NATIONAL WATER COMMISSION

PERFORMANCE TARGETS

AND

TARIFF REQUIREMENT

FOR

2003/04 TO 2008/09

September 4, 2003

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1 INTRODUCTION

National Water Commission (NWC) engaged PricewaterhouseCoopers (PWC) (primarily representatives from their Australian and Jamaican offices) to conduct a review of its tariff towards the end of calendar year 2002. PWC was selected through an international competitive tendering process based on Terms of Reference which were agreed to by key stakeholders of NWC, including the Office of Utilities Regulation (OUR).

During the review, PWC held consultations with various stakeholders, again including the OUR. During these consultations there was general agreement on the proposed methodology to be used in the study.

The report on the tariff review was submitted in July 2003 and a copy has been submitted to the OUR. The report forms the basis of this proposal for adjustments to be made to the existing tariff structure and levels.

2 POLICY FRAMEWORK AND OBJECTIVES FOR NWC

2.1 GENERAL

The Government of Jamaica (GOJ) has developed a Water Sector Policy (WSP) which was finalized after islandwide town meetings where public input was solicited. These inputs have been incorporated into the final document and did not result in any major changes to the original draft. The original draft was prepared by a team comprising key stakeholders in the water sector, including the OUR and the NWC.

2.2 RELEVANT TENETS OF THE WATER SECTOR POLICY

The key aspects of the WSP in relation to NWC's tariffs may be summarized as follows:

2.2.1 Institutional Responsibilities

- OUR shall have responsibility for approval of fees and tariffs based on agreed standards;
- MOWH, in consultation with stakeholders, will carry out the legislative reforms necessary to give effect to the Policy;
- NRCA shall continue to have responsibility for monitoring and enforcing compliance with environmental standards.

2.2.2 Financing and Cost Recovery

- Cost recovery mechanisms shall be used to ensure that the direct beneficiary pays to the extent feasible for the reasonable costs associated with provision of the service.

2.2.3 Operating Cost Recovery

- Where necessary to achieve social objectives, GOJ will provide subsidies otherwise payable by the consumer for "social water". Recovery of these costs is fundamental to the viability of the entity providing the service.

2.2.4 Financing Capital Costs

Funding will be accessed through:

- Millage (charges levied in addition to tariff to fund new projects);
- Finance provided by the private sector;
- Government grants for specific works with high social or environmental value.

2.2.5 Financing Infrastructure for Housing and Other Developments

- The developer shall be required to meet all on-site infrastructural costs;
- The developer shall be required to provide capital to construct or assist with the construction of off-site infrastructure required to take water to the development.

2.2.6 Tariff Structure

The tariff shall be designed to allow for:

- A life line rate;
- Full cost recovery to the extent that costs are not subsidized;
- Differential rates where appropriate.

2.2.7 Tariff Regulation

- OUR will be responsible for setting tariffs at a level which allows NWC to fully recover reasonable costs (including capital and operating costs);
- NWC will be responsible for increasing efficiency of operations;

- Where exceptional circumstances dictate the need for additional funds for systems improvements or rehabilitation, OUR will take this into account in setting tariffs.

2.2.8 Social Water

Social water refers to the provision of the minimum levels of potable water and sewerage services to persons who cannot afford the full cost of such services. The definition is also expanded to include water supplied to the public at large in circumstances where collection of payment from the user is impractical.

The relevant stakeholders, including the OUR and the Ministry of Finance and Planning, shall agree on revenue sources for social water including:

- Tariffs and user fees;
- Cross subsidies;
- Direct subsidies.

3 LEGAL AND REGULATORY FRAMEWORK

The legal/regulatory framework applicable to the NWC is currently being reviewed. This tariff proposal is being made based on the expected new framework. Under the new framework it is expected that:

- NWC will be treated similar to other service providers including those owned and operated by the private sector;
- NWC is intended to be operated as a commercially viable business;
- Tariffs are to be set to allow for full cost recovery, including the recovery of capital, operating and maintenance costs, to the extent that this is required to ensure the viability of the company and that the company is implementing reasonable measures to operate in an efficient manner;
- Performance targets are to be set within the context of the state of the existing facilities that have been largely inherited by the company, and the available resources, including financial resources from tariff revenues.

4 PERFORMANCE TARGETS

The OUR proposed a number of performance targets and benchmarks in its Regulatory Framework document of July 17, 2002. The tariff being proposed will allow NWC to meet some of these targets, but it will not be possible to meet all of them as the required tariff, in the absence of substantial GOJ subsidies, would be significantly larger and could potentially raise affordability issues. Chief among these is the OUR's requirement that

sewage treatment plants comply with the current standards of the National Environment and Planning Agency (NEPA). Many of the existing sewage treatment plants were not designed to meet the current standards and thus in most instances new plants will be required. In addition, many of the plants owned by NWC, including some recently handed over to the company, are in need of major rehabilitation work just to get them functioning to meet the standards they were designed for.

NWC proposes to jointly develop new performance targets with the OUR within the context of the NWC Financial Model submitted earlier. In this respect it will be possible to determine the required tariff adjustments based on the desired targets and to make the necessary trade offs.

The tariff being proposed assumes that we will meet the following targets during the new regulatory period, and in most instances are equal or close to those in the OUR's proposed regulatory framework.

4.1 OPERATIONAL TARGETS

- UFW would be decreased to 40% in the Kingston Metropolitan Area (KMA) and Port Antonio over a five year period. This is based on the major capital projects to be implemented in these areas which will include replacement of mains which have long past their useful lives. In other areas, UFW would be contained or reduced by a much smaller degree until similar financing to that being utilized in the KMA and Port Antonio can be sourced to replace the old mains. It is only through major mains replacement that a substantial dent can be made in UFW.
- Water quality will show a minimum of 95% compliance with the standards set by the Ministry of Health.
- At least 85% of customers will have functioning water meters.
- All disconnected accounts will be revisited within ninety (90) days of being disconnected and not reconnected and action will be taken with the intention of ensuring that these customers have not illegally reconnected and to collect outstanding balances.
- At least 95% of blocked sewerage mains will be cleared within 48 hours.

4.2 CUSTOMER SERVICE TARGETS

- There will be a maximum of three months between the readings of any customer meter.
- The number of billing complaints will be no more than 5% of total bills printed.

4.3 FINANCIAL TARGETS

- NWC has already completed a first inventory and valuation of its fixed assets. We propose to formally update this valuation and inventory at least every five years.
- Receivables will be kept below 30% of revenues. This would have resulted in a target of approximately $1.5 Billion for 2003.
- Employee costs will be reduced to less than 35% of revenues within two years and less than 30% of revenues within five years.
- Average collection rate shall be at least 90% of billing.

4.4 REPORTING TARGETS

- Best efforts shall be used to meet all reporting requirements of the OUR.

5 PLANS TO ACHIEVE PERFORMANCE TARGETS

The plans for meeting the performance targets are detailed in the NWC Corporate Business Plan. Additional requirements of the OUR will be incorporated in these plans to the extent that the requisite resources can be made available.

6 ROLE OF WATER AND WASTEWATER TARIFFS

Water and wastewater tariffs perform two critical functions as follows:

- Act as a signal to consumers on what it costs to provide the services, allowing them to make informed decisions about whether their use will generate benefits in excess of costs. In this way tariffs are a key factor in encouraging efficient levels of use.
- Tariffs are the main means by which the utility funds the ongoing costs of providing water and wastewater services. Tariffs also provide for the recovery of capital to support renewal and expansion of water and sewerage systems and improve quality of service.

Based on the above, the NWC tariffs were reviewed on two dimensions as follows:

- The level of revenue they provide to the utility; and
- The structure of the charge in terms of the signals it provides to service users.

7 GENERAL REVIEW OF EXISTING TARIFFS

NWC's existing water tariffs are two-part designed with a fixed customer service charge and a variable charge. In addition, domestic customer tariffs have an increasing block structure comprising six blocks.

Wastewater tariffs are set at 100% of the water consumption charge.

The strengths of the existing tariff framework include:

- Focus on water consumption as the basis for charging;
- High level of sophistication in cost allocation (such as service charges based on meter size);
- The tariff supports horizontal equity in that charges for like customers are comparable.

Weaknesses of the existing tariffs include:

- Does not allow full cost recovery;
- Does not support the primary charging objectives of revenue sufficiency;
- Does not send the correct signal to consumers;
- The volume of water to which the life line rate applies is well in excess of the internationally accepted minimum per capita requirement.

8 COST OF SERVICE MODEL

The Model developed for review of the tariff includes components for:

- Demand forecasting;
- Determination of Cost of Service using the Long Run Average Incremental Cost principle;
- Financial Forecasting with flexibility to accommodate changes in various input variables.

A copy of the Model and a user guide are provided.

9 REVIEW OF TARIFFS FOR POTABLE WATER SUPPLY

9.1 OVERVIEW WATER BUSINESS

9.1.1 General

The water business activity is made up of three major functions – production, distribution and customer functions. With the exception of a small number of bulk water users, all of the NWC's water customers are supplied with water delivered via its supply network.

Figure 1. Water accounts – by region and customer type

	Domestic	*Commercial*	*Condominium*	*Primary School*	*Other*	*Total*
Metro	110,822	11,746	230	379	593	123,770
Central	66,703	4,418	0	248	231	71,600
Northern	45,532	2,846	21	175	160	48,735
Western	70,145	5,556	4	183	357	76,246
Southern	88,869	2,911	1	176	495	92,453
Total	**382,071**	**27,477**	**256**	**1,161**	**1,836**	**412,804**

A significant majority of the NWC's water customers are domestic households, with the majority of the remainder "commercial" users..

9.1.2 Financial

With only a minority (around 31%) of those customers having a water account also having a wastewater account, the NWC's financial performance is dominated by the financial characteristics of its water "business activity".

In the financial year ending March 2003, water service charges and rates (volumetric charges) returned to the NWC revenue of approximately $J4 billion, or 70% of total operating revenue. Of the NWC's $25.1 billion in network and other fixed assets, around 79% are "water" assets. (This asset value is less than the NWC's total "regulatory" asset base for pricing purposes as it does not include other assets such as work-in-progress and accounts receivable).

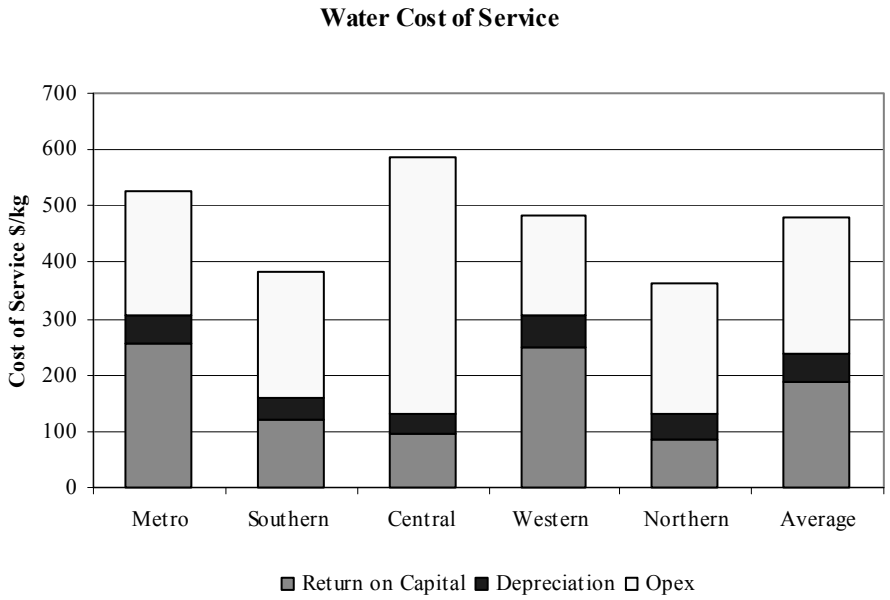
9.2 FULL COST RECOVERY AND WATER TARIFFS

9.2.1 Cost recovery under existing tariffs

The full cost of providing water services is in the order of $10.6 billion per year, or $6.9 billion if the "lower bound" (O&M cost only) definition of full cost recovery is applied. These estimates, and those incorporated in the figures below, are for the 2004 financial

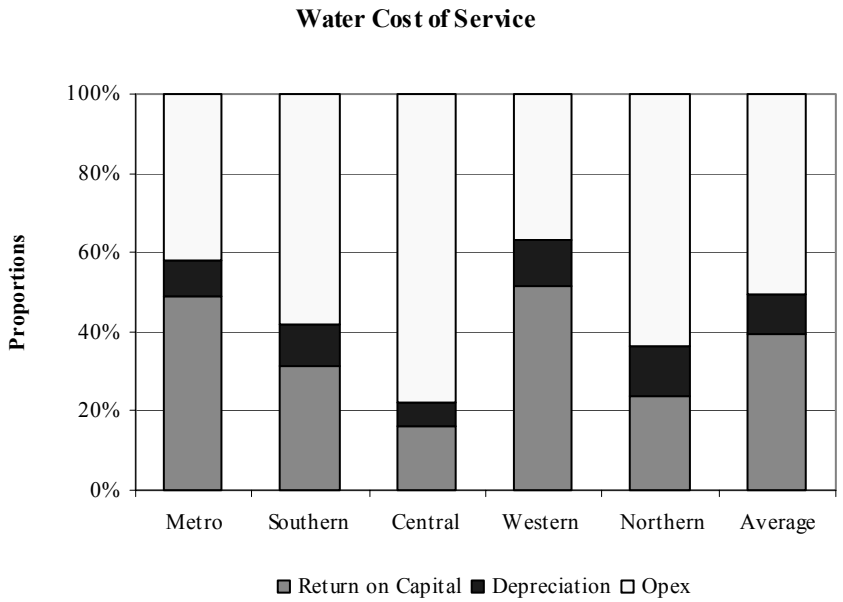
year (ending March 2004). Translated into unit rates, this is equivalent to just over $479/thousand gallons (kgal) (upper bound) or $311/kgal (lower bound).

Figure 2. Cost of service – by region (unit costs)



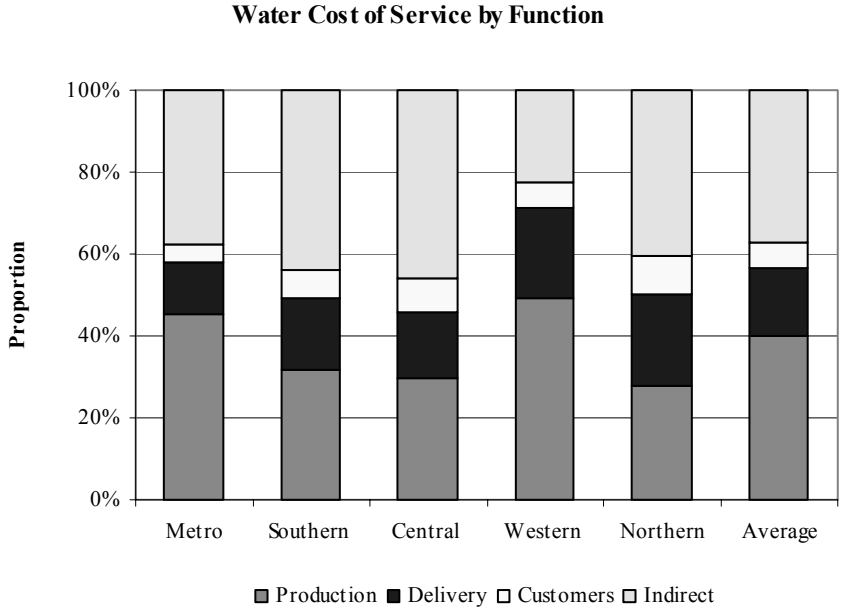
As shown in the figures above and below, the operating cost component is the singularly most significant cost component, amounting to slightly more than half of the total cost of providing water services (average all regions). Capital related costs (depreciation and return on capital) make up the remainder.

Figure 3. Cost of service (cost shares) – by region



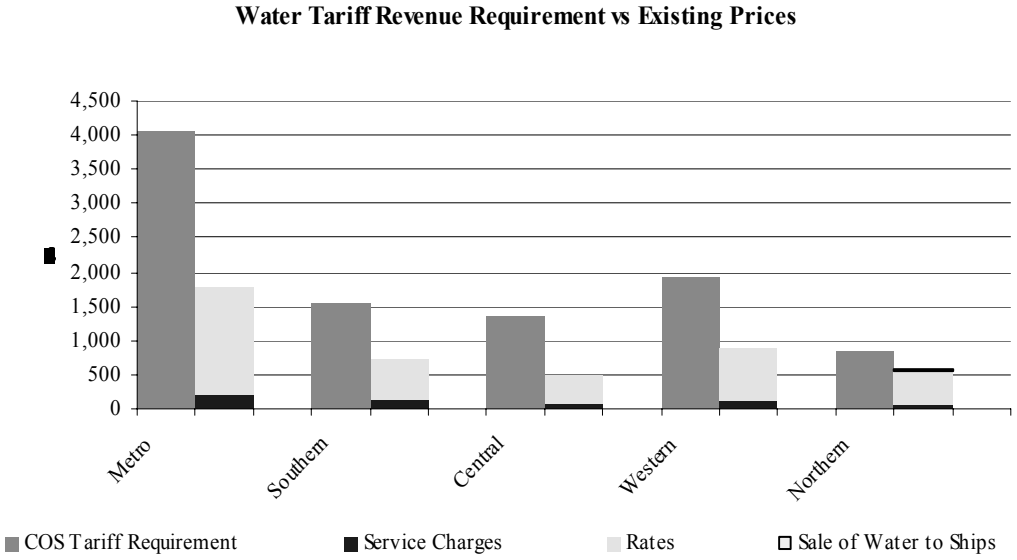
By function, production and delivery costs dominate, though in some regions customer related costs are quite significant. On average production and delivery costs make up around 55% of total water costs.

Figure 4. Cost of service (functional cost shares) – by region



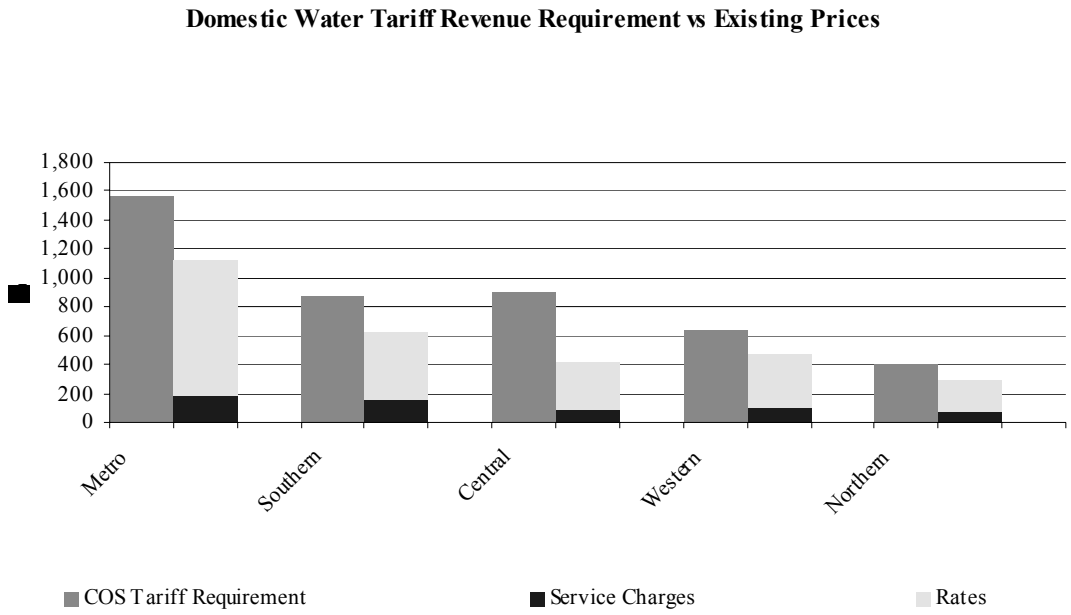
The NWC's existing tariffs do not provide for full cost recovery. The figure below contrasts tariff revenues from water rates, service charges and sales water to ships) to the estimated full cost of service provision. Clearly, significant tariff increases would be needed to close this gap.

Figure 5. Existing tariffs and tariff revenue requirement (upper bound)



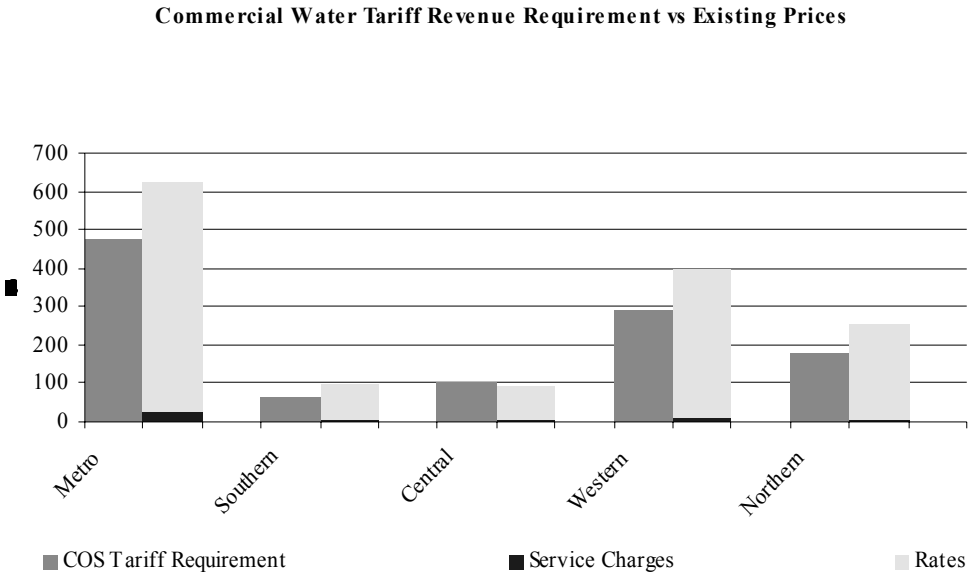
In fact, at least for domestic customers, cost recovery is below even the "lower bound" definition of costs (i.e. cost excluding capital recovery) suggesting that **existing tariffs are insufficient even to maintain the delivery of the present level of services to these water users**. The figures below illustrate this.

Figure 6. Existing tariffs and tariff revenue requirement (lower bound) – domestic users by region



Tariffs for commercial users are already above lower bound costs in every region (see figure below).

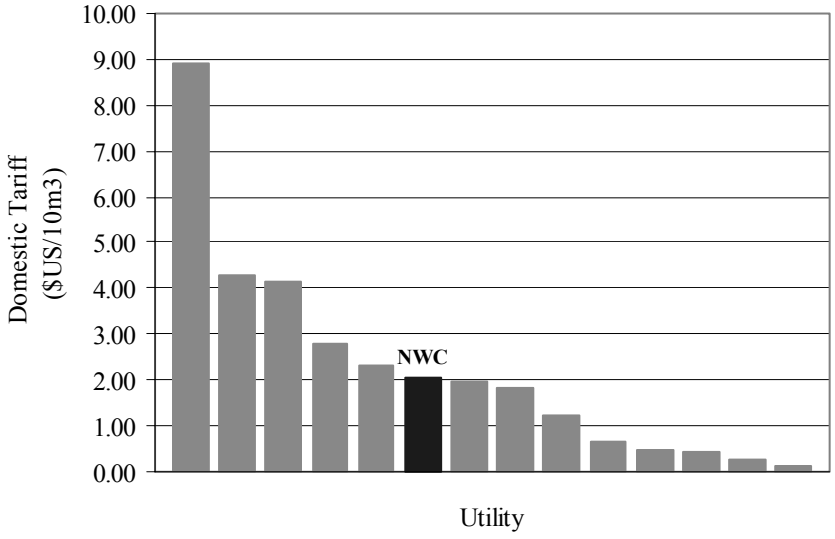
Figure 9: Existing tariffs and tariff revenue requirement (lower bound) – commercial users by region



For existing tariffs to meet the full cost recovery (upper bound) threshold, an across-the-board increase of approximately 80% would be needed in 2004, applied to all water rates (consumption charges) and service charges. Alternatively, charges could be increased by a compounding 13% per year for 5 years, to reach upper bound by the 2009 financial year.

Any such increase would raise clear affordability issues. While the NWC's present tariffs are mid-range for other developing countries in terms of the charge for domestic household consumption of $10m^3$ of water per month (see figure below), they account on average for just over 3% of household income (with sewer charges). Any tariff increase of the order required to move the NWC to full cost recovery (upper bound) within the next five years would plainly see average tariffs move well above the frequently cited 5% affordability threshold.

Figure 7. International comparison of water rates in developing countries



Note: Tariffs are shown in $US for 1999, for a domestic household consuming $10m^3$/month (approx. 2,200 gallons/month). Comparison data is drawn from selected utilities from ADB (1997) and WSAA (1999). Average domestic consumption for NWC is higher than $10m^3$/month (2,200 gallons/month) at some 3,670 gallons/month.

Tariff increases to recover *at least* lower bound however should be achievable, especially if they are implemented in conjunction with a coordinated system of "social water" tariffs for domestic users to ensure lower income households retain access to affordable water suppliers.

To reach lower bound requires, on average, an increase in the order of 20% in 2005. Beyond this year further tariff increases would be needed to keep pace with an increasing cost recovery target, as debt servicing costs grow with the profile of capital works that are assumed to be mostly debt financed. ***As a general principle tariffs should provide for the NWC to recover at least revenue equivalent to lower bound costs.***

9.3 ESTABLISHING THE RIGHT TARIFF STRUCTURE

9.3.1 Usage charge set at Long Run Marginal Cost

A fundamental concern with the NWC's present tariff structure is that it does not provide for consumption to be charged at LRMC. **LRMC is generally accepted as the best benchmark against which volumetric water charges should be set.**

The tariff model calculates the LRMC of water supply, using the "average incremental cost" approach. This method capitalizes the present value of future capital and operating costs required to service new demand, and divides this by the present value of the increment to water consumption. Formulaically it is expressed as:

$$\frac{\text{Present value extra capital and operating costs of the optimal expansion strategy}}{\text{Present value of additional volumes of water supplied}}$$

In a practical sense LRMC is estimated as the sum of marginal capacity cost (MCC) and Short Run Marginal Cost (SRMC). MCC is estimated as a rolling present value sum of forward capital costs related to the delivery of additional volumes of water, divided by a rolling present value sum of incremental demand serviced by this capacity. In this way the MCC can be recalculated in each year (provided there are sufficient remaining years in the model to calculate a robust present value).

To calculate LRMC therefore data on future capital and operating costs incurred in servicing the additional volume of water consumption and the quantum of additional water consumption itself were used. **Importantly, capital works unrelated to providing additional volumes of water (i.e. capital works to improve the quality of water services, to maintain the service capacity of existing assets or to connect new customers to the network) were not included in the derivation of LRMC.**

Capital works were therefore identified or apportioned across the following categories:

- Enhance service (ES) - or works designed to improve the quality or service level enjoyed by customers (e.g. pressure improvements, enhancements to water treatment standards)

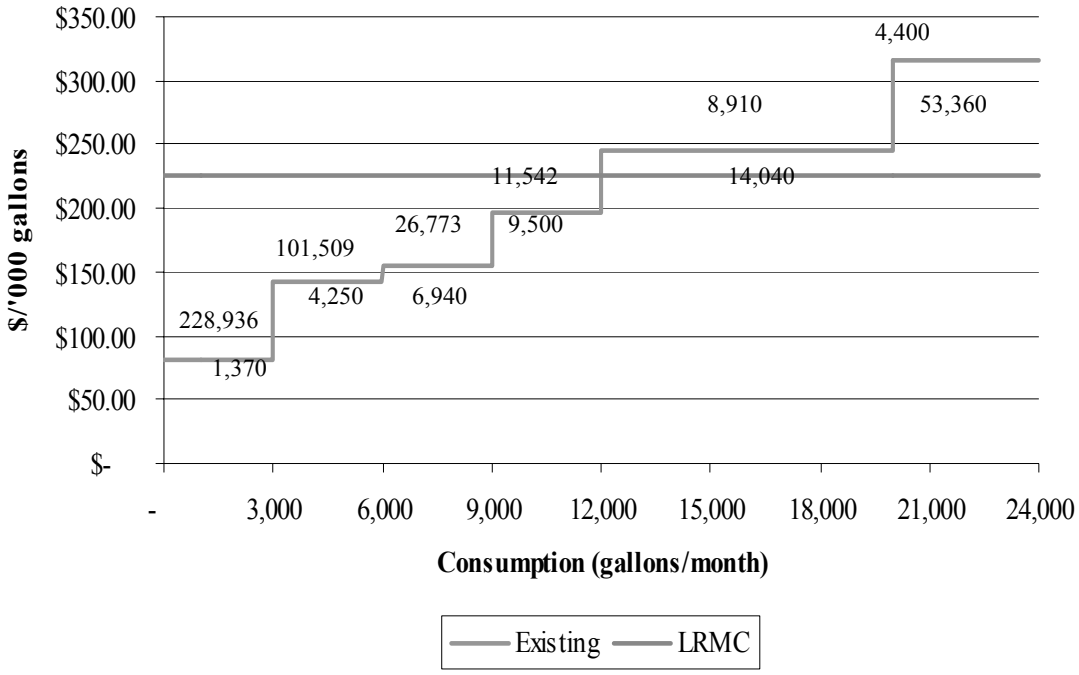
- Maintain service (MS) – works intended to maintain the service potential of assets

- Enhance coverage (EC) – works designed to expand the coverage of the water network, facilitating the delivery of water to more customers (and in greater volumes to existing customers).

All collaborative capex projects have been deemed "enhance service" related, hence are **excluded from LRMC**. To the extent that some collaborative works contribute to increased volumes of water, then properly these should be included in the MCC/LRMC derivation, which would tend to increase the estimated LRMC.

Based on the projections made by PWC, we have taken the conservative LRMC estimate of $225/kgal as a benchmark for tariff setting purposes. The NWC will continue to monitor its LRMC as its future capital works program is refined and developed for the long term.

Figure 8. LRMC and existing water rates



The figure above contrasts the medium term estimate of LRMC with the present tariff structure (inclusive of PAM, for the financial year ending March 2004). The numbers above the tariff (green) line show the number of domestic accounts in this consumption band, while the numbers below show the average consumption in this consumption band.

Presently only about 5% of total domestic accounts incur a volumetric charge close to the estimated LRMC. Even the proportionately larger share of consumption of these consumers (average consumption between 9,500 and 14,040 gallons/month) still means that a large proportion of domestic water use attracts a volumetric charge below the LRMC.

This suggests that marginal tariffs for the majority of NWC's domestic customers – those with monthly consumption below 6,000 gallons per month – need to increase over time to better reflect the estimated LRMC of supply. It may be that it is still desirable to maintain a higher charge (above LRMC) for very high consumption levels for reasons of cross-subsidy and to encourage conservation.

9.3.2 Increasing block tariff or uniform two part tariff

The NWC's present water tariff for domestic users is based on an "increasing block" structure, in that water rates increase for each progressive "block" of water consumption.

The key structural components of any increasing block tariff are the number of "blocks" or consumption bands, the size of each consumption band, and the marginal price set for each. Concerns with the increasing block tariff include the following:

- the large number of consumption bands makes the tariff unnecessarily complex;
- a large proportion of consumption attracts a marginal volumetric charge quite different from LRMC;
- the initial tariff band is set significantly below cost, without any attempt to limit this implicitly subsidised water service to lower income households;
- the initial tariff band allows as much as 36,000 gallons of use per year, several times the benchmark volume for "essential" purposes.

Reducing the complexity of the tariff and refining its structure to better match the NWC's customer and consumption profile could be achieved by restructuring the tariff around three consumption blocks (as opposed to six presently).

The first would cover water for "essential" household uses, and would be charged at a concessional rate.

The second tariff block would be set to capture the majority of users and the majority of consumption, applying to this a volumetric charge close to the estimated LRMC. This ensures that the correct pricing signal reaches the largest proportion of usage. The large gap between water rates for the majority of consumers and LRMC means that this change may need to be introduced over a reasonably long transitional period.

The third tariff block would serve two purposes. It would act as a consumption disincentive to those domestic households using very large volumes of water, thereby encouraging water conservation. It would also provide a source of additional revenue to fund the below-cost initial tariff band.

Extreme high use categories (>12,000 gal/month) may have characteristics more closely aligned with commercial than domestic customers. It is therefore recommended that their tariff reflect commercial pricing. This effectively creates a fourth domestic band (by default), although over time these customers may be reclassified as commercial users.

9.4 SOCIAL WATER TARIFFS

The Government of Jamaica has a policy of expanding the availability of water to all citizens, and ensuring the provision of minimal standards of service (water quality and quantity) to all people irrespective of their capacity to pay.

"Social water" policies are therefore concerned with the availability of water and wastewater services across Jamaica, the quality of these services, and the provision of subsidised "lifeline" tariffs for those unable to pay the full cost of water and wastewater services.

The tariff model considers these issues from two primary perspectives. First, the model has been set up with the flexibility to either include/exclude the so-called "collaborative" capital works projects. These are mostly capital projects intended to extend service coverage to new areas, under the Government of Jamaica's social water prescriptions.

As a default scenario, the collaborative projects are excluded in the model. When included, these works are added to the NWC's asset base upon which a rate of return is calculated for the purposes of estimating the cost of service (at upper bound).[1]

In developing a "workable set of social water" tariffs for implementation, the key issues are:

- which customers should receive subsidized water and wastewater tariffs; and
- the level of the subsidy.

Eligibility for subsidized "social water" tariffs would, in our view, be best determined by reference to general eligibility for other forms of social welfare assistance.

Through consultation with the Ministry of Labour and Social Security we understand that the Government of Jamaica is currently implementing a major consolidation of its social welfare and assistance programs, to a new centralized Program for Advancement through Health and Education (PATH).

The PATH program provides assistance to children, pregnant and lactating mothers, the elderly and persons with disabilities in households below the poverty line, as well as for indigent persons not in any of these categories. Assistance is by means of a lump sum monthly payment for each eligible beneficiary, with eligibility assessed by reference to a household means test.

Were the NWC able to direct subsidised social water tariffs *only* to those households which qualify for PATH assistance (ie, households that have at least one household member who is eligible under the PATH program), then the administrative and financial cost of the subsidy scheme could be contained. This potentially could allow for the

[1] The model is based on a projection that 60% of collaborative capital works projects will be funded by the Government of Jamaica. These capital subsidies are treated as other revenue, reducing the amount otherwise modelled as recovered from water users.

subsidy to be greater than otherwise, either in terms of the volume of water covered by the concessional tariff or the implied subsidy from full cost.

The NWC will continue to liaise with the Ministry of Labour and Social Security about means through which social water schemes can be linked to existing social welfare mechanisms such as the PATH program.

In the meantime, the most workable option is to design a social water tariff within the framework of the present increasing block tariff. By this we mean determining a charge for the first consumption increment that is sufficiently low as to provide for affordability to virtually all income groups. A common benchmark here is that water/wastewater charges that exceed 5% of a households' income are bordering on unaffordable.

Presently water tariffs account for, on average, around 2.1% of household income, for an average level of domestic water consumption. Including sewerage charges (if these are incurred) this proportion increases to around 3.8% of average household income.

What this aggregate level data obscures is that:

- households with water/sewerage connections more probably have a higher per capita income, hence the proportion of income consumed by water/sewerage bills *for these customers* is likely to be lower still, but

- there would be many customers whose lower-than-average household income, means that their water bill may exceed the 5% threshold.

Comprehensive income distribution data was not available. The *Water Sector Policy* notes that the poorest 20% of households in Jamaica spend 3.2% of their income on water, while the wealthiest 20% spend only 1.8%. Other partial data suggests the lowest 10% of households by income collectively account for only 3% of total household income.

Household income for this lowest 10% of households is therefore in the order of $J106,000/annum (i.e. slightly less than 1/3 of average household income overall, estimated at $354,114/annum), making current average tariffs of around $7,500 (water only) unaffordable for these lower income households, at least given the 5% benchmark noted above.

It is not clear to us, though, that a social water tariff should be designed so as to allow these lower income householders to access an *average* level of water consumption for no more than a given proportion of their income. A better test is that the *necessary* volume of water is available and within their financial means.

We have used the estimated lowest decile household income of $J106,000 per annum to assess the level of the initial "social water" tariff. Based on the 5% benchmark from above, a social water tariff needs to provide for water charges of no more than $J5,300

per annum, for that volume of water essential to maintain a household's wellbeing and to sustain its occupants.

To be conservative we have assumed that this charge must cover also a sewer charge, though only a minority of customers presently have, and into the near future are expected to have, a reticulated sewerage service.

Based on a benchmark "essential" level of water consumption of 40-50 litres per capita per day, and a household size of 3.5 persons, the social water tariff need cover only the first 937-1,171 gallons/month. For simplicity we have used a benchmark consumption level of 1,000 gallons per month.

To remain affordable, the social water tariff therefore needs to be set at no more than $310/month for water and $130/month for sewer, which together give an annual water/sewer charge of just under $5,300. **For the level of "essential" consumption above, this implies a charge (given the present service charge of approximately $150/month for a 5/8" meter) of no more than $130/kgal for the first 1,000 gallons of use each month**.

This amount is actually *higher* than the lowest tariff block present (the tariff for the first 3,000 gallons/month presently is set at $77/kgal, including PAM.

By limiting the concessional tariff to only the first 1,000 gallons of use each month, we are not suggesting that customers should seek to lower their use to this level. Rather, consistent with other forms of social welfare assistance, **the level of benefit should be set to provide a *necessary* level of a service, not automatically the *average* level observed for the community more generally.**

Also, the NWC will require compensation for an efficient level of bad debts. To the extent that additional bad debts are incurred as a result of the NWC providing services to areas or customers who do not have a capacity to pay, then these costs could be funded by the GOJ or through the tariff.

9.4.1 Tariffs for users in "high cost" areas

Presently the NWC's tariffs are uniform island-wide – there is no differentiation in charges based on location. Such tariffs are sometimes known as "postage stamp" tariffs, on account of the similarities to some country's postal arrangements where a standard letter costs the same to deliver to any domestic location, irrespective of distance from the origin to destination.

Postage stamp tariffs are likely to be most appropriate where:

- cost differences between regions/zones are minimal;
- shared network costs benefit all users to some extent;

- there are equity concerns regarding locationally-differentiated charges; or

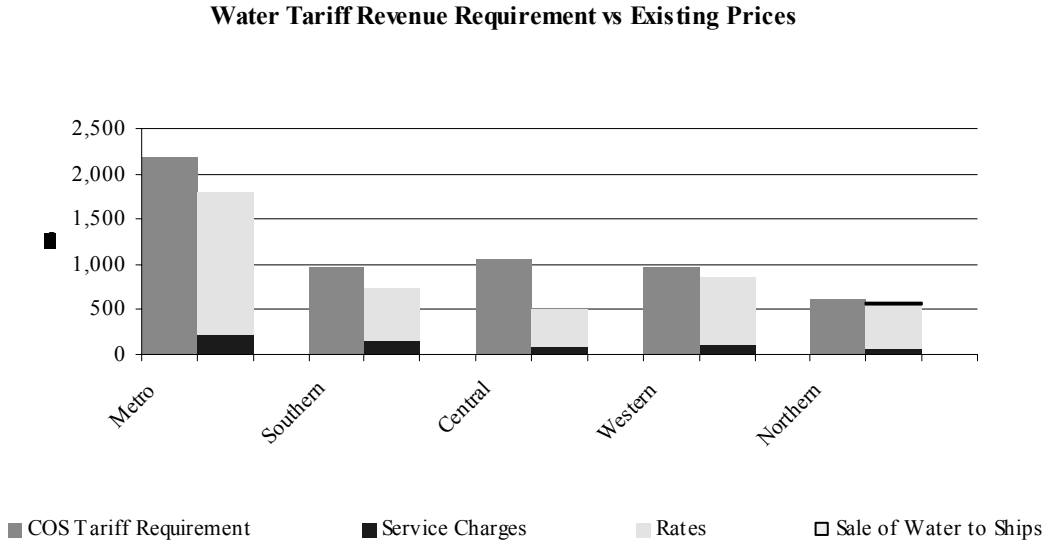
- there are difficulties in identifying and measuring cost differentials between sub-network areas (London Economics 1999).

Where costs of supply differ between consumers (whether by geographic area, consumer class, etc), efficiency would be enhanced where prices move to reflect these cost differentials. For the NWC such cost differentials will most likely be caused by increased electricity costs for pumping water to higher locations, such as to the Manchester parish in the Central region, but could also result from different levels of capital intensity and treatment standards between regions, parishes or other areas.

Recalling the cost of service figures from above, it is evident that there are significant cost differences between the five regions. Most prominently, unit costs are highest in the Metro region, and lowest in the Southern region. Different factors, though, are driving these outcomes.

In the Metro region, higher unit costs are primarily caused by the higher capital value in this region. And for the Central region, though total unit costs are close to average for the network as a whole, direct operating costs account for a higher proportion than in any other region (operating costs are around 70% of total costs).

Figure 9. Existing tariffs and tariff revenue requirement (lower bound) – by region



While a differentiated charging structure might be effective at signalling to consumers these cost differences, there are administrative costs in terms of structuring and implementing a charging regime which recognises such cost variations. Complex pricing structures also may be less readily understood by consumers, with consequent community opposition to pricing reforms.

We would be concerned also that, while average costs are comparatively high in the Central region,[2] within this region costs vary considerably by parish and even by township. Seeking to raise tariffs to a higher level in this region, to address its apparent high cost characteristics, would create additional anomalies and difficulties for the NWC in "selling" this differentiated charge to customers in this region.

Arguments for geographically differentiated tariffs are strongest where cost differences are such that a tariff cannot be designed to cover at least the unit operating costs in each supply area (i.e. there are some regions where the utility actually *loses* money on every additional quantity of water consumed).

With direct operating costs of, on average, around $200/kgal in the Central region (the highest cost region, excluding "indirect" costs that are allocated to the operating cost category), provided the tariff allows for the majority of consumption to attract a water rate at or above this level, then the need for a geographically differentiated tariff is lessened.

[2] In fact, the highest unit costs are actually in the Metropolitan region.

An alternative means of signalling to users the high cost of locating in a high cost area is through an upfront capital or infrastructure charge. Though the NWC does not presently levy an infrastructure charge, such a charge could be structured on a regionally-disaggregated basis, to signal to new developments the higher costs of one region over another.

The tariff model includes functionality to specify an infrastructure charge by region, though this has been set as a default to zero. Such an infrastructure charge should be set, if one is to be applied, to capture the additional capital related costs of a new development. This might include a share of existing spare capacity drawn down by the new development, new works constructed specifically for that development (or a share thereof if other users are anticipated), as well as the costs of "bringing forward" future capital works.

The standard method is to calculate the present value of future growth related capital works, and to the divide this by the present value of the increment to demand over the same period. The resulting "unit" charge is usually applied per lot or per equivalent tenement, or some similar metric.

As a result of the difficulties in measuring the cost differentials among the various supply areas and the added complexity that this would bring to the review process, we propose that the restructuring of the tariff be carried out over a one year period following the proposed overall increase. This would also allow time to more properly analyse and address issues of equity which are expected to arise.

10 REVIEW OF WASTEWATER TARIFFS

10.1 OVERVIEW OF WASTEWATER BUSINESS

10.1.1 General

The wastewater business comprises two primary functions, sewage conveyance and sewage treatment (including also effluent disposal). Only a fraction of the NWC's water customers receive a sewerage service, ranging from 8% in the Northern and Central regions to 54% in the Southern region.

10.1.2 Financial

Commensurate with the comparatively smaller number of wastewater customers, the wastewater business accounts for only a fraction of the NWC's total assets, revenues and costs.

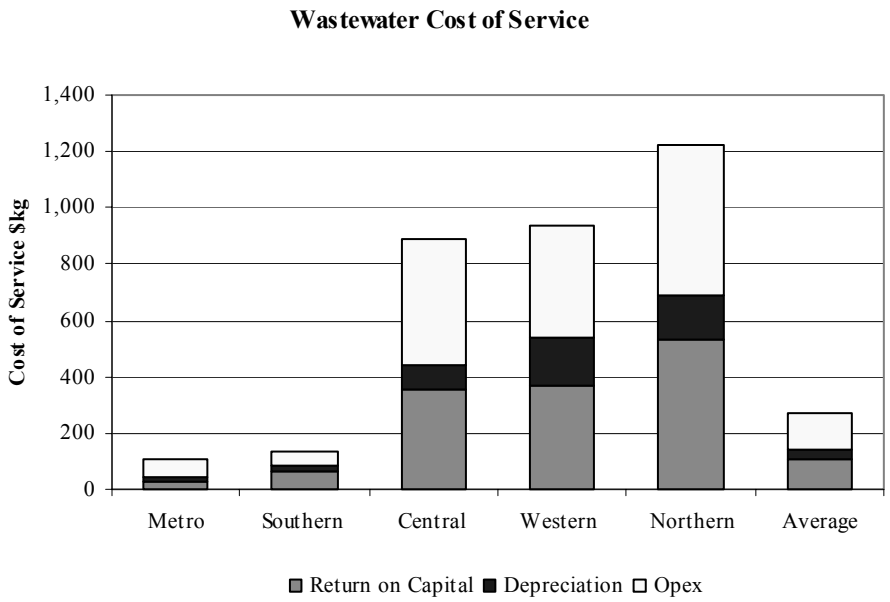
In the financial year to March 2003 revenue from sewerage charges was $670 million (before PAM), based on a sewerage charge set at 100% of each customer's water rates (where a sewerage service is provided). There is no separate sewerage service charge.

10.2 FULL COST RECOVERY AND WASTEWATER TARIFFS

10.2.1 Cost recovery under existing tariffs

Unit cost of service for the wastewater business varies markedly by region, much more so than is evident for the water business. The highest cost regions are the Northern and Western regions, where the significant North Coast Wastewater Scheme assets and operating expenditures have been committed, without yet a commensurate increase in demand growth. Unit costs in both regions are over $1,000/kgal (measured as a proportion of water used by sewerage customers).

Figure 10. Cost of service (unit costs) – by region



Conversely, unit costs are comparatively low in the Metro and Southern regions, even though the proportional cost structures of these regions are relatively similar to the Western and Northern regions (see figure below). **It should, however, be noted that costs for Metro and Southern Region are based on existing expenses and do not reflect the expected costs if these facilities were to be brought up to the required performance standards. Significant amounts of capital are required to rehabilitate these facilities and, once this is done, operating and maintenance costs would be expected to be similar to those for the Northern and Western Regions. The average cost would therefore be expected to be correspondingly higher.**

As one would expect given the regional cost differences observed above, existing tariffs fall well short of full cost recovery in the Northern and Western regions, and are short of what would be expected for properly functioning systems.

11 THE TARIFF REQUEST

Please refer to our tariff request contained in our letter dated July 31st 2003. We requested an overall real increase in the tariff of 42%, effective during this financial year. This is less than the 80% increase required for full cost recovery based on the PWC Report. The proposed increase would allow the NWC to recover operating and maintenance costs and spend at least $500 M per year on system rehabilitation in order to continuously improve operating efficiency, system reliability and quality of service.

In addition, we propose the following:

- The structure of the tariffs for domestic customers is revised to reduce the number of blocks from six to four over a period of two years. This will reduce the complexity of the tariff and better align the levels with the cost of service.

- The life line block is made zero to 1000 gallons monthly, consistent with the recommendations of PWC. This is considered more than adequate to meet the minimum requirement for potable water for a typical household. The second block would be from 1000 to 6000, the third from 6000 to 12000 and the final block for consumption above 12000 gallons per month.

- The service charges are revised to better relate them to the size of the pipe supplying water to the respective customers. We propose to use the rates recommended by PWC.

- Regarding the detailed allocation of the increase across customer categories and consumption blocks, we propose to work these out with the OUR in the context of the PWC recommendations, the need to better align tariffs with cost of service and affordability considerations. Various scenarios can be easily tested using the Tariff Model submitted to you earlier.

- To the extent that NWC is required to take on additional capital works based on the GOJ water sector policy or the requirements of any of our regulators, we propose that these additional capital costs be captured by means of a K-Factor which would provide adequate revenue for capital recovery.

- The current tariff proposal is based on NWC achieving the performance targets mentioned earlier. To the extent that additional operating costs are incurred due to increased performance standards by any of our regulators, these should be adequately compensated for by means of an additional adjustment to the tariff being proposed.

12 DETAILS SUPPORTING THE TARIFF REQUEST

12.1 OVERVIEW

The tariff increase is being requested on the basis that the existing tariff level produces unsustainable operating losses and net cash outflows. In fact the losses are so severe that "lower bound" costs of service are not being recovered, which by implication means the service capacity of the existing system is not being maintained. The requested increase is designed to address these issues. The increase has not been set to allow NWC to fund particular capital works, rather the return on assets generated from the increase allows NWC to reinvest in projects to improve service standards and system performance.

Significant work has been undertaken to form the basis of the tariff request. This chapter is added to bring together the findings of those reports to provide the collective picture which would make the review easier. In effect this chapter acts as an index to the volumes of supporting documentation and reports.

Analysis of NWC's business under existing operating conditions including the tariffs set at their existing level and structure has revealed a likely trend of future operating losses and cash deficits. This modelling has confirmed that the operating and cash loss NWC expects for the current year is not likely to be a one off situation but rather the norm if the status quo is maintained.

Perhaps of greater concern is the assessment that the existing situation is resulting in levels of cost recovery below the lower bound cost of service - the generally accepted minimum a business must recover to maintain its existing service capacity.

It is these findings that led NWC to undertake an assessment of its costs of service provision, projected financial performance, tariff structure and future levels of demand.

After detailed review of these factors NWC believes the most appropriate and efficient solution to the unsustainable levels of cost recovery, operating losses and cash deficits is for a combination of a one off tariff increase, internal reorganization and improvements in efficiency, both financial and operational.

When the other factors are taken into account, the tariff increase proposes is a real increase of 42% with no real increases required in the years following this.

An increase of this magnitude is sufficient to move NWC back into a financially sustainable position whereby service standards can be met and the water and wastewater system continually expanded and improved. It does not however enable NWC to earn a full rate of return on its assets. The upper bound movements towards full returns would be targeted by NWC in future years through further efficiency programs and performance improvements.

The following questions are addressed in detail in this chapter.

Why is a tariff increase required?
Forecasts of the financial position of NWC if no increase is granted are made and analyzed.

What is the approach used to arrive the proposed increase?
The basic methodology used is presented and discussed.

What are the underlying assumptions?
The assumptions and data that have been used to project costs and revenues are presented and discussed. The underlying reasoning is also discussed and further supporting work and documents that have been used in determining these positions are referenced.

What level of increase is required and why?
The determination of the requested level of increase is presented with reference to supporting detailed calculations using the Financial Model.

What other initiatives will be implemented by NWC to improve financial operating efficiency?

What will the increase and other initiatives deliver?
The major outcomes expected from the increase are discussed. These include:

- A healthy and sustainable financial position;
- A defined capital works program;
- The achievement of specific performance targets;
- Affordable water and wastewater charges.

What are the alternate scenarios?
The variations that could change the level of tariff increase required are discussed. These consider what would be required if the responsibility for the pension liability is shifted to GOJ or if alternative capital programs required to deliver different levels of service are to be implemented.

12.2 WHY IS A TARIFF INCREASE REQUIRED?

12.2.1 Historical Review 1998 - 2003

The performance of NWC has been mixed over the past five years. Initially, over the period 1997 to 2000, the overall performance improved substantially with annual increases in revenue, improved collections and efficiency of operations. Following gains made, NWC experienced a decline in performance over the period 2000 to 2003 despite measures to achieve financial sustainability and improved customer service.

12.2.2 Sales Growth & Profitability

Sales grew by 49% (point to point) over the 5-year period under review. The 1999/2000 financial year saw the largest growth in sales revenue at 17% following the Interim Tariff Adjustment. The operating margin increased over the same by 15%. By 2000/2001 the rate of growth of sales revenue tapered off to 8%, the operating margin narrowed to 6% and the net profit fell to 1% of revenue. This slowdown in the revenue growth continued into the 2001/2002 financial year, however a turnaround was shown in 2003 with a 7% growth in revenue. Growth in revenue was attributed to a 10% increase in the billed consumption from 19,721 mg to 21,761 mg.

Over the last two financial years, 2001/2002 and 2002/2003, NWC has recorded operating losses of $694 million and $618 million respectively. Declining performance over the period 2000 – 2003 has been due to:

- Unexpected pension liabilities;
- Increases in debt – long term liabilities increased from $66.7 million at year end 2000 to $2.1 billion at year end 2002. The Government of Jamaica assumed $3.5 billion of this debt in the year ending 2003;
- Implementation of projects with wider economic benefits but limited financial returns to NWC;
- The tariff being insufficient to cover capital costs even though loans for capital projects were placed on the books of NWC;
- High Unaccounted for Water (UFW) which increased during the expansion mode of the company when emphasis was on getting water to all Jamaicans by 2005 and due to increased theft during relative harsh economic climate;
- Lower than expected collection efficiency. The accounts receivable days over the period 1998 to 2003 increased from 87 days to 116 days which served to reduce the cash available after operations.
- NWC incurred substantial interest costs due to cash flow deficits and reliance on overdraft facilities.

NWC Historical Review Data

Year	1997	1998	1999	2000	2001	2002	2003
$000s							
Billed Water Sales	3,241,524	3,445,218	3,736,916	4,380,376	4,730,676	4,797,448	5,145,771
Operating Expenses	3,174,584	3,508,428	3,589,137	3,744,933	4,447,924	4,838,777	5,181,978
Gross Operating Margin	66,940	(63,210)	147,779	635,443	282,752	(41,329)	(36,207)
Interest Expense	19,247	18,824	16,195	45,351	45,176	178,340	107,111
Operating Profit	63,271	(8,210)	94,101	474,842	51,114	(694,811)	(618,285)
Current Assets	1,469,793	1,585,905	1,577,710	1,883,854	2,579,939	2,241,758	3,075,498
Current Liabilities	755,372	1,001,675	1,274,318	1,360,875	2,065,094	1,577,378	1,674,634
Production in mg	63,198	61,717	63,476	64,069	62,983	60,538	61,879
Consumption in mg	19,091	21,371	22,470	23,313	21,226	19,721	21,761
Unaccounted for Water (UFW)	*70%*	*65%*	*65%*	*64%*	*66%*	*67%*	*65%*
Performance Indicators							
Sales Growth	12%	6%	8%	17%	8%	1%	7%
Gross Operating Margin	2%	-2%	4%	15%	6%	-1%	-1%
Operating Profit Margin	2%	0%	3%	11%	1%	-14%	-12%
Current Ratio	1.95	1.58	1.24	1.38	1.25	1.42	1.84
Payables in Days	74	84	84	114	136	78	95
Receivables in Days	70	87	98	125	119	109	116
Asset Efficiency	93%	87%	80%	58%	54%	39%	37%
Interest Coverage	8.1	4.4	13.6	15.2	7.7	0.1	0.3
Employee Expenses/ Revenue	24%	25%	25%	31%	32%	45%	46%
Water Unit Price in $/kg	170	161	166	188	223	243	236

3.5.2 Achievements

On a positive note, the following achievements were recorded over the period 1999 to 2003:

- A decline in overtime.
- A decline in accidents – the number of lost-time accidents per month per 1,000 employees declined from 3 in 2000 to 1 in 2003.
- Attainment of the number 1 rating by the Regulatory Agency as the least complained about utility since October 2000 – an improvement from the most

complained about utility in 1999. The number 1 rating in customer service is supported by a consumer survey commissioned by the OUR in 2003.

- New sewerage systems being commissioned in the towns of Negril, Montego Bay and Ocho Rios.
- Installation of new pumps to improve reliability in many areas.
- Implementation of a new Query Management System to improve customer service.

12.2.3 Tariff Model

The National Water Commission (NWC) commissioned PricewaterhouseCoopers (PwC) to undertake various tasks relating to the review of NWC's water and wastewater tariffs. One of these tasks involved the construction of a comprehensive financial model of NWC's water, wastewater and consolidated business. One of the financial model's features is the ability to project forward NWC's revenues and costs. The model has revealed a worrying trend of both cash and operating losses over the short to medium term. An updated version of the model is included with this report.

12.2.4 Income Projections under Existing Tariff

Exhibit 12.1 below shows the projected operating statement for the NWC under the current tariff regime. As shown, under the existing tariff, total operating revenues are forecasted to grow consistently over the period, reflecting growth in production capacity and customer numbers. Operating performance (EBIDA) tracks this revenue performance, but continues to be negative up to 2005. Thereafter, it becomes positive and grows steadily as NWC efforts to contain operating costs take effect.

Although earnings before interest (EBI) improve, there are still negative results over the period under consideration. This is exacerbated by the increased depreciation resulting from the revaluation of the NWC's assets and the increased capital base from new projects.

NWC's present statement of financial position records fixed assets of approximately $10.6 billion (fixed assets plus construction work in progress) in contrast to a $25.1 Billion depreciated asset value based on the revaluation by Delano Reid in July 2003. The effect of this revaluation is that depreciation at $448 million in 2003 is projected to increase by 178% by 2004 to $1.34 billion. The resulting increase in depreciation indicates the previous under estimate of the cost of replacing / maintaining assets as they wear out.

Interest expenses increase to $3 billion by 2009 primarily as a result of financing the past service pension liability and projects to improve efficiency and service delivery. A significant amount of loan facilities are assumed to be offered on a concessional terms

but there would still be significant short term borrowings to cover cash flow deficits. Further, even where grace periods are assumed, interest expenses are still included as the operating statement recognizes expenses on an accrual basis.

Operating profit remains negative throughout the forecast period, increasing from a projected $2.3 billion in 2004 to $3.8 billion by 2009. This movement is a sign of an unsustainable situation.

Exhibit 12.1 Operating Statement – Existing Tariff

Operating Statement								
	Audited	Unaudited	Projected					
Year end 31 March ($'000)	2002	2003	2004	2005	2006	2007	2008	2009
Operating Revenue								
	4,797,448	**5,203,115**	**5,673,952**	**5,724,107**	**5,957,226**	**6,116,245**	**6,399,868**	**6,528,258**
				0.9%	4.1%	2.7%	4.6%	2.0%
Operating Expenses								
Water								
		(2,714,976)	(2,951,969)	(2,849,695)	(2,878,612)	(2,921,233)	(2,947,503)	(2,974,164)
Wastewater								
		(359,365)	(390,734)	(381,000)	(408,856)	(412,243)	(455,354)	(462,377)
Corporate Operating Costs								
		(1,713,689)	(2,876,097)	(2,382,040)	(2,154,789)	(2,145,381)	(2,149,524)	(2,153,900)
J's additional operating and maint costs								
	(4,925,022)	**(5,199,124)**	**(6,218,800)**	**(5,612,735)**	**(5,442,258)**	**(5,478,857)**	**(5,552,381)**	**(5,590,440)**
	% change	***6%***	***20%***	***-10%***	***-3%***	***1%***	***1.34%***	***0.69%***
	% of assets	***59%***	***17%***	***14%***	***13%***	***12%***	***12%***	***11.945%***
Gross Earnings	**(127,574)**	**3,991**	**(544,848)**	**111,373**	**514,968**	**637,388**	**847,487**	**937,818**
	% of Revenue	***100%***	***110%***	***98%***	***91%***	***90%***	***87%***	***86%***
Miscellaneous Income								
Project management fees	6,722	3,564	3,564	3,564	3,564	3,564	3,564	3,564
Other	43,512	54,742	54,742	54,742	54,742	54,742	54,742	54,742
	50,234	**58,306**	**58,306**	**58,306**	**58,306**	**58,306**	**58,306**	**58,306**
Other Expenditure								
	(52,323)	(72,497)	(226,958)	(228,964)	(238,289)	(244,650)	(255,995)	(261,130)
EBIDA	**(129,663)**	**(10,200)**	**(713,500)**	**(59,286)**	**334,985**	**451,044**	**649,798**	**734,993**
Depreciation								
Water								
			(814,843)	(876,960)	(928,749)	(984,791)	(1,018,628)	(1,023,073)
Wastewater								
			(218,889)	(227,793)	(237,078)	(244,226)	(249,633)	(255,304)
Corporate			(209,687)	(311,346)	(330,460)	(333,543)	(335,035)	(222,529)
			178%					
	(485,463)	**(447,804)**	**(1,243,420)**	**(1,416,100)**	**(1,496,286)**	**(1,562,559)**	**(1,603,296)**	**(1,500,906)**
	-5.67%	**-5.10%**	**-3.94%**	**-4.24%**	**-4.32%**	**-4.30%**	**-4.55%**	**-4.39%**
EBI	**(615,126)**	**(458,004)**	**(1,956,920)**	**(1,475,385)**	**(1,161,301)**	**(1,111,515)**	**(953,498)**	**(765,912)**
Interest								
Current Cash Invested / Overdraft	(23,344)	(11,023)	43,977	(161,520)	(398,480)	(654,364)	(1,006,201)	(1,474,515)
Long Term Borrowings	(142,586)	(75,733)	(395,665)	(981,137)	(1,214,900)	(1,492,525)	(1,531,381)	(1,530,803)
	(165,930)	(86,756)	(351,688)	(1,142,657)	(1,613,380)	(2,146,890)	(2,537,582)	(3,005,319)
Operating Profit (Loss)	**(781,056)**	**(544,760)**	**(2,308,608)**	**(2,618,042)**	**(2,774,681)**	**(3,258,405)**	**(3,491,080)**	**(3,771,231)**

12.2.5 Cash Flow Projections under Existing Tariff

Cash flow projections are shown in Exhibit 12.2 below. As shown, net cash flows are projected to remain negative and deteriorate significantly over the period. In 2004, NWC would experience negative cash flows in excess of $ 1 billion and this would worsen to approximately negative $2.8 billion by 2009. Closing cash balance would decline from positive $777 million in 2004 to negative $9.5 billion by 2009. This reflects the overall effects of the operating, investing and financing cash flows.

Operating cash flows are projected to decline from negative $1 billion in 2004 to negative $2.3 billion by 2009. This is due to the inability of revenues to cover operating costs throughout the forecast period.

Significant cash outflows are projected in association with planned projects to improve operating efficiency and meet performance targets. The amount of expenditure moderates over the five years (from over $5 billion in 2004 to approximately $0.5 billion by 2009) but still contributes significantly to the overall net cash position.

Financing cash flows of more than $13 billion are required to fund projects and the pension liability, although by 2009 this position turns negative reflecting a significant reduction in borrowings and the end of grace periods on loans.

A negative net cashflow position is thus projected for the foreseeable future under present water and wastewater tariffs with resulting growth in negative cash balances. A position that is unlikely to be sustainable without financial assistance.

Exhibit 12.2 Cash Flow Projections

Year end 31 March ($'000)	2002	2003	2004	2005	2006	2007	2008	2009
Cash Flows from Operating Activities								
Surplus / (deficit) for year after interest expenses	1,979,901	2,198,713	(2,308,608)	(2,618,042)	(2,774,681)	(3,258,405)	(3,491,080)	(3,771,231)
Depreciation and other adjustments	534,502	461,914	1,243,420	1,416,100	1,496,286	1,562,559	1,603,296	1,500,906
Interest differential (add back expense - paid)			74,378	162,934	235,211	463,752	4,551	4,915
	2,514,403	2,660,627	(990,810)	(1,039,009)	(1,043,183)	(1,232,094)	(1,883,233)	(2,265,410)
(Increase) / decrease in current assets								
Consumer accounts recievables	115,867	(291,478)	(121,788)	(12,973)	(60,299)	(41,132)	(73,363)	(33,210)
Prepaid expenses			-	-	-	-	-	-
Due from GOJ	59,546	-	-	-	-	-	-	-
Other accounts recievable			-	-	-	-	-	-
Change in accounts inventory	(188,320)	(16,776)	(137,824)	81,919	23,043	(4,947)	(9,938)	(5,144)
	(12,907)	(308,254)	(259,612)	68,945	(37,256)	(46,079)	(83,301)	(38,354)
Increase / (decrease) in current liabilities								
Deposits and retentions	25,072	(798)	7,154	762	3,542	2,416	4,309	1,951
Trade and other accounts payable	(541,754)	292,879	276,120	(164,118)	(46,164)	9,911	19,910	10,306
	(516,682)	292,081	283,274	(163,356)	(42,622)	12,327	24,219	12,257
(Increase) / decrease in current assets and liabiliti	(529,589)	(16,173)	23,662	(94,410)	(79,879)	(33,752)	(59,082)	(26,097)
	(1,305,732)	**(115,192)**	**(967,148)**	**(1,133,419)**	**(1,123,062)**	**(1,265,846)**	**(1,942,314)**	**(2,291,507)**
Cash Flows from Investing Activities								
Purchase of fixed assets								
Water								
Production			(3,307,110)	(2,525,010)	(2,234,010)	(2,867,910)	(85,710)	(85,710)
Delivery			(95,400)	(91,800)	(139,080)	(139,080)	(139,080)	(94,080)
Customers			-	-	-	-	-	-
Indirect			-	-	-	-	-	-
			(3,402,510)	**(2,616,810)**	**(2,373,090)**	**(3,006,990)**	**(224,790)**	**(179,790)**
Wastewater								
Conveyance			-	-	-	-	-	-
Treatment			(325,800)	(415,800)	(355,800)	(235,800)	(211,800)	(259,800)
Indirect			-	-	-	-	-	-
			(325,800)	**(415,800)**	**(355,800)**	**(235,800)**	**(211,800)**	**(259,800)**
Corporate fixed assets			(1,330,936)	(262,516)	(37,080)	(11,247)	(12,146)	(13,118)
Total fixed asset additions	**(3,142,033)**	**(652,212)**	**(5,059,246)**	**(3,295,126)**	**(2,765,970)**	**(3,254,037)**	**(448,736)**	**(452,708)**
Additions to projects in progress	**(1,266,462)**	(186,675)	-	-	-	-	-	-
	(4,403,113)	**(838,065)**	**(5,059,246)**	**(3,295,126)**	**(2,765,970)**	**(3,254,037)**	**(448,736)**	**(452,708)**
Cash Flows from Financing Activities								
Capital Income / Equity Injections								
Grants and Subsidies			-	-	-	-	-	-
Collaborative Projects GoJ Funded			-	-	-	-	-	-
Non-Collaborative Projects GoJ Funded			42,855	42,855	42,855	42,855	42,855	42,855
Contributed Private Assets			1,140,000	114,000	0	0	0	0
	2,760,957	**2,743,473**	**1,182,855**	**156,855**	**42,855**	**42,855**	**42,855**	**42,855**
Distribution to shareholders			-	(2,500,000)	-	-	-	-
	2,760,957	2,743,473	1,182,855	(2,343,145)	42,855	42,855	42,855	42,855
Debt drawdown	2,125,793	(1,107,009)	3,876,391	5,638,271	2,723,115	3,211,182	405,881	409,853
Debt principal repayment	(48,024)	(35,000)	(53,940)	(154,818)	(195,267)	(230,552)	(431,495)	(486,137)
	2,077,769	(1,142,009)	3,822,451	5,483,452	2,527,848	2,980,630	(25,614)	(76,284)
	4,828,168	**1,586,749**	**5,005,306**	**3,140,307**	**2,570,703**	**3,023,485**	**17,241**	**(33,429)**
Net Cash Inflow/(Outflow)	**(880,677)**	**633,492**	**(1,021,089)**	**(1,288,237)**	**(1,318,329)**	**(1,496,397)**	**(2,373,810)**	**(2,777,644)**
Cash Balance								
Opening cash	478,273	127,185	776,850	(244,239)	(1,532,476)	(2,850,805)	(4,347,202)	(6,721,012)
Closing cash	(402,404)	760,677	(244,239)	(1,532,476)	(2,850,805)	(4,347,202)	(6,721,012)	(9,498,657)

12.2.6 Balance Sheet Projections under Existing Tariff

Projections for NWC's balance sheet, assuming the tariff remains unchanged, are shown in Exhibit 12.3. As indicated, fixed assets are projected to increase dramatically from $10.5 billion (including $1.8 billion in work in progress) in 2003 to $31.5 billion in 2004. This is primarily due to the revaluation of assets based on the Delano Reid report and, to a lesser extent, some capital investments. Fixed assets are projected to increase over the remainder of the period reaching $34.2 billion in 2009.

Current assets are projected to initially decrease from $3.1 billion in 2003 to $2.6 billion by 2006 as NWC's cash is depleted. There is a further projected decrease to $2.5 billion by 2005 due to reduced inventories. From 2006 to 2009 current assets would increase marginally to end up at $2.74 billion. At this point, total assets would amount to $36.9 billion.

It is the movement of NWC's liabilities, however, that gives to true indication of the declining financial situation of the company if the current tariffs were to persist. In particular, current liabilities would increase rapidly from $1.77 billion in 2003 to $11.7 billion in 2009. This increase would be largely driven by the dramatic increases in overdraft from $280 million in 2003 to $9.5 billion in 2009 as the utility becomes cash starved. In reality, it is expected that NWC would not be allowed to incur such levels of overdraft and the worsening financial situation would more be reflected in curtailment of service in many areas and reduced service quality in others.

As a direct result of the expected increases in current liabilities, net current assets would decrease from positive $1.4 billion in 2003 to negative $800 million in 2005 and negative $8.9 billion by 2009.

Given the above, and with long term borrowings reaching $15.1 billion by 2009 on the assumption that capital investments are 100% financed with long term loans, net assets would increase initially from $10.7 billion in 2003 to $28.2 billion in 2004 and then decrease at precipitously to $10.1 billion by 2009. By 2012, net assets would become negative confirming the lack of sustainability of financial and operational performance if the tariffs were not to be increased.

Exhibit 12.3 Projected Balance Sheets

$'000	Audited	Unaudited	Projected					
Year ending 31 March	2002	2003	2004	2005	2006	2007	2008	2009
Non-Current Assets								
Fixed Assets			36,586,436	39,881,562	42,647,532	45,901,569	46,350,305	46,803,013
Water								
Production			17,509,525	19,625,070	21,400,469	23,756,910	23,300,498	22,842,310
Delivery			5,234,518	4,970,743	4,751,606	4,529,285	4,303,780	4,030,605
Customers			1,209,257	1,097,337	985,416	873,496	761,575	649,655
Indirect			0	0	0	0	0	0
Land			664,040	664,040	664,040	664,040	664,040	664,040
			24,617,341	26,357,191	27,801,532	29,823,731	29,029,893	28,186,610
Wastewater								
Conveyance			966,571	923,209	879,847	836,485	793,123	749,762
Treatment			3,189,265	3,420,633	3,582,717	3,617,653	3,623,182	3,671,040
Indirect			-	-	-	-	-	-
Land			48,983	48,983	48,983	48,983	48,983	48,983
			4,204,819	4,392,825	4,511,547	4,503,122	4,465,289	4,469,785
Corporate								
Corporate fixed assets			1,763,250	1,714,420	1,421,041	1,098,744	775,856	566,445
Corporate Land			941,780	941,780	941,780	941,780	941,780	941,780
	-	-	2,705,030	2,656,200	2,362,821	2,040,524	1,717,636	1,508,225
	8,566,846	**8,775,725**	**31,527,190**	**33,406,216**	**34,675,900**	**36,367,377**	**35,212,817**	**34,164,620**
Construction Work in Progress	1,590,371	1,777,046	-	-	-	-	-	-
Long Term Receivables	822	-	-	-	-	-	-	-
	10,158,039	**10,552,771**	**31,527,190**	**33,406,216**	**34,675,900**	**36,367,377**	**35,212,817**	**34,164,620**
Current Assets								
Inventory	685,963	702,739	840,563	758,645	735,602	740,549	750,487	755,631
Consumer accounts recievable	1,131,734	1,345,849	1,467,637	1,480,610	1,540,909	1,582,041	1,655,404	1,688,613
Due from Government of Jamaica	-	-	-	-	-	-	-	-
Other accounts recievable	296,876	174,409	174,409	174,409	174,409	174,409	174,409	174,409
Pre-paid expenses		122,467	122,467	122,467	122,467	122,467	122,467	122,467
Cash at Bank	127,185	776,850	-	-	-	-	-	-
	2,241,758	**3,122,314**	**2,605,076**	**2,536,131**	**2,573,387**	**2,619,466**	**2,702,767**	**2,741,121**
Total Assets	**12,399,797**	**13,675,085**	**34,132,266**	**35,942,347**	**37,249,287**	**38,986,843**	**37,915,584**	**36,905,740**
Current Liabilities								
Overdraft	294,702	279,987	244,239	1,532,476	2,850,805	4,347,202	6,721,012	9,498,657
Deposits and retentions	79,850	79,052	86,206	86,968	90,509	92,925	97,235	99,185
Accounts payable	1,115,003	1,407,882	1,684,002	1,519,885	1,473,721	1,483,631	1,503,541	1,513,847
Borrowings	174,068	290	154,818	195,267	230,552	431,495	486,137	546,645
	1,663,623	**1,767,211**	**2,169,265**	**3,334,595**	**4,645,587**	**6,355,255**	**8,807,925**	**11,658,334**
Net Current Assets / (Liabilities)	**578,135**	**1,355,103**	**435,811**	**(798,465)**	**(2,072,199)**	**(3,735,788)**	**(6,105,158)**	**(8,917,213)**
Non-Current Liabilities								
Borrowings	2,149,126	1,199,476	3,742,011	9,347,948	12,075,723	15,319,161	15,243,457	15,111,580
Total Liabilities	**3,812,749**	**2,966,687**	**5,911,276**	**12,682,544**	**16,721,310**	**21,674,416**	**24,051,382**	**26,769,914**
Net Assets / (Liabilities)	**8,587,048**	**10,708,398**	**28,220,990**	**23,259,803**	**20,527,977**	**17,312,427**	**13,864,202**	**10,135,826**

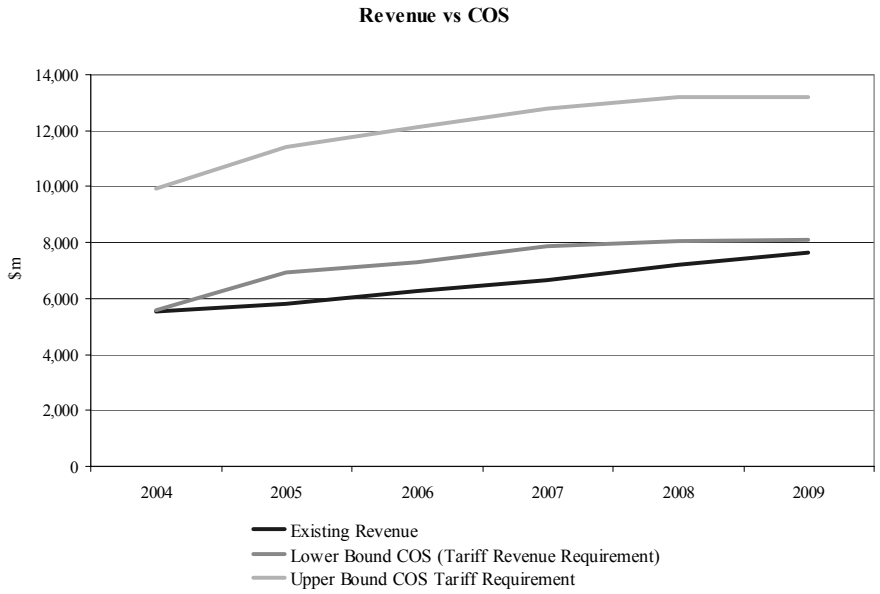
12.2.7 Conclusion on Projected Financial Position under Existing Tariff

The above financial statements represent the financial position of NWC if tariffs are not allowed to increase in real terms. Operating and cash deficits of the above magnitude would be inevitable along with dramatic curtailments in service level.

It is unlikely that NWC will be able to sustain operating and cash performances of this magnitude over the next few years (as loans to support operations would ultimately disappear) and NWC would inevitably require financial assistance to continue to provide water and wastewater services.

However of even greater concern is that the level of revenue generated from existing tariffs is insufficient to recover even the "lower bound" costs of providing water services. That is, revenue is not sufficient to maintain the existing level of service provision, let alone improve the standard of service. This is illustrated in Exhibit 12.4 below.

Exhibit 12.4 Existing Revenue and Cost of Service (COS)



At the current level of cost recovery the service capacity of the existing system is effectively being run down.

12.3 HOW WAS THE LEVEL OF INCREASE DETERMINED?

Based on the analysis carried out by PWC, NWC would require an 80% increase in tariffs to facilitate full cost recovery, while meeting performance targets. An increase of this magnitude would begin to raise questions of affordability, using the 5% of income guideline.

NWC therefore seeks a tariff that is nearly half the required level, but which would allow the utility to achieve positive cash flows. NWC would focus on a limited set of projects in order to allow this to work. These projects would be aimed at plant rehabilitation, efficiency improvements and customer service improvements.

The level of increase is based on incurring the same level of costs as described above in the assessment of NWC's existing position.

The process to determine the increase required has been based on three key pieces of information - lower and upper bound cost of service estimates and financial performance forecasts (both operating and cash flow).

The lower and upper bounds have been used as the floor and ceiling for any revenue movement. Where the lower bound represents the minimum costs to be incurred in maintaining the system at its present state and the upper bound being the maximum a monopoly service provider should be allowed to earn including a full return on capital.

The preferred increase is between these limits and has been designed to ensure NWC remains financially viable and in a position to continue to produce cost reduction programs, efficiency savings and further reductions in UFW. All these will lead to improved services for consumers and enable NWC to work towards a full cost recovery position.

By not requesting an increase which would enable NWC to earn a full rate of return, the burden of improving financial performance is being shared between NWC and consumers. NWC's financial performance improvement strategy is based not only on tariff increase to consumers but internal programs which over time will enable NWC to achieve continual improvement in its financial performance.

The primary purpose of the tariff increase is to enable NWC to avoid immediate and unsustainable operating and cash losses. The increase has not been set to allow NWC to fund particular capital works, rather the return on assets (albeit not a full return) generated from the increase allows NWC to reinvest in projects to improve service standards.

12.4 WHAT ARE THE UNDERLYING ASSUMPTIONS?

12.4.1 Demand forecast

Demand is important in the tariff setting process as it, along with tariffs, determines the level of revenue the business will earn. Demand is forecast both in terms of number of connections and consumption.

The number of connections is forecast to increase with population growth. Consumption however is assumed to be impacted by a number of variables. Consumption has been forecast as a function of change in total connections, change in price and change in consumers' income.

The significance of this is that with a one-off increase in price consumption is forecast to initially decrease in a response to its higher cost, then increase from this lower base over time as connections and income grows without any real increase in price.

The result is that the impact on customer bills is not equal to the full increase in tariffs as the demand is expected to decrease which will lesson the customers' total bill which is a function of both tariff level and actual consumption. The demand forecasting model is included with the tariff model submitted to the OUR. is discussed in more detail below.

12.4.2 Operating costs

Operating costs in the model are broken down by function: water, wastewater and corporate project expenses. Costs are projected based on whether or not they are variable or fixed. Water-related variable costs are moved with changes in consumption. Wastewater-related variable cost projections are tied to changes in water consumption and changes in the number of connections the sewerage systems.

Operating costs are projected to increase by 20% in 2004 followed by a 10% decline in 2005 then a decline of 3% in 2006 then increasing at approximately 1% yearly over the period 2007 to 2009. Overall, costs increase in 2004 due to:

- Restructuring expenses incurred while benefits are not being fully realized;
- A rise in the electricity unit cost. Electricity costs in 2004 increase by approximately 25% in real terms based on 2003/4 year to date figures;
- A more realistic provision for repairs and maintenance; an approximate 50% increase being made in order to bring NWC's assets to an adequate maintenance level (about 3% to 4% of asset base). Up to 2004, NWC has not been maintaining assets at a sufficient level. To rehabilitate assets, provisions have been made in the capital projects program.

The following years, 2005 and 2006, operating costs decline reflecting efficiency gains including:

- A 25% reduction in personnel costs;

- A 20% decline in administrative costs;
- A 50% decline in bad debt expenses;
- An approximate 5% reduction in energy use.

Following the sharp decline in operating costs in 2005 and 2006 due to efficiency gains, a relatively flat 1% yearly increase in operating costs in 2007 to 2009 is projected reflecting steady increases in water consumption and the number of wastewater connections.

12.4.3 Asset Values

NWC's 2003 asset value of $8.8 billion is based on a depreciated actual cost valuation. From a tariff setting perspective, depreciated actual/historic cost is near to irrelevant. What an asset might have cost in the past is unimportant to the matter of what it is worth today, either in terms of value in use or its value from resale.

Delano Reid and Associates has valued NWC's assets using a depreciated replacement cost methodology. The result is a significant increase in asset value from $8.8 billionto $25 billion. It is this value that has been used to determine the return on capital to be included in the calculation of the upper bound cost of service.

The primary reasons why the valuation exceeds that carried in the NWC's books are exchange rate movements and inflationary adjustments, both of which tend to negate the extent to which historic cost values reflect the present opportunity cost of invested capital. It should also be noted that some assets gifted or transferred to the NWC were not previously included in the Commission's balance sheet, tending to exacerbate differences between the financial reporting valuation and the indicative depreciated replacement cost value established.

Further information on the asset valuation methodology, a breakdown of assets by type and the depreciated replacement cost methodology can be found in the Delano Reid and Associates Asset Valuation Report and PricewaterhouseCoopers *First Interim Report* and *Final Report.*

12.4.4 Depreciation

Depreciation is an imputed cost introduced to account for capital assets that have a finite life, and to apportion the cost of these assets (which is a legitimate cost of service item) over this useful life.

Depreciation has been estimated on a straight line approach, based on the written down value of assets apportioned over their remaining useful lives.

The impact of revaluing NWC's assets upwards is an increase in the depreciation expense. Depreciation in the NWC's 2003 unaudited financial statements is $J447.8 million, and although this imputed expense has increased over recent years, it is still significantly below the depreciation expense calculated using a current cost valuation. Total depreciation expenses in 2004 are shown at more than $1.2 billion.

The remaining useful lives of much of the NWC's asset base have been assessed by Delano Reid (see separate interim report on asset valuation). Remaining useful lives for water assets range significantly.

Depreciation on new capital works is calculated by assigning for each new capital project an opening useful life estimate, based on the useful life for a comparable "new" asset (again, drawn from the Delano Reid/PwC asset inventory and assessment).

It is worth noting here that the tariff increase being sought has been primarily constructed around operating and cash flow requirements. Since depreciation is a non-cash item (at least until the asset needs replacement) it has no impact on the negative cash flows forecast under existing prices.

12.4.5 Interest Expenses

Each capital project has had its funding source identified as either IDB, EIB, JBIC, GOJ, Private Sector or undefined. The undefined projects are assumed to be funded directly by NWC through a mixture of new debt and any available free cash flow.

The terms for each major funding source in terms of loan duration, interest rate and any repayment grace periods are as bellows:

Exhibit 12.5 Loan Assumptions

Funding Source	Loan Term	Interest Rate	Grace Period
IDB	20 years	8%	Until 2008
EIB	20 years	8%	Until 2008
JBIC	40 years	8%	Nil
Undefined (NWC)	15 years	12%	Nil

International funding sources are assumed to have margin built into the interest rate that reflects hedging costs. This eliminates the need to attempt to forecast currency movements and specify exchange rate losses.

Where a project is funded by the Government of Jamaica or the Private Sector it is considered to be a capital contribution to NWC.

12.4.6 Weighted Average Cost of Capital (WACC)

The following information was required to construct the upper bound which has been used as a reference point in determining the level of price increase required. The requested increase (as discussed below) does not result in NWC approaching the upper bound. Therefore they are not as relevant in the evaluation of the increase as those discussed above which directly affect operating and cash flow results for both the existing position and that achieved under the requested increase.

The WACC is relevant to this process in that it has been used to determine the return on capital requirement to identify the upper bound cost of service. PricewaterhouseCoopers estimated a pre-tax nominal WACC for NWC of 15.2%. A full discussion of this variable, its components and justification can be found in PricewaterhouseCoopers *Final Project Report.*

12.5 WHAT IS THE OUTLOOK FOR NWC WITH THE INCREASE?

The tariff and efficiency increase will deliver 4 major outcomes:

- a healthy and sustainable financial position for NWC;
- a defined capital works program;
- achievement of specific performance targets;
- affordable water and sewerage charges.

12.5.1 Financial Viability for NWC

The model has been used to project NWC's operating and cash positions with a 42% increase. The resulting financial statements are given below in Exhibits 12.6 to 12.8.

12.5.1.1 Income Improvements with the Proposed New Tariff

Exhibit 12.6 shows the projected income statements with the proposed new tariff. As shown, operating revenues improve by 30% in 2005 as result of the tariff adjustment. The increase is less than the 42% real increase in rates because expected reductions in consumption based on the price elasticity assumptions which range from negative 0.1 to negative 0.4 for the lowest level of domestic consumption to the highest level respectively and negative 0.3 for commercial customers. Operating expenses would be marginally lower as production would be slighter lower as NWC is better able to meet the reduced demand.

Operating income (EBIDA) would now be positive in 2005 and improve steadily to $2.9 billion by 2009. EBI which was negative for the entire period under the existing tariff scenario, ranging from negative $1.5 billion in 2005 to negative $766 million in 2009, would now be a positive $263 million in 2005 and improve to $1.4 billion in 2009.

Operating profit would improve significantly but would still remain negative up to 2007, with positive outturns of $186 million and $617 million in 2008 and 2009 respectively. The improvement is largely due to the reduced interest charges on overdraft and loans as NWC's cash position would be much healthier.

Exhibit 12.6 Income Projections with Proposed New Tariff

$'000	Audited	Unaudited	Projected					
Year ending 31 March	2002	2003	2004	2005	2006	2007	2008	2009
Operating Revenue								
	4,797,448	**5,203,115**	**5,673,952**	**7,447,030**	**8,086,279**	**8,267,381**	**8,609,580**	**8,743,481**
				31.2%	8.6%	2.2%	4.1%	1.6%
Operating Expenses								
Water								
		(2,714,976)	(2,951,969)	(2,778,995)	(2,847,850)	(2,889,900)	(2,915,790)	(2,942,066)
Wastewater								
		(359,365)	(390,734)	(367,175)	(402,389)	(405,719)	(447,622)	(454,498)
Corporate Operating Costs								
		(1,713,689)	(2,876,097)	(2,382,040)	(2,154,789)	(2,145,381)	(2,149,524)	(2,153,900)
J's additional operating and maint costs								
	(4,925,022)	**(5,199,124)**	**(6,218,800)**	**(5,528,210)**	**(5,405,028)**	**(5,441,000)**	**(5,512,936)**	**(5,550,464)**
	% change	*6%*	*20%*	*-11%*	*-2%*	*1%*	*1.32%*	*0.68%*
	% of assets	*59%*	*17%*	*14%*	*13%*	*12%*	*12%*	*12%*
Gross Earnings	**(127,574)**	**3,991**	**(544,848)**	**1,918,820**	**2,681,251**	**2,826,381**	**3,096,644**	**3,193,016**
	% of Revenue	*100%*	*110%*	*74%*	*67%*	*66%*	*64%*	*63%*
Miscellaneous Income								
Project management fees	6,722	3,564	3,564	3,564	3,564	3,564	3,564	3,564
Other	43,512	54,742	54,742	54,742	54,742	54,742	54,742	54,742
	50,234	**58,306**	**58,306**	**58,306**	**58,306**	**58,306**	**58,306**	**58,306**
Other Expenditure								
	(52,323)	(72,497)	(226,958)	(297,881)	(323,451)	(330,695)	(344,383)	(349,739)
EBIDA	**(129,663)**	**(10,200)**	**(713,500)**	**1,679,244**	**2,416,106**	**2,553,991**	**2,810,566**	**2,901,583**
Depreciation								
Water								
			(814,843)	(876,960)	(928,749)	(984,791)	(1,018,628)	(1,023,073)
Wastewater								
			(218,889)	(227,793)	(237,078)	(244,226)	(249,633)	(255,304)
Corporate			(209,687)	(311,346)	(330,460)	(333,543)	(335,035)	(222,529)
	(485,463)	**(447,804)**	**(1,243,420)**	**(1,416,100)**	**(1,496,286)**	**(1,562,559)**	**(1,603,296)**	**(1,500,906)**
	-5.67%	**-5.10%**	**-3.94%**	**-4.24%**	**-4.32%**	**-4.30%**	**-4.55%**	**-4.39%**
EBI	**(615,126)**	**(458,004)**	**(1,956,920)**	**263,145**	**919,820**	**991,432**	**1,207,270**	**1,400,678**
Interest								
Current Cash Invested / Overdraft	(23,344)	(11,023)	43,977	(30,761)	58,340	211,398	389,541	611,165
Long Term Borrowings	(142,586)	(75,733)	(395,665)	(981,137)	(1,182,222)	(1,383,656)	(1,410,949)	(1,394,505)
	(165,930)	(86,756)	(351,688)	(1,011,898)	(1,123,883)	(1,172,258)	(1,021,408)	(783,341)
Operating Profit (Loss)	**(781,056)**	**(544,760)**	**(2,308,608)**	**(748,753)**	**(204,063)**	**(180,826)**	**185,863**	**617,337**

12.5.1.2 Cash Flow Improvements with the Proposed New Tariff

All cash flow parameters show marked improvements under the proposed new tariff, as shown in Exhibit 12.7. In particular, net cash flow becomes a positive $150 million in 2005 compared to negative $1.3 billion under the current rates. The trend is also much improved ash cash flows now increase to over $1.4 billion by 2009 instead of the decrease to negative $2.8 billion with no tariff increase. This has resulted from primarily from improvements in the operating and financing cash flows.

Operating cash flows in 2005 are now positive $304 million and increase to $2.1 billion by 2009. Under the no tariff increase scenario, the cash flows in 2005 would have been negative $1.13 billion, decreasing to negative $2.3 billion by 2009.

12.5.1.3 Improvements in Projected Balance Sheets

The projected statement of financial position, shown in Exhibit 12.8, would also improve dramatically with the tariff increase. Net current assets would now remain positive throughout the period, increasing from over $1 billion in 2005 to $5.6 billion by 2009. With no increase the figures would have been negative $800 million in 2005 and negative $8.9 billion in 2009. This improvement is based on increases in current assets and decreases in current liabilities. The primary cause for these improvements is the improved cash position and reduction in overdraft requirement.

Net assets would now indicate sustainability as they would start to increase from 2006 onwards instead of continuing to decrease to negative values as is the case under the no increase scenario. There would still be decreases form 2004 to 2006 due to increases in liabilities.

12.5.1.4 Overall Financial Performance

Overall financial viability of NWC would be assured with the new tariff, resulting in improved chances of the utility being able to access financing at reasonable rates and being able to implement the necessary projects and programs to improve operating efficiency and service level.

Exhibit 12.7 Cash Flow Projections

Year ending 31 March	2002	2003	2004	2005	2006	2007	2008	2009
Cash Flows from Operating Activities								
Surplus / (deficit) for year after interest expenses	1,979,901	2,198,713	(2,308,608)	(748,753)	(204,063)	(180,826)	185,863	617,337
Depreciation and other adjustments	534,502	461,914	1,243,420	1,416,100	1,496,286	1,562,559	1,603,296	1,500,906
Interest differential (add back expense - paid)			74,378	162,934	235,211	463,752	4,551	4,915
	2,514,403	2,660,627	(990,810)	830,280	1,527,435	1,845,485	1,793,710	2,123,158
(Increase) / decrease in current assets								
Consumer accounts recievables	115,867	(291,478)	(121,788)	(458,628)	(165,350)	(46,844)	(88,514)	(34,635)
Prepaid expenses			-	-	-	-	-	-
Due from GOJ	59,546	-	-	-	-	-	-	-
Other accounts recievable			-	-	-	-	-	-
Change in accounts inventory	(188,320)	(16,776)	(137,824)	93,344	16,650	(4,862)	(9,723)	(5,072)
	(12,907)	(308,254)	(259,612)	(365,285)	(148,700)	(51,706)	(98,237)	(39,707)
Increase / (decrease) in current liabilities								
Deposits and retentions	25,072	(798)	7,154	26,939	9,712	2,752	5,199	2,034
Trade and other accounts payable	(541,754)	292,879	276,120	(187,006)	(33,357)	9,741	19,480	10,162
	(516,682)	292,081	283,274	(160,068)	(23,645)	12,493	24,679	12,197
(Increase) / decrease in current assets and liabilities	(529,589)	(16,173)	23,662	(525,352)	(172,344)	(39,214)	(73,558)	(27,511)
	(1,305,732)	**(115,192)**	**(967,148)**	**304,928**	**1,355,090**	**1,806,272**	**1,720,151**	**2,095,647**
Cash Flows from Investing Activities								
Purchase of fixed assets								
Water								
Production			(3,307,110)	(2,525,010)	(2,234,010)	(2,867,910)	(85,710)	(85,710)
Delivery			(95,400)	(91,800)	(139,080)	(139,080)	(139,080)	(94,080)
Customers			-	-	-	-	-	-
Indirect			-	-	-	-	-	-
			(3,402,510)	**(2,616,810)**	**(2,373,090)**	**(3,006,990)**	**(224,790)**	**(179,790)**
Wastewater								
Conveyance			-	-	-	-	-	-
Treatment			(325,800)	(415,800)	(355,800)	(235,800)	(211,800)	(259,800)
Indirect			-	-	-	-	-	-
			(325,800)	**(415,800)**	**(355,800)**	**(235,800)**	**(211,800)**	**(259,800)**
Corporate fixed assets			(1,330,936)	(262,516)	(37,080)	(11,247)	(12,146)	(13,118)
Total fixed asset additions	**(3,142,033)**	**(652,212)**	**(5,059,246)**	**(3,295,126)**	**(2,765,970)**	**(3,254,037)**	**(448,736)**	**(452,708)**
Additions to projects in progress	**(1,266,462)**	(186,675)	-	-	-	-	-	-
	(4,403,113)	**(838,065)**	**(5,059,246)**	**(3,295,126)**	**(2,765,970)**	**(3,254,037)**	**(448,736)**	**(452,708)**
Cash Flows from Financing Activities								
Capital Income / Equity Injections								
Grants and Subsidies			-	-	-	-	-	-
Collaborative Projects GoJ Funded			-	-	-	-	-	-
Non-Collaborative Projects GoJ Funded			42,855	42,855	42,855	42,855	42,855	42,855
Contributed Private Assets			1,140,000	114,000	0	0	0	0
	2,760,957	**2,743,473**	**1,182,855**	**156,855**	**42,855**	**42,855**	**42,855**	**42,855**
Distribution to shareholders			-	(2,500,000)	-	-	-	-
	2,760,957	2,743,473	1,182,855	(2,343,145)	42,855	42,855	42,855	42,855
Debt drawdown	2,125,793	(1,107,009)	3,876,391	5,638,271	2,450,804	2,568,945	284,117	245,912
Debt principal repayment	(48,024)	(35,000)	(53,940)	(154,818)	(187,963)	(205,143)	(399,772)	(446,209)
	2,077,769	(1,142,009)	3,822,451	5,483,452	2,262,841	2,363,802	(115,655)	(200,297)
	4,828,168	**1,586,749**	**5,005,306**	**3,140,307**	**2,305,696**	**2,406,657**	**(72,800)**	**(157,442)**
Net Cash Inflow/(Outflow)	**(880,677)**	**633,492**	**(1,021,089)**	**150,110**	**894,816**	**958,892**	**1,198,615**	**1,485,497**

Exhibit 12.8 Projected Balance Sheets

$'000	Audited	Unaudited	Projected					
Year ending 31 March	2002	2003	2004	2005	2006	2007	2008	2009
Non-Current Assets								
Fixed Assets			36,586,436	39,881,562	42,647,532	45,901,569	46,350,305	46,803,013
Water								
Production			17,509,525	19,625,070	21,400,469	23,756,910	23,300,498	22,842,310
Delivery			5,234,518	4,970,743	4,751,606	4,529,285	4,303,780	4,030,605
Customers			1,209,257	1,097,337	985,416	873,496	761,575	649,655
Indirect			0	0	0	0	0	0
Land			664,040	664,040	664,040	664,040	664,040	664,040
			24,617,341	26,357,191	27,801,532	29,823,731	29,029,893	28,186,610
Wastewater								
Conveyance			966,571	923,209	879,847	836,485	793,123	749,762
Treatment			3,189,265	3,420,633	3,582,717	3,617,653	3,623,182	3,671,040
Indirect			-	-	-	-	-	-
Land			48,983	48,983	48,983	48,983	48,983	48,983
			4,204,819	4,392,825	4,511,547	4,503,122	4,465,289	4,469,785
Corporate								
Corporate fixed assets			1,763,250	1,714,420	1,421,041	1,098,744	775,856	566,445
Corporate Land			941,780	941,780	941,780	941,780	941,780	941,780
	-	-	2,705,030	2,656,200	2,362,821	2,040,524	1,717,636	1,508,225
	8,566,846	**8,775,725**	**31,527,190**	**33,406,216**	**34,675,900**	**36,367,377**	**35,212,817**	**34,164,620**
Construction Work in Progress	1,590,371	1,777,046	-	-	-	-	-	-
Long Term Receivables	822	-	-	-	-	-	-	-
	10,158,039	**10,552,771**	**31,527,190**	**33,406,216**	**34,675,900**	**36,367,377**	**35,212,817**	**34,164,620**
Current Assets								
Inventory	685,963	702,739	840,563	747,220	730,570	735,432	745,155	750,228
Consumer accounts recievable	1,131,734	1,345,849	1,467,637	1,926,265	2,091,614	2,138,459	2,226,973	2,261,608
Due from Government of Jamaica	-	-	-	-	-	-	-	-
Other accounts recievable	296,876	174,409	174,409	174,409	174,409	174,409	174,409	174,409
Pre-paid expenses		122,467	122,467	122,467	122,467	122,467	122,467	122,467
Cash at Bank	127,185	776,850	-	-	800,687	1,759,579	2,958,195	4,443,692
	2,241,758	**3,122,314**	**2,605,076**	**2,970,361**	**3,919,748**	**4,930,346**	**6,227,199**	**7,752,403**
Total Assets	**12,399,797**	**13,675,085**	**34,132,266**	**36,376,577**	**38,595,647**	**41,297,723**	**41,440,016**	**41,917,023**
Current Liabilities								
Overdraft	294,702	279,987	244,239	94,129	-	-	-	-
Deposits and retentions	79,850	79,052	86,206	113,144	122,857	125,608	130,807	132,842
Accounts payable	1,115,003	1,407,882	1,684,002	1,496,996	1,463,639	1,473,380	1,492,860	1,503,022
Borrowings	174,068	290	154,818	187,963	205,143	399,772	446,209	496,414
	1,663,623	**1,767,211**	**2,169,265**	**1,892,232**	**1,791,639**	**1,998,760**	**2,069,876**	**2,132,278**
Net Current Assets / (Liabilities)	**578,135**	**1,355,103**	**435,811**	**1,078,129**	**2,128,109**	**2,931,586**	**4,157,323**	**5,620,126**
Non-Current Liabilities								
Borrowings	2,149,126	1,199,476	3,742,011	9,355,253	11,836,125	14,469,050	14,311,510	14,065,923
Total Liabilities	**3,812,749**	**2,966,687**	**5,911,276**	**11,247,485**	**13,627,763**	**16,467,810**	**16,381,386**	**16,198,200**
Net Assets / (Liabilities)	**8,587,048**	**10,708,398**	**28,220,990**	**25,129,092**	**24,967,884**	**24,829,913**	**25,058,631**	**25,718,823**

12.5.2 Defined Capital Works Program

The total estimated cost of NWC's committed capital works program up to 2009 is $19.4 billion. The proposed capital investment program is summarized in Appendix I along with profiles for the major projects. Most of the projects are focused on system rehabilitation but the program also includes projects that will increase water production capacity, extend potable water service coverage, increase wastewater treatment capacities and extend wastewater collection systems. Focus, however, will be on system rehabilitation to improve service reliability, water quality and the level of unaccounted for water (UFW).

The projects that were selected for inclusion in the capital works program were arrived at following a selection process developed by NWC. The main criteria used in this selection process included economic benefit to NWC, availability of financing, public health and environmental benefits to the population.

Information on each of the selected projects, setting out the estimated cost, areas to benefit, implementation period, incremental water to be produced, additional sewerage and sewage treatment capacities are also included in Appendix I.

12.5.3 Achievement of Specific Performance Targets

The proposed new tariff will allow NWC to meet the performance targets set out in section 4 of this document. These targets largely reflect those included in the OUR's regulatory framework document.

12.5.4 Affordable Water and Wastewater Charges

PricewaterhouseCoopers' report on *Review of Existing Tariffs and Regulatory System* identified a common benchmark that water/wastewater charges that exceed 5% of a households income are bordering on unaffordable.

Any increase above 45% would on average begin to exceed these levels for Jamaican households. However as noted above it is expected that although tariffs will increase by 42% the expected change in consumption behaviour due to the increase in price would result in an effective average increase of around 30%.

This combined with no real increases going forward in an economy where household income is increasing in real terms will ensure that water and wastewater bills on average remain affordable.

13 ALTERNATE TARIFF ADJUSTMENT SCENARIOS

Two alternate capital works programs have been developed which would enable NWC to provide even greater standards in the provision of water and sewerage services. However these capital programs are greater than the one used to derive the 42% increase and hence would require increases greater than 42%. Were the OUR to interested in achieving performance standards greater than those detailed above, NWC would be ready to open a dialogue on which projects could be included and what impact they would have on price.

14 FUTURE ADJUSTMENTS

Once the overall increase required to allow NWC to recover reasonable costs, we would be prepared to discuss in more detail the restructuring of the tariffs and the implementation strategy with the OUR. We propose to make the changes to the structure referred to in Section 11. We would also be prepared to consider any other changes the OUR may deemed necessary and feasible.

15 Documentation

Throughout this report reference has been made to reports and other mediums which contain supporting data and analysis for the requested tariff increase. The major ones are presented collectively below along with other relevant sources of information.

Item	Reference(s)
Financial viability under existing tariffs	PwC Final Report
Costing Approach	PwC Final Report
Operating Costs	Opening position: 2003 actuals, Forecasting approach: PWC Final Report
Asset Value	Delano Reid Asset Valuation Report
Regulatory Asset Base	PwC Final Report
WACC	PwC Final Report
Return on Capital	Combination of above
Depreciation	Delano Reid Asset Valuation Report
Capital Expenditure Details	Report being prepared by Vernon
Demand	PwC Demand Model Report
Performance Targets	Business Plan
Anything else you can think of that is relevant/contained in the reports already provided to OUR	