-consumption low-income households; this is equivalent to an estimated 36,651 low-income households.

Source: IPART, unpublished data, 2004.

Nearly all low-income, public housing households that were high water users had a washing machine. Over three-quarters of them had one or more single-flush toilets. And less than half watered the garden for an hour or more per week during warmer months. This figure is significantly lower than for any other group in IPART survey data. The figure for the proportion with five or more indoor water-using amenities is not reliable because of the large relative standard error. The sample size was too small to give an estimate of the number of these households that had a dishwasher.

Again, this is a group that appears to have a particular vulnerability with respect to their capacity to reduce water consumption. Households in public housing in Sydney face significant infrastructure-based problems with water inefficiency and tenants have limited options for spending on both appliances and property maintenance. More importantly, the NSW Department of Housing as landlord should be seen as responsible for addressing some of these issues. However, demand management activities by water agencies

## 6.2 Moderate/Low-Income Households with High Water Usage

This section examines in detail the water-consumption profiles of those households with a total household income less than \$52,000 (moderate/low-income) and consuming more than 400kL of water a year (high usage). Moderate/low incomes are defined as an annual household income of less than \$52,000 per annum and are considered more appropriate to consider larger households. Table 2 above estimates this to be a population of 84,500 households in the catchment area, with just under half of this number (37,525 households) having five or more people in the household. Moderate/low-income households account for 30.8% of all households consuming over 400kL per annum. The consumption analysis of this group looks at the social characteristics, certain discretionary and non-discretionary water-using activities and the features of large households.

Table 7 below provides data on a number of the characteristics of moderate/low-income households who were high water users.

**Table 7: Social Characteristics of Moderate/Low-Income, High Usage Households**

Characteristic	Households	Relative standard error	Proportion of households <sup>a</sup>
Household size ≥5	37,525	9.3%	44.4%
House	81,439	1.6%	96.4%
Renting - public	21,871	14.1%	25.9%
Health needs	6,225	29.6%	7.4%

<sup>a</sup> Indicates proportion of moderate/low-income households (< \$52,000) with high water usage with the characteristic.

Note: Consumption data was not available for 127 survey cases of high-consumption low-income households; this is equivalent to an estimated 54,627 low-income households

Source: IPART, unpublished data, 2004.

Nearly half of moderate/low-income households who were high water users had a household made up of five or more people, and nearly all of them lived in a house. A quarter of respondents were public housing tenants. For households reporting health needs, which require extra water, usage the relative standard error is too large for the data to be statistically reliable. However, it is clear that some households at this income level have health needs that impact on their water usage.

Table 8 looks at the water-related activities of households with moderate/low-incomes who are high water users and have five or more people. It looks at discretionary and non-discretionary use and the respondents' self-assessment of whether they could easily reduce water usage.

**Table 8: Water Using Activities by Household Type**

Characteristic	Low-middle income, high usage households <sup>a</sup>	Large, low-middle income, high usage households <sup>b</sup>
>5 indoor water-using amenities	61.7%	56.6%
Own a dishwasher	34.4%	26.0%
Have one or more single-flush toilets	72.2%	74.8%
Water the garden one hour or more per week during warmer months	55.7%	46.2%
Own a washing machine	97.5%	100.0%

<sup>a</sup> The percentage figure indicates the proportion of low-income (<\$52,200) households who have the characteristic.

<sup>b</sup> The percentage figure indicates the proportion of all households who have the characteristic.

Note: Consumption data was not available for 183 survey cases; this is equivalent to an estimated 100,095 households. Of the cases for whom consumption data was not available, 127 were low-income (<\$52,200) households; this is equivalent to an estimated 54,627 low-income households. Income data was not available for 161 survey cases; this is equivalent to an estimated 180,949 households.

Source: IPART, unpublished data, 2004.

All respondents in this survey group had a washing machine. Over half of them had five or more indoor water-using amenities. Nearly three-quarters had one or more single-flush toilets, and a quarter had a dishwasher. Less than half watered the garden for an hour or more per week during warmer months. Over half of these large, low-income households indicated they could easily reduce their water usage.

By comparison with low-income households (less than \$31,200) moderate-income households are more likely to have a dishwasher and to water the garden for an hour or more in warmer months. Large households with incomes less than \$52,000 are less likely to have a dishwasher and to water the garden for an hour or more in warmer months, than smaller households with similar incomes.

Table 9 below provides data on the self-reported capacity to reduce usage by moderate/low-income households with high water usage. It presents the respondents' self-assessment of whether they could easily reduce their water usage. The data suggests, once again, that vulnerable households have a positive view of their ability to participate in water-reducing programs.

**Table 9: Capacity to Reduce Usage**

Characteristic	Low-middle income, high-usage households <sup>a</sup>	Large, low-middle income, high usage households <sup>b</sup>
Could easily reduce usage	41.3%	57.4%

<sup>a</sup> Indicates proportion of low-income (< \$52,000) households who are high water users who reported that they could easily reduce their water usage.

Note: Consumption data was not available for 127 survey cases of high-consumption low-income households; this is equivalent to an estimated 54,627 low-income households.

Source: IPART, unpublished data, 2004.

## 7. COMMENTS

The data presented in the preceding section provides some insight into why some households are more vulnerable to price rises than others. This include 16% of high usage households that earn less than \$31,200 pa, of which a substantial proportion have five or more people living in the household and reside in public housing.

Large and low-income households are more likely to be living in public housing, with fewer indoor water-using amenities and more likely to be in houses with single-flush toilets than other high-usage households. Low-income, high-usage households also consistently reported less time spent in highly discretionary activities like watering the garden. The data indicates that these households have a more limited capacity to reduce their water consumption than other high usage households. It also points to the responsibility of landlords, including the NSW Department of Housing, to address poor infrastructure. These results provide a challenge to the notion that an inclining block tariff for water consumption is 'fair' or can be implemented in an equitable manner.

A significant number of households with low-income and high-usage have reported difficulty in paying their water bills. Some of these included households with more than five members. Given the limited capacity of many of these households to reduce their consumption to compensate for an inclining block tariff, it is likely that financial stress on some will increase, and difficulties with paying water bills will become more widespread. Current measures available to assist customers of Sydney Water facing financial hardship include:

- direct income support such in the form of vouchers under the Sydney Water Payment Assistance Scheme (PAS);
- payment assistance in the form of easier payment plans, arrears forgiveness eg. Sydney Water's Flexipay scheme; and
- price discounts (concessions) to eligible social security and veterans beneficiaries.

These measures generally impose costs on Sydney Water or the NSW Government. Price strategies such as inclining block tariffs are likely to lead to a greater pressure on these measures and consequently on Sydney Water or the NSW Government.

On the other hand, 57% of these high-usage household types reported that they could easily reduce their water usage; a higher proportion than smaller low-income households (41%). This provides some scope that high usage can be addressed by mechanisms that target the causes of that consumption rather than imposing financial burden on low-income households. Such an approach is supported by the willingness of low-income households to participate in programs such as the 2002 pilot REFIT program.