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# PDAM TIRTA KAHURIPAN KABUPATEN BOGOR

PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF  
INVESTMENT PROPOSAL

**FEBRUARY 2006**

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# PDAM TIRTA KAHURIPAN KABUPATEN BOGOR

## PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL

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# EXECUTIVE SUMMARY

## INTRODUCTION

This report presents a preliminary assessment of the investment programs of PDAM Kabupaten Bogor using as reference the Sub-Project Appraisal Report (SPAR) prepared under the Water Supply and Sanitation Project (WSSP) funded through ADB TA 4411-INO. The SPAR encompasses three discrete investment packages (one each for East Bogor, Central Bogor, and West Bogor) to be implemented from 2006 to 2013.

Prepared under the auspices of the Environmental Services Program (ESP) funded by the United States Agency for International Development (USAID), this report is meant to serve as basis for mobilizing commercial-loan financing for the investment program for East Bogor.

## ANALYSIS OF HISTORICAL PERFORMANCE (2001-2005)

PDAM Kabupaten Bogor had a production capacity of 2,099 liters per second (l/sec). Service was 24 hours in most of the coverage area. Non-revenue water (NRW) was at a high of 42.3% in 2001. Starting 2003, the PDAM has implemented a sustained program of water-loss reduction whose results can be gleaned from the decline in NRW to 39.6% in 2004 and then further to 36.9% in 2005. The PDAM operated a total of 33 water treatment facilities. Connections have grown by a yearly average of 7% since 2001, reaching 96,362 in 2005. Per capita daily consumption fluctuated between 143 and 155 liters per day (lcd), with a slightly declining trend between 2002 and 2005.

Excluding PDAM connections outside the boundaries of Kabupaten Bogor (41,000 in Depok and DKI Jakarta as well as 8,000 in Kota Bogor), domestic service ratios were 8% of the kabupaten population and 13% of the service area population in 2005. There were about 20,000 prospective customers in the PDAM's waiting list.

Recurrent costs at constant 2005 prices posted an increase of over 17% in 2003, but declined slightly in 2004. Real increase in personnel cost averaged over 6% per year. The number of employees per 1,000 connections was 8 in 2001 and less than 7 in 2005. Power cost increased by almost 6% per annum, chemicals by 6%, maintenance materials by almost 15%, overhead by almost 11%, and raw water by 5%. Overhead cost remained less than one-third of, but was growing faster than, personnel cost.

Average tariff increased in nominal terms by 20% in 2002, 22% in 2003, and 2% in 2004. Starting 1 October 2005, fuel prices were raised nationwide by an average of 120%. In response, effective 1 November 2005, the PDAM implemented a new tariff, which is on average 74% higher than the then existing tariff. At constant 2005 prices, average tariff for 2005 increased to Rp 2,206 from Rp 1,824 in 2004. Average monthly consumption per connection progressively declined from 28.8 m<sup>3</sup> in 2001 to 26.5 m<sup>3</sup> in 2005.

Accounts receivables surged in 2002 to 82 days of water sales and went down to 64 days in 2005. The write-off of bad debts averaged 0.32% of water sales, but was on a declining trend. Consumables inventory averaged 77 days cover; installation inventory was at 177 days. The PDAM's current ratio deteriorated from 4.2 in 2001 to 1.3 in 2004, before improving again to 2.6 in 2005. Its cash cover of operating costs likewise declined steeply from 8.9 months in 2001 to only 1.1 months in 2004, before going up to 3.3 in 2005.

The PDAM's outstanding long-term obligations consisted mostly of loans from the national government contracted between 1991 and 2000 with an aggregate original amount of Rp 30.9 billion. The PDAM has never incurred arrears on these loans.

The debt service coverage ratio (DSCR) remained at a safe level of 4.6 in 2005. In the same year, debt on debt plus equity was a mere 12%, indicating ample room for additional borrowing.

## **PROJECTED RESULTS FOR 2006**

For 2006, the PDAM plans to install 6,252 new connections, which represents an increase of almost 7% from 2005. Consumption per connection is projected to increase slightly to 26.8 m<sup>3</sup>. NRW is foreseen at 32.2% for a reduction of over four percentage points from the 2005 level. Average tariff at constant 2005 prices is projected at Rp 2,665 or Rp 2,884 at current prices. The said average tariff will then be higher than that which is estimated to be required for full-cost recovery of Rp 2,580 at constant 2005 prices or Rp 2,763 at current prices.

Overall, operating expenses are budgeted to increase by 13% with anticipated real increases in personnel of 13%, power 15%, maintenance materials 13%, overhead over 18%, and raw water 7%. Overhead thus maintains the previously observed trend of increasing faster than personnel cost. The cost of chemicals is however expected to decline by almost 5%.

Total tariff revenues are calculated at about Rp 99.5 billion. For the year, the PDAM expects a total net income of Rp 10.4 billion.

Accounts receivables are estimated at 63 days of water sales. The current ratio is expected to slightly decline to 2.4. Cash is likewise anticipated to decrease to 3.1 months of operating expenses from 3.3 in 2005. DSCR will improve significantly to 10.9, while debt will further shrink to 10% of debt plus equity.

## **PERFORMANCE OVERVIEW OF SERVICE REGIONS**

The PDAM's franchise area is served by 12 branches. These branches are, in turn, grouped under four service regions: Depok and DKI Jakarta, West Bogor, Central Bogor and Kota Bogor, and East Bogor. The present practice is to view each of the service regions as a more or less discrete area for investment planning.

About 43% of the PDAM's customers are located in Depok and DKI Jakarta. Consumptions per connection and per capita are highest in Kota Bogor and Central Bogor at 31 m<sup>3</sup> month and 170 liters per day, and lowest in East Bogor at 17 m<sup>3</sup> and 93 liters respectively.

Average revenue per connection is also highest in Depok and DKI Jakarta at Rp 42,000. Customers in East Bogor, however, pay the highest per cubic meter of water at Rp 2,518. West Bogor has the highest margins per unit of water sold at 89%. In absolute amount, however, East Bogor takes the distinction at Rp 930 again due to the much higher average per unit price of water sold in this area. Operating expenses and depreciation charges are also highest in East Bogor at Rp 638 per cubic meter of water sold.

## PDAM INVESTMENT PROPOSAL

The investment costs were first calculated under WSSP. The PDAM management was of the opinion, however, that the resulting cost figures were overstated, especially for procurement, as they were based on unit prices then prevailing in Jakarta. ESP assisted the PDAM in recalculating the costs of the investment program for East Bogor, while the PDAM itself undertook the recalculation of the costs for Central Bogor and West Bogor. In summary, the recalculation led to reductions in the investment costs for East Bogor and Central Bogor, but an increase in those for West Bogor.

Based on the recalculation, the combined costs of the investment programs at current prices are estimated at Rp 193.7 billion. Procurement accounts for the biggest share at 33% or Rp 63.6 billion followed closely by civil works at 32% or Rp 61.4 billion.

### Breakdown of Investment Costs (In Million Rp)

	<b>Consolidated</b>	<b>East Bogor</b>	<b>Central Bogor</b>	<b>West Bogor</b>
Procurement	63,610	22,171	20,076	21,363
Civil Works	61,414	20,911	29,885	10,617
Total, Base Prices	153,978	52,925	61,762	39,291
Total, Current Prices Inc. Contingencies	193,690	68,459	75,969	49,046

For East Bogor, the proposed investment consists of the construction of two new production units with a combined capacity of 150 l/sec and extension of the distribution system. The investment program for Central Bogor consists of three components: extension of the transmission and distribution network, installation of a new production unit with a capacity of 150 l/sec, and a non-revenue water reduction program. The investment program for West Bogor consists of: extension of the transmission and distribution network and installation of two new production units with combined capacity of 80 l/sec.

For East Bogor, 66.7% or Rp 45.8 billion of the investment cost is to be financed by a loan from a domestic commercial bank with a repayment period of seven years, including a two-year grace period, and annual interest of 17.0%. Loan from the ADB is slated to finance 70% or Rp 87.5 billion of the investment programs for Central and West Bogor, with a loan term of 25 years, including a five-year grace period, and an interest rate of 9.55% per annum.

### Financing Plan (In Million Rp)

<b>Service Region</b>	<b>ADB Loan</b>	<b>Comm'l Loan</b>	<b>Customers</b>	<b>Loc. Gov't</b>	<b>PDAM</b>	<b>Total</b>
East Bogor		45,759	18,111	516	4,288	<b>68,674</b>
West Bogor	34,333		7,479	816	6,419	<b>49,046</b>
Central Bogor	53,178		13,231	1,661	7,898	<b>75,969</b>
<b>Total</b>	<b>87,511</b>	<b>45,759</b>	<b>38,821</b>	<b>2,993</b>	<b>18,606</b>	<b>193,690</b>
<b>% of Total</b>	<b>45.2%</b>	<b>23.6%</b>	<b>20.0%</b>	<b>1.5%</b>	<b>9.6%</b>	<b>100.0%</b>

The commercial loan is scheduled to be disbursed in seven years, from 2007 to 2013, which would require that it is packaged in several tranches, with its tranche having its own repayment schedule. Investment for East Bogor in 2006 will be covered by the PDAM's internal cash generation and connection fees. The disbursement of the ADB loan will be from 2007 to 2009, which coincides with the implementation period of the investment programs for Central Bogor and West Bogor.

The costs of capital are computed based on the fund-sourcing mix presented in the financing plan. Opportunity costs of 12.5% and 6.0% are assumed for respectively government and customer contributions. On this basis, the nominal weighted average costs of capital (NWACC) are 10.9% for the consolidated investment program, 13.8% for East Bogor, 9.3% for Central Bogor, and 9.4% for West Bogor. The real weighted average costs of capital (RWACC) further assumes a long-term inflation rate of 5.5%, tax rate of 30%, and minimum rate test of 4%. On this basis, the RWACC for the consolidated investment program is 4.78%, for East Bogor 5.56%, Central Bogor 4.33%, and West Bogor 4.39%.

## **HIGHLIGHTS OF THE FINANCIAL PROJECTION**

A total of 30,704 new connections are to be generated, to be installed during a seven-year period from 2007 to 2013: 12,878 in East Bogor, 11,000 in Central Bogor, and 6,826 in West Bogor. Based on estimates of PDAM management, average consumption of ordinary households is 146 lcd and of very poor households, 116 lcd.

The production capacity of the system is assumed to increase to 2,479 l/sec in 2007 with the completion of new production units. Service is assumed to be 24 hours. NRW is assumed at 29.6% in 2007, finally settling between 20% and 21% from 2010 onward. A capacity utilization of 81% will be reached only during the last years of the financial projection, indicating ample room for a more aggressive generation of new connections and/or satisfying increased demand from existing and new customers without causing any strain on the PDAM's production and distribution facilities.

The personnel-to-connection ratio is projected to progressively improve to settle at 6 per 1,000 from 2008 onward.

Real annual increases in major cost components are assumed as follows: personnel 8% per employee, power 15.7% per m<sup>3</sup> of water produced, and chemicals 13.6% per m<sup>3</sup> of water produced. Maintenance materials are assumed at 3% of net assets. The write-off of bad debts will be at 0.6% of water sales. Overhead is maintained at 28.6% of personnel cost and raw water at constant 2005 prices will cost Rp 21 per m<sup>3</sup> of water produced. Again, it should be noted here that overhead has historically been increasing faster than personnel cost, such that it could very well break above the assumed level unless definitive steps are taken to contain it.

The PDAM management assumes positive nominal adjustment to average tariff of 42% in 2008 with effect on the seventh month of the year. Thereafter, tariff is projected to increase at a nominal rate of by 27.5% every two years, starting in 2010. At these rates of increase, the assumed average tariff will consistently exceed those required for basic- and full-cost recovery.

Using the real weighted average costs of capital (RWACC), the investment programs, as consolidated and individually, are deemed feasible with positive NPVs and FIRRs that exceed the hurdle rates. They all remain feasible even with a 10% increase in investment and incremental O&M costs or 10% reduction in incremental revenues. The investment program for West Bogor fails to surmount the combined impact of 10% increase in investment and incremental O&M costs and 10% reduction in incremental revenues, however.

Using the nominal weighted average costs of capital (NWACC), all the investment programs are likewise found to be feasible. Only the one for Central Bogor is however expected to withstand a 10% increase in investment and incremental O&M costs.

### **Feasibility Indicators**

	<b>Consolidated</b>		<b>East Bogor</b>		<b>Central Bogor</b>		<b>West Bogor</b>	
	<b>NPV</b>	<b>FIRR</b>	<b>NPV</b>	<b>FIRR</b>	<b>NPV</b>	<b>FIRR</b>	<b>NPV</b>	<b>FIRR</b>
Based on RWACC	155,726	13.1%	61,218	17.5%	69,909	12.1%	25,308	9.5%
Based on NWACC	22,357	13.1%	9,066	17.5%	15,400	12.1%	249	9.5%

The PDAM is projected to continue to generate net income after tax. Declines will however be experienced during the years when tariff is held constant.

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR  
PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**Extract Income Statement (In Rp Million)**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total Operating Revenues	151,653	207,921	224,787	277,069	288,825	355,946	371,498	448,929	472,496	568,535
Operating Expenses	97,998	130,623	163,867	198,981	224,319	251,322	278,367	306,838	339,463	374,639
Net Profit Before Tax	33,307	51,507	25,915	36,890	21,352	47,303	33,797	80,799	72,137	132,866
Income Tax	9,983	9,983	9,983	9,983	9,983	9,983	9,983	9,983	9,983	9,983
<b>Net Income Loss</b>	<b>23,323</b>	<b>36,064</b>	<b>18,149</b>	<b>25,832</b>	<b>14,955</b>	<b>33,121</b>	<b>23,667</b>	<b>56,568</b>	<b>50,505</b>	<b>93,015</b>
Retained Earnings	6,064	9,377	4,719	6,716	3,888	8,611	6,153	14,708	13,131	24,184
Return on Equity	13.5%	16.0%	7.2%	8.9%	4.8%	9.2%	6.0%	11.8%	9.2%	13.6%

The PDAM will continue to enjoy positive annual cash flows, except in 2011 when a cash decrease of Rp 169 million will be recorded. DSCR will always be above the statutory minimum level, however, with the lowest at 3.4 in 2013.

**Extract Sources and Applications of Funds (In Million Rp, Except Ratios)**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total Sources of Funds	129,333	129,806	126,418	106,596	96,918	119,479	119,005	162,624	175,507	236,902
Total Applications of Funds	124,226	90,443	118,136	75,070	97,087	98,655	105,969	92,714	105,218	102,204
Cash Increase (Decrease)	5,107	39,363	8,282	31,525	(169)	20,824	13,036	69,910	70,290	134,697
DSCR (Net Revenues)	15.1	22.9	3.9	4.8	4.6	3.6	3.4	6.5	8.3	12.5

Balance sheet projections assume 60-day accounts receivables and 30-day accounts payable. The inventory point for chemicals and maintenance materials is 30 days cover and for installation inventories, 70 days. The current ratio is found to be always at a safe level with the lowest at 1.7 in 2007. The debt on debt plus equity ratio rises, reaching 57.1% in 2009, after which it continually improves throughout the rest of the projection period. Cash remains at a safe level, with the lowest at 2.7 months of operating expenses in 2007.

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR  
PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**Extract Balance Sheet (In Million Rp, Except Ratios)**

	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Current Assets	46,438	96,168	106,907	147,509	150,965	183,493	199,989	283,506	358,006	508,912
Net Fixed Assets	99,115	198,593	244,163	289,138	291,303	307,840	311,490	312,889	311,424	309,838
<b>Total Assets</b>	<b>280,228</b>	<b>382,768</b>	<b>444,229</b>	<b>491,559</b>	<b>515,704</b>	<b>556,413</b>	<b>578,603</b>	<b>665,086</b>	<b>742,658</b>	<b>896,856</b>
Current Liabilities	26,819	49,650	52,660	58,248	63,543	71,303	68,848	80,350	90,273	116,337
Total Liabilities	107,604	156,826	190,637	200,494	202,463	195,387	182,726	187,653	191,299	211,031
<b>Total Equity and Liabilities</b>	<b>280,228</b>	<b>382,768</b>	<b>444,229</b>	<b>491,558</b>	<b>515,704</b>	<b>556,413</b>	<b>578,602</b>	<b>665,085</b>	<b>742,658</b>	<b>896,855</b>
Current Ratio	1.7	1.9	2.0	2.5	2.4	2.6	2.9	3.5	4.0	4.4
Debt on Debt Plus Equity	45.8%	50.6%	57.1%	51.0%	48.0%	37.5%	30.4%	22.8%	18.5%	13.9%

## **CONCLUSIONS**

The following observations and recommendations are offered regarding the PDAM's present operations:

1. Recurrent costs need to be carefully monitored and controlled, especially overhead.
2. Data in the 2004 audited financial statement suggest that the PDAM should take definitive steps to resolve the issue of increasing receivable from government agencies and the armed forces, as well as its high inventory levels.
3. The role of external parties in the development of the PDAM's water supply system needs to be standardized.
4. The presence of the PDAM in the territorial jurisdictions of other local governments needs to be secured by long-term franchise agreements.

## **INVESTMENT**

The following observations and recommendations are meant to further ensure that the desired/expected results from the investment programs are achieved:

1. The proposed investment programs are found feasible, even under adverse scenarios.
2. Assumptions on operating costs may however have to be revisited in view of current talks of an impending significant increase in the basic electricity tariff.
3. As a consequence of the foregoing, the costs of the investment programs may again have to be adjusted as prices of energy-intensive investment components rise.
4. The volume of the investment program may exert undue strain on the PDAM's implementation capacity.
5. The PDAM may need to launch a campaign to build constituency around the investment programs and their corresponding financing plans.
6. The 33 production facilities that are presently being operated and maintained could just be too much for the PDAM to be able to achieve maximum operational efficiency.

# I. INTRODUCTION

This report presents a preliminary assessment of the investment programs of PDAM Kabupaten Bogor. Prepared under the auspices of the Environmental Services Program (ESP) funded by the United States Agency for International Development (USAID), the report aims to ultimately serve as basis for mobilizing loans from domestic commercial banking system for the implementation of the investment program for East Bogor.

The report uses as reference the Sub-Project Appraisal Report (SPAR) Kabupaten Bogor. The said SPAR, dated September 2005, was prepared under the Water Supply and Sanitation Project (WSSP) funded through ADB TA 4411-INO. It already takes into account significant developments since the SPAR was published, however, including the tariff adjustment that was approved and made effective on 1 November 2005.

The SPAR encompasses three major investment packages (one each for West Bogor, Central Bogor, and East Bogor). While likewise analyzing all the three programs, this report places special emphasis on the investment program for East Bogor as the area of interest for ESP, this being the component intended for commercial-loan financing. As part of a more in-depth treatment of East Bogor, ESP conducted an investigation to ascertain water demand as well as the costs of the various components of the investment program based on prices prevailing in the kabupaten and the project-implementation experience of PDAM management. This resulted in the reduction of the investment cost by about 30% and the increase in number of targeted additional connections by about 10%, which were then subsequently incorporated in this report. Based on this precedent, the PDAM itself reviewed the costs of the investment programs for Central Bogor and West Bogor, the results of which have likewise been fully taken into account.

The report examines how the investment programs will affect the future operation of the water enterprise mainly from the financial standpoint. For this purpose, a 20-year financial projection has been prepared. Along with the financial feasibility of the investment programs, individually and taken as a whole, of particular interest is the debt-carrying capacity of PDAM Kabupaten Bogor under a financing scheme that uses a combination of central government on-lending, with concessionary terms and conditions, and ordinary bank borrowing under the prevailing domestic commercial banking practices.

The report can be divided essentially into the following parts:

1. Analysis of the PDAM's historical performance from 2001 to 2005
2. Work plan and budget for 2006
3. Overview of the existing conditions in each of the service regions for which the proposed investment programs are intended
4. Investment programs, as consolidated and individually for each of the target service regions
5. Highlights of the 20-year financial projection, including the underlying assumptions and indicators of the financial feasibility of the investment programs
6. Conclusions on, or more properly observations about, both the historical and future operation of the PDAM.



## 2. ANALYSIS OF HISTORICAL PERFORMANCE (2001-2005)

### 2.1. PRODUCTION AND DEMAND

PDAM Kabupaten Bogor had a production capacity of 2,099 liters per second (l/sec) from a combination of spring, surface, and ground water with surface water as the dominant source. The biggest increase was recorded in 2002 at 412 l/sec or 26% of the previous year's capacity. Service was 24 hours in most of the coverage area, although there were locations, especially in East Bogor, where water flowed only between 12 and 18 hours per day.

Non-revenue water (NRW) was at a high of 42.3% in 2001. Starting 2003, the PDAM has implemented a sustained program of water-loss reduction whose results can be gleaned from the decline in NRW to 39.6% in 2004 and then further to 36.9% in 2005.

Salient data on production capacity, capacity constraints, and water losses are shown in Table I.

**Table I Production Capacity, Capacity Constraints and Water Losses (2001-2005).**

	2001	2002	2003	2004	2005 (Un-audited)
Production Capacity (l/sec)	1,587	1,999	2,027	2,099	2,099
Production Volume (m <sup>3</sup> /year)	45,369	46,537	48,091	49,056	48,616
Distribution Volume (m <sup>3</sup> /year)	40,897	46,386	47,990	48,985	48,616
Volume Sold to Consumers (m <sup>3</sup> /year)	26,196	29,087	28,409	29,645	30,698
Water Losses (%)	42.26%	37.50%	40.93%	39.57%	36.86%
Ratio of Production to Consumption	1.7	1.6	1.7	1.7	1.6

Kabupaten Bogor had a population of almost 3.6 million in 2005 with a projected annual growth rate of 3.2%. The service area population stood at almost 2.1 million, or 58% of the kabupaten population, growing at a much lower rate of 1% per year.

Connections have grown by a yearly average of 7% since 2001. Household connections represented nearly 97% of total connections and 82% of consumption in 2005. PDAM calculates its service coverage on the basis of 5 persons per ordinary household connection, 7 persons per very poor household connection, and 100 persons per public tap. Domestic service ratios at the end of 2005 were 14.3% in terms of the entire population of Kabupaten Bogor and 25.0% in terms of the service area population. Domestic daily consumption

fluctuated between 155 and 143 liters per capita per day (lcd), with a slightly declining trend between 2002 and 2005.

Data pertaining to connection and water demand are presented in *Table 2*.

**Table 2 Connection and Water Demand.**

	2001	2002	2003	2004	2005 (Un-audited)
Household Connections (No.)	70,426	73,732	80,367	85,135	91,539
Unit Consumption (lcd)	143	155	151	153	152
Non-Domestic Connections (No.)	1,939	2,037	2,522	2,529	2,449
Unit Consumption (m <sup>3</sup> /day)	9.6	9.6	5.8	5.2	5.7
Total Connections	75,880	78,939	85,426	89,878	96,362
Annual Change (No.)		3,059	6,487	4,452	6,484
Domestic Service Ratio-Kab Bogor(%)	12.7%	12.9%	13.4%	13.8%	14.3%
Domestic Service Ratio-Service Area (%)	23.2%	22.2%	23.3%	23.7%	25.0%

The foregoing figures on domestic service ratios are however misleading as they include those that are outside the boundaries of Kabupaten Bogor. PDAM Kabupaten Bogor serves around 41,000 connections in Depok, which was spun off from the kabupaten in 1999, and DKI Jakarta as well as another 8,000 connections in Kota Bogor. If these were all taken into account, in 2005 the domestic service ratios within what might be called the PDAM's franchise area would be less than half of what is presently recognized, that is, only about 7% of the kabupaten population and 13% of the service area population.

The very low service reach implies huge potential demand, which is further substantiated by about 20,000 prospective customers now in the PDAM's waiting list. The very low coverage within its franchise area is what is prompting the PDAM to focus its investments toward expanding service reach within the territorial boundaries of Kabupaten Bogor.

## 2.2. FINANCIAL PERFORMANCE

### 2.2.1. RECURRENT COSTS

At constant 2005 prices, recurrent costs posted the highest increase of over 17% in 2003 following the tariff increase in 2002. In aggregate, these declined by almost 3% in 2004 before increasing again by almost the same magnitude in 2005.

Much of the steep increase in 2003 was due to the increase in personnel cost of over 23%, even as head count declined from 617 in 2002 to 604. This may be considered usual, as it is the practice of PDAMs to allocate a substantial portion of the tariff increase for personnel

welfare, including salary adjustments. For the five-year period under review, increase in personnel cost had, however, averaged only 6%. The number of employees per 1,000 connections stood at over 8 in 2001 and gradually declined to 7 in 2005.

Power cost increased by almost 6% per annum, maintenance materials by 15%, overhead by 11%, and raw water by 5%. Overhead cost remained less than one-third of salary cost, which is considered a very reasonable indicator, although it had been increasing at a faster rate than salary cost.

The PDAM's recurrent costs for the five-year period under review are shown in *Table 3*.

**Table 3 PDAM Unit Costs (Rp per m<sup>3</sup> of Water Sold) At 2005 Constant Prices.**

	2001	2002	2003	2004	2005 (Un-audited)	Ave. Increase
Personnel	568	598	736	711	715	6.3%
Power (Operational)	260	288	312	321	326	5.9%
Chemicals	100	75	88	86	90	6.3%
Maintenance Materials	123	173	160	142	193	14.5%
Overhead	139	166	220	216	198	10.5%
Raw Water	25	15	26	25	22	4.5%
<b>Total</b>	<b>1,216</b>	<b>1,315</b>	<b>1,542</b>	<b>1,501</b>	<b>1,544</b>	
<b>% Year-on-Year Change</b>		<b>8.16%</b>	<b>17.30%</b>	<b>-2.70%</b>	<b>2.87%</b>	<b>7.74%</b>

## 2.2.2. TARIFF

The tariff structure is typical of PDAMs throughout Indonesia, being based on blocks of consumption, with high-income households and commercial/industrial consumers subsidizing low-income households and social services. Tariff increase was implemented in mid-2002, with the tariff for the 0-10m<sup>3</sup> consumption band for consumer Group IIIA (low-income households) amounting to Rp 950.

Overall, average tariff increased by 20% in 2002, by 22% in 2003, and by a mere 2% in 2004. The sharp rise in 2003 seemed to have arrested the increase in average monthly consumption per connection, which rose to 30.7 m<sup>3</sup> in 2002 from 28.8 m<sup>3</sup> in 2001 then went down in 2003 to 27.7 m<sup>3</sup> and further to 27.5 m<sup>3</sup> in 2004. Nevertheless, throughout the four-year period average consumption remained in the third and highest tariff block (more than 20 m<sup>3</sup> per month).

Effective 1 October 2005, the national government raised fuel prices by an average of over 100%. In response, on 1 November 2005 the PDAM implemented a new tariff, which was on average about 74% higher than the previous one. A comparison of the old and new tariffs is presented in *Table 4*.

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**Table 4 Comparison of Old and New Tariffs.**

TYPE OF CONNECTION/CUSTOMER		OLD TARIFF (1 July 2002-31 October 2005) In Rp			NEW TARIFF (As of 1 November 2005) In Rp			% INCREASE		
		0-10 m <sup>3</sup>	11-20 m <sup>3</sup>	>20 m <sup>3</sup>	0-10 m <sup>3</sup>	11-20 m <sup>3</sup>	>20 m <sup>3</sup>	0-10 m <sup>3</sup>	11-20 m <sup>3</sup>	>20 m <sup>3</sup>
<b>GROUP I</b>	Public Toilets, Hydrants, Water Terminals, Places of Worship	390	390	390	970	970	970	149%	149%	149%
<b>GROUP II</b>	<b>IIA</b> Health Centers, Government Hospitals, Public Schools, Educational Foundations	550	550	1,170	1,300	1,500	2,800	136%	173%	139%
	<b>IIB</b> Very Low Cost Housing	620	620	1,300	1,300	1,500	2,800	110%	142%	115%
<b>GROUP III</b>	<b>IIIA</b> Low-Cost Housing	950	950	1,900	1,600	2,990	3,410	68%	215%	79%
	<b>IIIB</b> Medium-Class Housing	1,350	1,350	2,700	2,030	3,270	3,840	50%	142%	42%
	<b>IIIC</b> Government Agency	1,175	1,175	2,100	1,700	3,130	3,410	45%	166%	62%
<b>GROUP IV</b>	<b>IVA</b> Luxury Housing	1,450	1,450	2,800	2,560	3,550	4,120	77%	145%	47%
	<b>IVB</b> Small Commercial Establishment	1,550	1,550	2,800	2,990	3,840	4,270	93%	148%	53%
	<b>IVC</b> Small Industrial Establishment	1,950	1,950	3,000	3,560	4,130	4,550	83%	112%	52%
	<b>IVD</b> Big Commercial Establishment	4,550	4,550	4,550	6,260	6,260	6,260	38%	38%	38%
	<b>IVE</b> Big Industrial Establishment	4,550	4,550	4,550	6,260	6,260	6,260	38%	38%	38%
<b>SPEC. GROUP</b>	University of Indonesia	1,300	1,300	1,300	2,620	2,620	2,620	102%	102%	102%
	PAM Jaya/PT. TPJ	675	675	675				NA	NA	NA
	Yayasan Anggraini Bhakti				1,870	1,870	1,870	NA	NA	NA

This further dampened monthly consumption to 26.5 m<sup>3</sup> per connection. As the new tariff structure was applied only during the last two months of the year, average tariff per m<sup>3</sup> of water sold increased by 36% in nominal terms and by 20% in real terms.

In 2001, average tariff exceeded the levels required to cover O&M, depreciation, and debt service. Starting 2002, however, it was sufficient to cover only O&M cost, as shown in *Table 5*.

**Table 5 Relationship of Tariff to Cost (Rp at Constant 2005 Prices)**

	2001	2002	2003	2004	2005 (Un-audited)
Weighted Average Tariff per m <sup>3</sup>	2,070	1,932	2,025	1,834	2,206
O&M per m <sup>3</sup> Water Sold	1,216	1,315	1,542	1,501	1,544
Depreciation + Interest	1,760	1,800	2,197	2,191	2,231
Full-Cost Recovery	1,945	1,955	2,428	2,478	2,449

### 2.2.3. ACCOUNTS RECEIVABLE

Accounts receivable surged in 2002 to 82 days of water sales. While this improved in later years to finally settle at 64 days in 2005, the performance was still below par, compared for example to PDAM Kota Bogor, which stood at 50 days during the same period. The write-off of bad debts was on a declining trend and remained below the national average, as shown in *Table 6*.

**Table 6 Collection Efficiencies.**

	2001	2002	2003	2004	2005 (Un-audited)
Days Accounts Receivable	63	82	63	62	64
Bad Debts as % of Water Sales	0.47%	0.35%	0.29%	0.27%	0.19%

In 2004 accounts receivable increased in absolute amount by almost Rp 162 million from the level in 2003. Those under three months, which are considered active, also fell to 57% of the total from 64% at the end of the previous year. Those due from government agencies and the armed forces, which can neither be aged nor written off, increased as a proportion of the total from 29% to 37% or from Rp 2.3 billion in 2003 to almost Rp 3 billion in 2004.

### 2.2.4. INVENTORY MANAGEMENT

PDAM keeps consumables on the current assets side of the balance sheet and classifies investment materials as long-term assets. The consumables inventory accounting is based on the FIFO system. This seemed to be excessive at 77 days cover on average during the five-year period under review compared, for instance, to PDAM Kota Bogor's 30 days or less. Similarly, installation inventory was at 177 days cover.

An item in the balance sheet consists of fixed assets (pumps and transmission and distribution pipes), which have never been used. These have been carried at a gross book value of Rp 454.4 million.

## 2.2.5. CURRENT RATIO AND CASH FLOW

The PDAM's current ratio has deteriorated even with the tariff increase in 2002. Also, other receivables rose sharply, by almost four times in 2004 compared to the level in 2003. Similarly, its cash cover of operating costs (excluding interest payments) continued on a steep decline, settling at only 1.1 months in 2004. All these were reversed by the tariff increase implemented in 2005, however: current ratio improved to 2.6 and cash to 3.3 months of operating expenses, as shown in *Table 7*.

**Table 7 Current Ratio and Cash Flow.**

	2001	2002	2003	2004	2005 (Un-audited)
Current Ratio	4.2	2.3	1.1	1.3	2.6
Cash = No. of Mo. of Operating Expenses	8.9	3.3	1.7	1.1	3.3

## 2.2.6. OUTSTANDING LOANS AND DEBT-SERVICE CAPACITY

The PDAM's outstanding long-term loans from the national government through the Ministry of Finance are summarized in *Table 8*.

**Table 8 Outstanding Long-Term Loans.**

Loan	Date Contracted	Original Amount (Rp)
SLA-629/DDI/1991	30 December 1991	224,888,763
SLA-576/DDI/1991	14 August 1991	9,474,171,414
RDA-89/DDI/1992	25 June 1992	2,959,472,000
RDA-96/DDI/1992	7 August 1992	74,259,000
SLA-717/DP3/1993	10 August 1993	14,951,325,571
RDA-200/DP3/1994	15 April 1994	1,284,023,000
SLA 4138/DD3/2000	15 July 2000	1,973,584,000

In addition to the above, the PDAM has a loan with an original value of about Rp 954 million from the West Java Development Bank for the establishment and initial operation of its Amiral Branch. This loan was contracted on 1 November 2001 and should have been fully paid by 15 November 2005. There is a lease-purchase agreement for the procurement of motor vehicles also for the Amiral Branch.

All through the years, the PDAM has been able to make timely payments on both principals and interests of the aforementioned loans as they fall due.

In the absence of any additional sizeable loan during the five-year period under review, the PDAM had been able to maintain more than adequate levels of debt service coverage ratios. It likewise had a healthy and improving gearing (debt on debt plus equity) ratio, indicating its capacity to absorb more loans to finance any future investment, as shown in *Table 9*.

**Table 9 Indicators of Debt-Service and Borrowing Capacity.**

	2001	2002	2003	2004	2005 (Un-audited)
DSCR Based on Net Revenue	3.6	4.4	5.0	5.5	4.6
Debt on Debt Plus Equity	31%	29%	22%	16%	12%

The free-of-charge transfer by real estate developers of water supply fixed assets in new residential estates to PDAM for operation and maintenance at PDAM's own cost and care has played an increasingly important role in the development of the PDAM's water supply system in recent years. There had also been cases wherein previously self-contained systems, such as the one in the Bogor National Park, were turned over to PDAM. The value of these assets as well as to what extent they account for the PDAM's total equity and the additional depreciation-cost burden they impose upon the water supply enterprise could however not be ascertained from available references. Based on expressed intentions of its management, the PDAM expects real estate developers to continue to play a significant role, especially in the extension of its distribution network.



### 3. WORK PLAN AND BUDGET FOR 2006

For 2006, the PDAM plans to install 6,252 new connections, which represents an increase of almost 7% from 2005. Consumption per connection is projected to increase slightly to 26.8 m<sup>3</sup>. NRW is foreseen at 32.2% for a reduction of over four percentage points from the 2005 level, as the PDAM's water-loss reduction program continues to bear positive results. Average tariff at constant 2005 prices is projected at Rp 2,665 or Rp 2,884 at current prices, reflecting the full-year application of the tariff increase in 2005. The said average tariff will then be higher than that which is estimated to be required for full-cost recovery of Rp 2,580 at constant 2005 prices or Rp 2,763 at current prices.

Overall, operating expenses are budgeted to increase by 13% with anticipated real increases in personnel of 13%, power 15%, maintenance materials 13%, overhead over 18%, and raw water 7%. Overhead thus maintains the previously observed trend of increasing faster than personnel cost. The cost of chemicals is however expected to decline by almost 5%, as shown in *Table 10*.

**Table 10 Unit Cost per m<sup>3</sup> of Water Sold (Rp at Constant 2005 Prices).**

	<b>2005 (Un-audited)</b>	<b>2006 (Budget)</b>	<b>Increase/ (Decrease)</b>
Personnel	715	809	13.2%
Power (Operational)	326	375	14.9%
Chemicals	90	85	-4.6%
Maintenance Materials	193	218	12.9%
Overhead	198	235	18.4%
Raw Water	22	23	7.0%
<b>Total</b>	<b>1,544</b>	<b>1,745</b>	<b>13.1%</b>

Total tariff revenues are calculated at about Rp 99.5 billion. For the year, the PDAM expects a total net income of Rp 10.4 billion.

Accounts receivables are estimated at 63 days of water sales. The current ratio is expected to slightly decline to 2.4. Cash is likewise anticipated to decrease to 3.1 months of operating expenses from 3.3 in 2005. DSCR will improve significantly to 10.9, while debt will further shrink to 10% of debt plus equity.



## 4. PERFORMANCE OVERVIEW OF SERVICE REGIONS

### 4.1. GENERAL

The PDAM's franchise area is served by 12 branches. These branches are, in turn, grouped under four service regions, as presented in *Table II*. A map of the franchise area is presented in *Figure I*.

**Table II Service Regions and Branches.**

<b>Service Region</b>	<b>Branches</b>	<b>Coverage Area</b>
Depok and DKI	Branch I	
	Branch II	
	Branch III	
	Branch IV	
West Bogor	Branch V	
	Branch VI	
	Branch VII	
	Branch VIII	
Central Bogor and Kota Bogor	Branch X	
	Branch XI	
East Bogor	Branch IX	
	Gunung Putri	

The present practice is to view each of the service regions as a more or less discrete area for investment planning. An overview of the performance of each service region, therefore, would serve to provide an additional perspective from which any proposed investment program of the PDAM may be assessed. The analysis provided in the following paragraphs is based on the interim results of the PDAM's operations until September 2005.

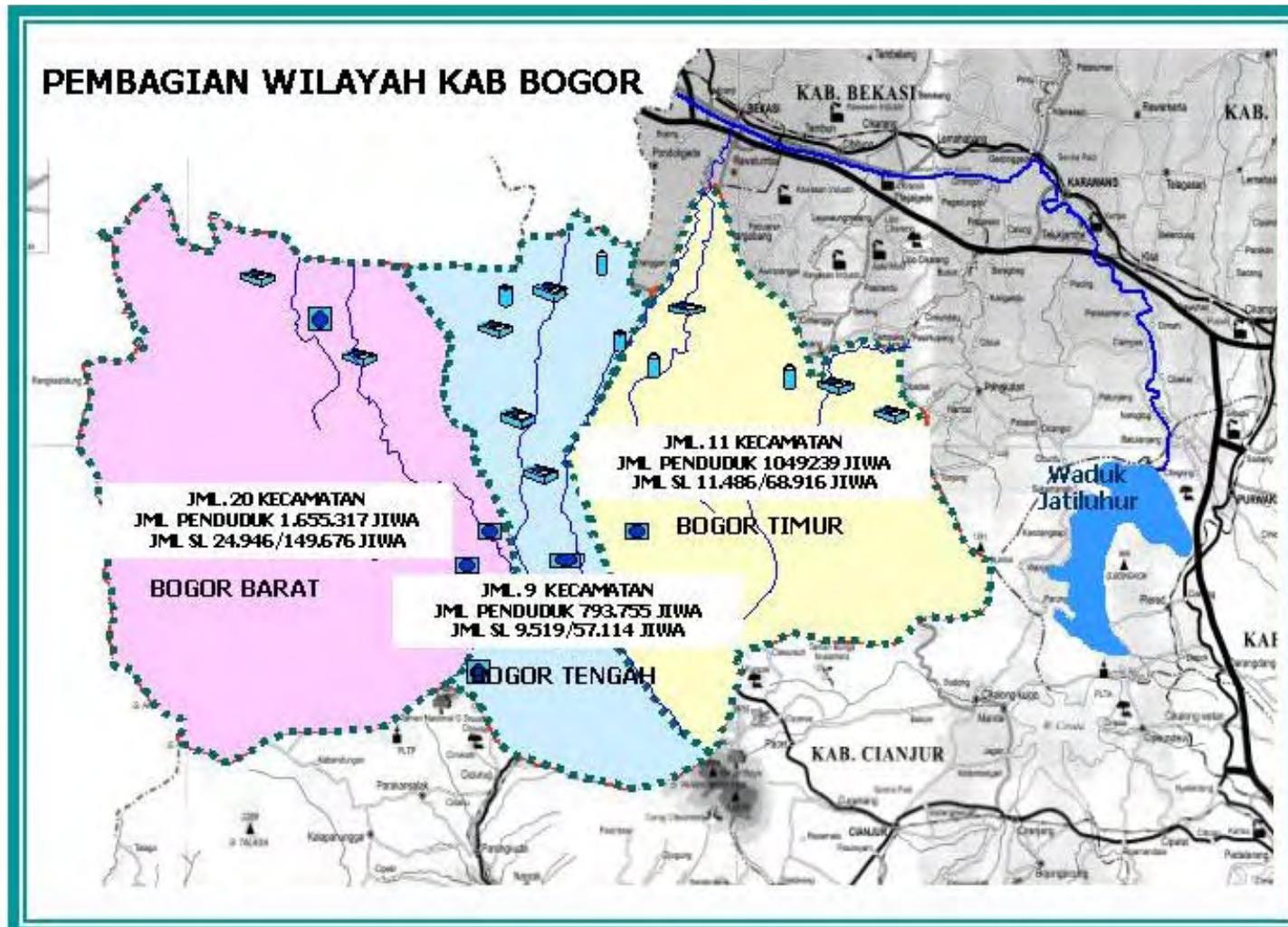


Figure 1 Map of the Franchise Area of PDAM Kabupaten Bogor.

## 4.2. WATER DEMAND

About 43% of the PDAM's customers are located in Depok and DKI Jakarta. Consumptions per connection and per capita are highest in Kota Bogor and Central Bogor at 31 m<sup>3</sup> month and 170 liters per day, and lowest in East Bogor at 17 m<sup>3</sup> and 93 liters respectively. The reason cited by the PDAM for the low consumption in East Bogor is that service in a significant portion of the region is less than 24 hours a day. This has already been rectified by the end of September 2005, however, such that the estimated consumption per connection would already be between 23-25 m<sup>3</sup> per month. An overview of water demand in each of the service regions is presented in *Table 12*.

**Table 12 Water Consumption per Service Region.**

Service Area	No. of Active Connections	Vol. of Water Sold (000 m <sup>3</sup> )	Consumption per Connection (m <sup>3</sup> /Month)	Consumption per Capita (Liters/Day)
Depok + DKI	41,267	10,325	25	139
West Bogor	31,813	7,699	24	134
Central Bogor + Kota Bogor	10,009	3,065	31	170
East Bogor	12,587	2,109	17	93

## 4.3. REVENUE

Average revenue per connection is also highest in Depok and DKI, followed by West Bogor. While registering the lowest average monthly bill, customers in East Bogor are actually paying the highest per cubic meter of water, which is a clear indication that these customers are in the higher tariff brackets, most probably luxury houses as well as commercial and industrial establishments. Average monthly water bill per connection in East Bogor would therefore have been higher had there been 24-hour service and sufficient water pressure as price seems to be not a constraint to demand in this region. The revenue breakdown for each service region is presented in *Table 13*.

**Table 13 Water Consumption per Service Region.**

Service Area	Ave. Water Sales Rev. (Rp 000/ Month)	Ave. Rev. per Connection (Rp/Month)	Ave. Revenue per m <sup>3</sup> of Water Sold
Depok + DKI	1,736,203	42,072	1,682
West Bogor	1,187,419	37,325	1,542
Central Bogor + Kota Bogor	556,703	55,620	1,816
East Bogor	531,222	42,204	2,518

## 4.4. PROFITABILITY

West Bogor has the highest margins per unit of water sold at 89%. In absolute amount, however, East Bogor takes the distinction at Rp 930 again due to the much higher average per unit price of water sold in this area. Operating expenses and depreciation charges are also highest in East Bogor, which could be traceable to the large number of water production and treatment facilities in this service region. An overview of the margins derived from each service region is in *Table 14*.

**Table 14 Margins on Water Sales Revenue per Service Region.**

Service Area	Operating Exp. per m3 of Water Sold	Depreciation Charges per m3 of Water Sold	Operating Margin per m3 of Water Sold		Margin After Dep. per m3 of Water Sold	
			Amount (Rp)	As % of Water Revenue	Amount (Rp)	As % of Water Revenue
Depok + DKI	268	637	1,413	84%	777	46%
West Bogor	171	658	1,371	89%	713	46%
Cental Bogor + Kota Bogor	638	520	1,178	65%	658	36%
East Bogor	638	950	1,880	75%	930	37%

# 5. PDAM INVESTMENT PROPOSAL

## 5.1. SCOPE AND COST

### 5.1.1. CONSOLIDATED INVESTMENT PROGRAM

A medium-term investment program has been prepared for each of the service regions of East Bogor, Central Bogor, and West Bogor. The combined costs of the investment programs at current prices are estimated at Rp 193.7 billion. Procurement accounts for the biggest share at 33% or Rp 63.6 billion followed closely by civil works at 32% or Rp 61.4 billion.

The bulk of the investment will be implemented during the period 2007-2010. Preparatory works, including land acquisition, however, will already start in 2006. In addition, residual works, mainly for installing new connections, will extend up to 2013.

The aggregated costs of the investment programs are presented in *Table 15*.

### 5.1.2. EAST BOGOR

The proposed investment consists of basically two discrete components:

1. Construction of a new production unit, including intake facilities and treatment plant, with a capacity, of 150 l/sec
2. Extension of the distribution system, which is forecast to yield a total of 12,878 new connections during the seven-year period covered by the investment program.

Details of the program are in *Annex A-1*.

For the location of the new production unit, the PDAM considered the following options:

1. Option 1: Two intakes and two treatment plants, one in Bojong Kolor with a capacity of 100 l/sec and another in Bojong Nangka with a capacity of 50 l/sec
2. Option 2: Intake and treatment plant in Bojong Kolor with capacity of 100 l/sec
3. Option 3: Intake and treatment plant in Bojong Kolor with capacity of 150 l/sec
4. Option 4: Intake and treatment plant in Bojong Nangka with capacity of 150 l/sec

Under the assistance of ESP, PDAM management has decided to construct one treatment plant with a capacity of 50 l/sec on Bojong Kolor and another in Bojong Nangka with a capacity of 100 l/sec. The total cost of the program is estimated at Rp 68.5 billion. Procurement cost accounts for 32% or Rp 22.2 billion, and civil works 31% or Rp 20.9 billion. A breakdown of the cost of the investment program for East Bogor is presented in *Table 16*.

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**Table 15 Cost Breakdown of the Consolidated Investment Program of PDAM Kabupaten Bogor (In Rp Million).**

	2006	2007	2008	2009	2010	2011	2012	2013	Total	% of Total
Procurement		25,031	16,717	14,449	1,092	520			<b>57,809</b>	<b>29.8%</b>
Procurement – Connections	434	783	757	783	1,754	492	434	362	<b>5,801</b>	<b>3.0%</b>
Civil Works		34,581	7,827	14,331	728	347			<b>57,814</b>	<b>29.8%</b>
Civil Works – Connections	290	575	553	575	749	328	290	241	<b>3,600</b>	<b>1.9%</b>
Land Acquisition	156	1,182	1,066	589					<b>2,993</b>	<b>1.5%</b>
Design	1,124	2,638	1,192	534	131				<b>5,618</b>	<b>2.9%</b>
Supervision	749	1,759	794	356	87				<b>3,745</b>	<b>1.9%</b>
Administration	22	1,554	673	768	66	42	18	15	<b>3,158</b>	<b>1.6%</b>
Taxes and Duties	260	6,537	2,784	3,103	454	169	72	60	<b>13,439</b>	<b>6.9%</b>
<b>Total, Base Prices</b>	<b>3,035</b>	<b>74,641</b>	<b>32,363</b>	<b>35,487</b>	<b>5,061</b>	<b>1,898</b>	<b>814</b>	<b>678</b>	<b>153,978</b>	<b>79.5%</b>
Physical Contingencies	51	4,806	1,712	2,252	290	118	51	42	<b>9,322</b>	<b>4.8%</b>
Financial Contingencies	219	10,321	6,544	9,722	1,749	806	412	402	<b>30,175</b>	<b>15.6%</b>
<b>Total, Current Prices Incl. All Contingencies</b>	<b>3,304</b>	<b>89,768</b>	<b>40,619</b>	<b>47,461</b>	<b>7,100</b>	<b>2,822</b>	<b>1,392</b>	<b>1,223</b>	<b>193,690</b>	<b>100.0%</b>

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR  
PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**Table 16 Cost Breakdown of the Investment Program for East Bogor (In Rp Million).**

	2006	2007	2008	2009	2010	2011	2012	2013	Total	% of Total
Procurement		6,607	286	9,974	1,092	520			<b>18,479</b>	<b>27.0%</b>
Procurement – Connections	434	492	492	492	492	492	434	362	<b>3,692</b>	<b>5.4%</b>
Civil Works		6,843	191	10,341	728	347			<b>18,450</b>	<b>27.0%</b>
Civil Works – Connections	290	328	328	328	328	328	290	241	<b>2,461</b>	<b>3.6%</b>
Land Acquisition	156		360						<b>516</b>	<b>0.8%</b>
Design	1,124	627	131	131	131				<b>2,143</b>	<b>3.1%</b>
Supervision	749	418	87	87	87				<b>1,429</b>	<b>2.1%</b>
Administration	22	357	41	528	66	42	18	15	<b>1,090</b>	<b>1.6%</b>
Taxes and Duties	260	1,532	152	2,135	286	169	72	60	<b>4,665</b>	<b>6.8%</b>
<b>Total, Base Prices</b>	<b>3,035</b>	<b>17,204</b>	<b>2,069</b>	<b>24,016</b>	<b>3,210</b>	<b>1,898</b>	<b>814</b>	<b>678</b>	<b>52,925</b>	<b>77.3%</b>
Physical Contingencies	51	1,072	91	1,590	185	118	51	42	<b>3,200</b>	<b>4.7%</b>
Financial Contingencies	219	2,374	415	6,597	1,109	806	412	402	<b>12,334</b>	<b>18.0%</b>
<b>Total, Current Prices Incl. All Contingencies</b>	<b>3,304</b>	<b>20,650</b>	<b>2,574</b>	<b>32,203</b>	<b>4,504</b>	<b>2,822</b>	<b>1,392</b>	<b>1,223</b>	<b>68,459</b>	<b>100.0%</b>

### 5.1.3. CENTRAL BOGOR

The investment program for Central Bogor consists of the following:

1. Extension of the transmission and distribution network, which will generate a total 11,000 new connections
2. Installation of a new production unit with a capacity of 150 l/sec.

The details of the program, as recalculated by the PDAM itself, are provided in *Annex A-2*.

The cost of the investment program at current prices is estimated at almost Rp 76 billion. Civil works account for the biggest share at Rp 29.9 billion or 39% of the total. Procurement's share is 26% or Rp 20.1 billion. A breakdown of the cost of the investment program for Central Bogor is presented in *Table 17*.

**Table 17 Cost Breakdown of the Investment Program for Central Bogor (In Rp Million).**

	2007	2008	2009	2010	Total	% of Total
Procurement	13,290	3,023	2,228		18,541	24.4%
Procurement – Connections	212	212	212	900	1,535	2.0%
Civil Works	23,757	2,921	2,369		29,047	38.2%
Civil Works – Connections	180	180	180	300	839	1.1%
Land Acquisition	856	430	375		1,661	2.2%
Design	1,608	284	225		2,118	2.8%
Supervision	1,072	189	150		1,412	1.9%
Administration	957	169	134		1,261	1.7%
Taxes and Duties	4,012	681	536	120	5,349	7.0%
<b>Total, Base Prices</b>	<b>45,945</b>	<b>8,088</b>	<b>6,408</b>	<b>1,320</b>	<b>61,762</b>	<b>81.3%</b>
Physical Contingencies	3,069	472	377	75	3,992	5.3%
Financial Contingencies	6,367	1,644	1,748	456	10,215	13.4%
<b>Total, Current Prices Incl. All Contingencies</b>	<b>55,381</b>	<b>10,204</b>	<b>8,533</b>	<b>1,851</b>	<b>75,969</b>	<b>100.0%</b>

### 5.1.4. WEST BOGOR

The investment program for West Bogor consists of the following:

1. Extension of the transmission and distribution network to serve a total of 6,826 new connections
2. Installation of two new production units with combined capacity of 80 l/sec.

The details of the program, based on the recalculation done by the PDAM, are provided in *Annex A-3*.

The cost of the investment program at current prices is estimated at slightly over Rp 49 billion. Procurement accounts for the biggest share at Rp 21.3 billion or 44% of the total. Civil works amount to Rp 10.6 billion or 22% of the total. A breakdown of the cost of the investment program for West Bogor is presented in *Table 18*.

**Table 18 Cost Breakdown of the Investment Program for West Bogor (In Rp Million).**

	2007	2008	2009	2010	Total	% of Total
Procurement	5,134	13,408	2,248		<b>20,789</b>	<b>42.4%</b>
Procurement – Connections	79	53	79	362	<b>574</b>	<b>1.2%</b>
Civil Works	3,981	4,715	1,621		<b>10,317</b>	<b>21.0%</b>
Civil Works – Connections	67	45	67	121	<b>300</b>	<b>0.6%</b>
Land Acquisition	326	276	214		<b>816</b>	<b>1.7%</b>
Design	403	777	178		<b>1,357</b>	<b>2.8%</b>
Supervision	268	518	118		<b>905</b>	<b>1.8%</b>
Administration	240	462	106		<b>808</b>	<b>1.6%</b>
Taxes and Duties	993	1,952	431	48	<b>3,424</b>	<b>7.0%</b>
<b>Total, Base Prices</b>	<b>11,492</b>	<b>22,206</b>	<b>5,062</b>	<b>531</b>	<b>39,291</b>	<b>80.1%</b>
Physical Contingencies	665	1,149	285	30	<b>2,130</b>	<b>4.3%</b>
Financial Contingencies	1,579	4,485	1,378	183	<b>7,626</b>	<b>15.5%</b>
<b>Total, Current Prices Incl. All Contingencies</b>	<b>13,736</b>	<b>27,840</b>	<b>6,725</b>	<b>745</b>	<b>49,046</b>	<b>100.0%</b>

## 5.2. FINANCING PLAN

For East Bogor, 66.7% or Rp 45.8 billion of the investment cost is proposed to be financed by a loan from a domestic commercial bank. Terms of the loan are based on the most recent experiences of PDAMs that have successfully tapped similar funding sources. The repayment period is seven years, including a two-year grace, and annual interest of 17.0%. The disbursement of the loan, in view of the preparation that needs to be completed, is assumed to start in 2007, or one year after the start of the implementation of the investment program. Investment in 2006 will be financed mainly by the PDAM's internal cash generation and, to a very limited extent, by equity contribution from the local government basically for land acquisition. The rest of the investment requirement is assumed to be covered through contributions from customers (Rp 18.1 billion), local government equity (Rp 0.5 billion), and the PDAM's internal cash generation (Rp 4.3 billion).

In view of the relatively drawn out implementation period, during which loan financing will be required, and the short grace period usually granted by domestic commercial banks, the loan may have to be disbursed in several tranches, with each tranche having a repayment schedule of its own.

Loan from the ADB, which will then be channeled to the PDAM through a sub-loan agreement (SLA) with the central government through the Ministry of Finance, is slated to finance 70% or Rp 87.5 billion of the investment programs for Central and West Bogor. The loan term is 25 years, including a five-year grace period during which interest on the disbursed portion will be capitalized. It carries an interest rate of 9.55% per annum. Similarly, the remaining investment cost will be funded through contributions from customers (Rp 20.7 billion), local government equity (Rp 2.5 billion), and the PDAM's internal cash generation (Rp 14.3 billion).

The financing plan for the investment programs is shown in *Table 19*.

**Table 19 Financing Plan (In Rp Million).**

Service Region	ADB Loan	Comm Loan	Custom-ers	Loc. Gov't	PDAM	Total
East Bogor		45,759	18,111	516	4,288	<b>68,674</b>
West Bogor	34,333		7,479	816	6,419	<b>49,046</b>
Central Bogor	53,178		13,231	1,661	7,898	<b>75,969</b>
<b>Total</b>	<b>87,511</b>	<b>45,759</b>	<b>38,821</b>	<b>2,993</b>	<b>18,606</b>	<b>193,690</b>
<b>% of Total</b>	<b>45.2%</b>	<b>23.6%</b>	<b>20.0%</b>	<b>1.5%</b>	<b>9.6%</b>	<b>100.0%</b>

Loan disbursement will be heaviest during the first year of program implementation at over Rp 62.8 billion. It then drastically tapers off during the ensuing years. The loan disbursement schedule is shown in *Table 20*.

**Table 20 Loan Disbursement Schedule (In Rp Million).**

Service Region	2007	2008	2009	2010	2011	2012	2013	Total
East Bogor	14,455	1,802	22,542	3,153	1,976	974	856	<b>45,759</b>
West Bogor	9,615	19,488	4,708	521				<b>34,333</b>
Central Bogor	38,767	7,143	5,973	1,296				<b>53,178</b>
<b>Total</b>	<b>62,837</b>	<b>28,433</b>	<b>33,223</b>	<b>4,970</b>	<b>1,976</b>	<b>974</b>	<b>856</b>	<b>133,270</b>

A more detailed presentation of the loan disbursement and amortization schedules is in *Annex B*.

### 5.3. COSTS OF CAPITAL

The costs of capital are computed based on the fund-sourcing mix presented in the financing plan. Opportunity costs of 12.5% and 6.0% are assumed for respectively government and customer contributions. On this basis, the nominal weighted average costs of capital (NWACC) are 10.9% for the consolidated investment program, 13.8% for East Bogor, 9.3% for Central Bogor, and 9.4% for West Bogor. The derivation of the real weighted average costs of capital (RWACC) further assumes a long-term inflation rate of 5.5%, tax rate of 30%, and minimum rate test of 4%. On this basis, the RWACC for the consolidated investment program is 4.78%, for East Bogor 5.56%, Central Bogor 4.33%, and West Bogor 4.39%, as shown in *Table 21*.

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Table 21 Weighted Average Costs of Capital.

	ADB Loan	Comm'l Loan	Gov't Funds	Con-sumers	Overall	East Bogor	Central Bogor	West Bogor
Weighting	45.18%	23.62%	11.15%	20.04%				
<b>Weighted Component of Nominal WACC</b>	<b>9.55%</b>	<b>17.00%</b>	<b>12.50%</b>	<b>6.00%</b>	<b>10.93%</b>	<b>13.78%</b>	<b>9.30%</b>	<b>9.44%</b>
Tax Rate	30%	30%						
Tax-Adjusted Nominal Cost	6.69%	11.90%	12.50%	6.00%				
Inflation Rate	5.50%	5.50%	5.50%	5.50%				
Real Cost	1.12%	6.07%	6.64%	0.47%				
Minimum Rate Test (4%)	4.00%	6.07%	6.64%	4.00%				
<b>Weighted Component of Real WACC</b>	<b>1.81%</b>	<b>1.43%</b>	<b>0.74%</b>	<b>0.80%</b>	<b>4.78%</b>	<b>5.56%</b>	<b>4.33%</b>	<b>4.39%</b>



## 6. HIGHLIGHTS OF THE FINANCIAL PROJECTION

The discussion of the financial projection focuses on the time slice from 2007 to 2016, which is deemed critical for the following reasons:

1. The period covers the years when the bulk of the investment programs are going to be implemented.
2. It corresponds to the full amortization of the proposed commercial loan for funding the East Bogor investment program and the first five years of amortization of the ADB loan that will be used to finance the investment programs for Central Bogor and West Bogor.

### 6.1. ASSUMPTIONS

#### 6.1.1. DEMAND

A total of 30,704 new connections are hoped to be generated from the investment programs, to be installed during the period 2006-2013. Almost 95% of them will be meant for ordinary households and only 1.8% for the very poor households, which are under the subsidized-tariff category. A total of 183 public taps will be installed, and an additional 626 commercial establishments will be connected to the system. After 2013, when all the investment programs would have been implemented, each type of connection is projected to increase by 0.6% per year, generated through the PDAM's sustained connection program. The consolidated schedule for installing the additional connections is shown in *Table 22*.

**Table 22 Consolidated Schedule for Installing New Connections.**

	2006	2007	2008	2009	2010	2011	2012	2013	Total
Other Household	1,435	7,279	4,909	4,978	4,283	3,142	1,861	1,196	<b>27,649</b>
Very Poor Households	28	141	95	96	83	61	36	23	<b>536</b>
Public Tap	10	48	33	33	28	21	12	8	<b>183</b>
Commercial	33	165	111	113	97	71	42	27	<b>626</b>
Services	9	44	30	30	26	19	11	7	<b>167</b>
Industry	1	6	4	4	4	3	2	1	<b>25</b>
Harbor and Water Tankers	0	1	1	1	1	0	0	0	<b>4</b>
Sub-Total, Non-domestic	43	216	146	148	127	93	55	36	<b>821</b>
<b>Total</b>	<b>1,515</b>	<b>7,685</b>	<b>5,182</b>	<b>5,255</b>	<b>4,522</b>	<b>3,317</b>	<b>1,965</b>	<b>1,263</b>	<b>30,704</b>

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The schedules for installing new connections in East Bogor, Central Bogor, and West Bogor are respectively shown in *Tables 23, 24, and 26*.

**Table 23 Schedule for Installing New Connections in East Bogor.**

	2006	2007	2008	2009	2010	2011	2012	2013	Total
Other Household	1,435	1,626	1,626	1,626	1,626	1,626	1,435	1,196	<b>12,198</b>
Very Poor Households	28	32	32	32	32	32	28	23	<b>236</b>
Public Tap	10	11	11	11	11	11	10	8	<b>81</b>
Commercial	33	37	37	37	37	37	33	27	<b>276</b>
Services	9	10	10	10	10	10	9	7	<b>74</b>
Industry	1	1	1	1	1	1	1	1	<b>11</b>
Harbor and Water Tankers	0	0	0	0	0	0	0	0	<b>2</b>
Sub-Total, Non-domestic	43	48	48	48	48	48	43	36	<b>362</b>
<b>Total</b>	<b>1,515</b>	<b>1,717</b>	<b>1,717</b>	<b>1,717</b>	<b>1,717</b>	<b>1,717</b>	<b>1,515</b>	<b>1,263</b>	<b>12,878</b>

**Table 24 Schedule for Installing New Connections in Central Bogor.**

	2006	2007	2008	2009	2010	2011	2012	2013	Total
Other Household		2,842	2,368	2,368	1,894	947			10,420
Very Poor Households		55	46	46	37	18			202
Public Tap		19	16	16	13	6			69
Commercial		64	54	54	43	21			236
Services		17	14	14	11	6			63
Industry		3	2	2	2	1			9
Harbor and Water Tankers		0	0	0	0	0			1
Sub-Total, Non-domestic		84	70	70	56	28			310
<b>Total</b>		<b>3,000</b>	<b>2,500</b>	<b>2,500</b>	<b>2,000</b>	<b>1,000</b>			<b>11,000</b>

**Table 25 Schedule for Installing New Connections in West Bogor**

	2006	2007	2008	2009	2010	2011	2012	2013	Total
Other Household		2,811	914	983	763	568	426		<b>6,466</b>
Very Poor Households		54	18	19	15	11	8		<b>125</b>
Public Tap		19	6	7	5	4	3		<b>43</b>
Commercial		64	21	22	17	13	10		<b>147</b>
Services		17	6	6	5	3	3		<b>39</b>
Industry		3	1	1	1	1	0		<b>6</b>
Harbor and Water Tankers		0	0	0	0	0	0		<b>1</b>
Sub-Total, Non-domestic		84	27	29	23	17	13		<b>192</b>
<b>Total</b>		<b>2,968</b>	<b>965</b>	<b>1,038</b>	<b>805</b>	<b>600</b>	<b>450</b>		<b>6,826</b>

The preparation of the WSSP SPAR included a survey that showed the price elasticity of demand, based on the reduction in consumption after the tariff increase in 2002. This was disregarded, however, based on the judgment of PDAM management that such reduction in consumption was more due to the inability of the system to satisfy water demand. Thus, based on discussions with PDAM management, the average consumption of ordinary households is pegged at 146 lcd and of very poor households of 116 lcd throughout the projection period. Average monthly consumption per connection has been set at between 25 m<sup>3</sup> and 26 m<sup>3</sup>, which the PDAM management considers realistic.

The domestic coverage ratio for the entire kabupaten population will reach its maximum in 2010 at 15.9% and for the service area in 2012 at 31.7%. Thereafter, the coverage ratios will progressively decline each year, reflecting the inadequacy of the generation of new connections to keep pace with population growth, as shown in *Table 26*.

### 6.1.2. PRODUCTION

The new connections generated by the extension of the system are assumed to be served by four new production units: two in East Bogor with a combined capacity of 150 l/sec, one in Central Bogor also with a capacity of 150 l/sec, and two in West Bogor with a combined capacity of 80 l/sec. Thus, the production capacity of the system increases to 2,479 l/sec in 2007 from 2,099 in 2006.

Service is assumed to be 24 hours. As mentioned, since 2003 the PDAM has been implementing an NRW-reduction program. Preliminary figures for 2005 showed that the achievement in this area was quite significant. The PDAM management expects, however, that reductions in the succeeding years will be more modest. Thus, NRW in 2007 is set at 29.6%. This is assumed to progressively go down, settling at between 20% and 21% starting 2010. The highest plant utilization factor of 81% will be reached only during the last year of the projection period, implying that under the assumed pace of installing new connections and the corresponding water demand, new facilities will not be needed and that there is ample room for the PDAM to pursue a far more aggressive new-connection program. The PDAM's projected production capacity, capacity constraints, and water losses are summarized in *Table 27*. *Annex C* presents the detailed demand forecast.

### 6.1.3. RECURRENT EXPENDITURES

Recurrent expenditure for each major cost item is treated on the following basis:

1. Personnel and personnel cost: The proportion of staff to connections will improve to 6 per 1,000 in 2008 and will be maintained at this level throughout the rest of the projection period. Cost per employee is assumed to increase annually in real terms by 8.0% or about 13.5% in nominal terms based on the experience of the PDAM in 2004 and 2005 and its budget for 2006.
2. Power and chemicals: Distortions in the prices of these production inputs are expected to be gradually corrected during the next five years, or up to 2010, concurrent with the progressive elimination of government subsidies for petroleum-based fuel and electricity. Their prices are therefore anticipated to post significant real annual increases in the interim. Based on the results of operations for 2004 and 2005 and the budget for 2006, annual increase in power cost is set at 15.7% and chemicals at 13.6%. Beginning 2011, costs of these inputs are expected to already reflect market prices and will therefore move based on annual inflation rate.
3. Maintenance materials: These are pegged at 3% of net assets.

**Table 26 Projected Connections and Water Demand.**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Household Connections (No.)	104,741	109,649	114,627	118,910	122,052	123,913	125,110	125,860	126,616	127,375
Unit Consumption (lcd)	146	146	146	146	146	146	146	146	146	146
Non-Domestic Connections (No.)	2,841	2,987	3,135	3,262	3,355	3,411	3,446	3,467	3,488	3,509
Unit Consumption (m <sup>3</sup> /day)	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Total Connections	110,299	115,481	120,736	125,258	128,575	130,540	131,803	132,594	133,389	134,190
Annual Change (No.)	7,685	5,182	5,255	4,522	3,317	1,965	1,263	791	796	800
Domestic Service Ratio-Kab Bogor (%)	15.4%	15.6%	15.8%	15.9%	15.8%	15.6%	15.3%	14.9%	14.5%	14.2%
Domestic Service Ratio-Service Area (%)	28.1%	29.1%	30.2%	31.0%	31.5%	31.7%	31.6%	31.5%	31.4%	31.3%

**Table 27 Projected Production Capacity, Capacity Constraints and Water Losses.**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Production Capacity (l/sec)	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479	2,479
Production Volume (m <sup>3</sup> /year)	47,318	47,688	49,099	50,315	51,090	51,726	51,538	51,936	52,248	52,562
Distribution Volume (m <sup>3</sup> /year)	47,251	47,640	49,050	50,265	51,039	51,674	51,487	51,885	52,196	52,509
Volume Sold to Consumers (m <sup>3</sup> /year)	34,908	38,249	39,801	41,255	42,399	42,944	43,079	43,118	43,118	43,118
Water Losses (%)	29.6%	26.0%	24.9%	23.7%	22.6%	22.0%	20.7%	20.7%	20.7%	20.7%
Ratio of Production to Consumption	1.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
% of Connected Demand Satisfied	104.7%	108.4%	107.9%	107.5%	107.2%	106.4%	105.4%	104.7%	104.1%	103.5%
Plant Utilization Factor	69.6%	70.2%	72.2%	74.0%	75.2%	76.1%	75.8%	76.4%	76.9%	77.3%

4. Administration: These are defined as PDAM general and administrative expenses minus wages, interest payments, bad debts allowances, and maintenance and depreciation costs related to general and administrative fixed assets. These expenses were recorded at 28.6% of personnel expenses and are assumed to remain as such throughout the projection period. It should be noted, however, that, as mentioned earlier, this cost component has been increasing at a rate faster than personnel cost.
5. Raw water: The average cost of Rp 21 per m<sup>3</sup> at constant 2005 prices is used throughout the projection period.

#### 6.1.4. WATER TARIFFS

The PDAM management assumes positive nominal adjustment to average tariff of 42% in 2008 with effect on the seventh month of the year. Thereafter, tariff is projected to increase at a nominal rate of by 27.5% every two years, starting in 2010. At these rates of increase, the assumed average tariff will consistently exceed those required for basic- and full-cost recovery.

The assumed yearly average tariff and those required for basic-cost and full-cost recovery are presented in *Table 28*.

## 6.2. FEASIBILITY INDICATORS

The financial feasibility of the investment programs was assessed using both the real and nominal weighted average costs of capital.

Using the real weighted average costs of capital (RWACC), and based on the foregoing assumptions on revenue and cost, the investment programs, as consolidated and individually, are deemed feasible with positive NPVs and FIRRs that exceed the hurdle rates. They all remain feasible even with a 10% increase in investment and incremental O&M costs or 10% reduction in incremental revenues. The investment program for West Bogor fails to surmount the combined impact of 10% increase in investment and incremental O&M costs and 10% reduction in incremental revenues, however.

Using the nominal weighted average costs of capital (NWACC), all the investment programs are likewise found to be feasible. Only the one for Central Bogor is however expected to withstand a 10% increase in investment and incremental O&M costs.

The projected yields of the investment programs expressed in NPVs and FIRRs using the RWACC and NWACC as hurdle rates under the base case and the sensitivity analysis are presented in *Table 29*.

**Table 28 Projected Tariff Analysis (In Rp).**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Constant 2005 Prices</b>										
Weighted Average Tariff per m <sup>3</sup>	2,655	3,591	3,591	4,335	4,335	5,142	5,142	6,003	6,003	6,905
O&M per m <sup>3</sup> Water Sold	2,485	2,865	3,274	3,635	3,780	3,963	4,148	4,330	4,540	4,749
Depreciation + Interest	3,000	3,431	3,973	4,388	4,507	4,867	5,032	5,194	5,355	5,523
Full-Cost Recovery	3,159	3,747	4,259	4,705	4,822	5,025	5,206	5,384	5,545	5,711
<b>Current Prices</b>										
Weighted Average Tariff per m <sup>3</sup>	3,000	4,280	4,516	5,752	6,068	7,594	8,012	9,866	10,409	12,632
O&M per m <sup>3</sup> Water Sold	2,807	3,415	4,117	4,823	5,291	5,852	6,462	7,116	7,873	8,689
Depreciation + Interest	3,390	4,089	4,997	5,822	6,309	7,187	7,839	8,538	9,285	10,104
Full-Cost Recovery	3,570	4,466	5,356	6,242	6,749	7,420	8,110	8,849	9,616	10,447

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**Table 29 Feasibility Indicators.**

<b>Based on RWACC</b>	<b>Consolidated</b>		<b>East Bogor</b>		<b>Central Bogor</b>		<b>West Bogor</b>	
RWACC	4.78%		5.56%		4.33%		4.39%	
	<b>NPV</b>	<b>FIRR</b>	<b>NPV</b>	<b>FIRR</b>	<b>NPV</b>	<b>FIRR</b>	<b>NPV</b>	<b>FIRR</b>
Base Case	155,726	13.1%	61,218	17.5%	69,909	12.1%	25,308	9.5%
10% Increase in Investment and O&M Costs	103,906	10.0%	42,425	13.5%	49,310	9.4%	13,257	6.9%
10% Decrease in Incremental Revenues	88,333	9.7%	36,303	13.1%	42,320	9.2%	10,726	6.6%
+10% Investment and O&M Costs and -10% Incremental Revenues	36,513	6.7%	17,510	9.1%	21,721	6.7%	(1,324)	4.1%
NWACC	10.93%		13.78%		9.30%		9.44%	
	<b>NPV</b>	<b>FIRR</b>	<b>NPV</b>	<b>FIRR</b>	<b>NPV</b>	<b>FIRR</b>	<b>NPV</b>	<b>FIRR</b>
Base Case	22,357	13.1%	9,066	17.5%	15,400	12.1%	249	9.5%
10% Increase in Investment and O&M Costs	(10,627)	10.0%	(834)	13.5%	861	9.4%	(8,257)	6.9%
10% Decrease in Incremental Revenues	(12,863)	9.7%	(1,740)	13.1%	(679)	9.2%	(8,282)	6.6%
+10% Investment and O&M Costs and -10% Incremental Revenues	(45,847)	6.7%	(11,640)	9.1%	(15,217)	6.7%	(16,786)	4.1%

## 6.3. FINANCIAL RESULTS

### 6.3.1. INCOME STATEMENT

The PDAM will consistently generate yearly net income during the entire projection period. Declines will however be experienced during the years when tariff is not adjusted. Return on equity will be highest at 16.0% in 2008 and lowest at 4.8% in 2011.

A summary of the PDAM's income statement for the period 2007-2016 is presented in *Table 30*. Detailed income statements are presented in *Annex D*.

### 6.3.2. SOURCES AND APPLICATIONS OF FUNDS

Cash flows will be positive, except in 2011. DSCR will always be above the statutory minimum level, with the lowest at 2.4 in 2013, when the PDAM is scheduled to start the amortization of the ADB loan on top of the still ongoing repayment of the proposed commercial loan.

A summary of the sources and applications of funds is presented in *Table 31*, while the details are in *Annex E*.

### 6.3.3. BALANCE SHEET

Capital expenditures are forecast to be completed in 2013. All new investments are carried as work-in-progress in the year of expenditure and capitalized in the following year. Depreciation is calculated on the useful life basis for tariff purposes and at the fiscal rate for accounting purposes.

Fixed assets are carried throughout the forecast at historical cost, as is the current PDAM practice. The provisions of the Decree of the Minister of Finance (KepMenKeu) No. 507/KMK/04/1996 and preceding relevant pieces of legislation treat revaluation surpluses as capital gains, with the tax payable immediately. The PDAM is therefore not expected to consider re-valuation of its fixed assets while this decree is still in effect. Capitalized interest and construction preliminaries and demobilization expenses are treated as deferred expenses and amortized at 10% per annum on the outstanding balance.

Balance sheet projections assume 60-day accounts receivables and 30-day accounts payable. The inventory point for chemicals and maintenance materials is 30 days and for installation inventories, 70 days.

Cash and cash equivalents are projected to be positive and will constantly increase during the entire projection period. The current ratio will always be at a safe level, with the lowest at 1.7 in 2007. Cash expressed in terms of number of months of operating expenses will likewise be adequate, although it will be at only 2.7 months of operating expenses in 2007 or slightly less than what is generally regarded a safe level of 3 months. Debt on debt plus equity reaches its highest level of 57.1% in 2009 and progressively declines thereafter to settle at 13.9% in 2016.

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**Table 30 Summary Income Statement (In Rp Million).**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Tariff Revenues	104,732	163,721	179,734	237,286	257,277	326,116	345,131	425,416	448,814	544,676
Total Operating Revenues	151,653	207,921	224,787	277,069	288,825	355,946	371,498	448,929	472,496	568,535
Operating Expenses	97,998	130,623	163,867	198,981	224,319	251,322	278,367	306,838	339,463	374,639
Non-Operating Income (Loss)	32,277	50,197	22,439	32,959	15,688	41,648	26,996	73,281	60,774	117,637
Net Profit Before Tax	33,307	51,507	25,915	36,890	21,352	47,303	33,797	80,799	72,137	132,866
Income Tax	9,983	9,983	9,983	9,983	9,983	9,983	9,983	9,983	9,983	9,983
<b>Net Income Loss</b>	<b>23,323</b>	<b>36,064</b>	<b>18,149</b>	<b>25,832</b>	<b>14,955</b>	<b>33,121</b>	<b>23,667</b>	<b>56,568</b>	<b>50,505</b>	<b>93,015</b>
Other Payments	17,259	26,687	13,430	19,115	11,067	24,509	17,513	41,860	37,373	68,831
Retained Earnings	6,064	9,377	4,719	6,716	3,888	8,611	6,153	14,708	13,131	24,184
Return on Equity	13.5%	16.0%	7.2%	8.9%	4.8%	9.2%	6.0%	11.8%	9.2%	13.6%

**Table 31 Summary Sources and Applications of Funds (In Rp Million, Except Ratios).**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Gross Internal Cash Generation	54,685	78,608	64,395	82,019	70,171	110,279	99,932	149,608	144,395	209,124
Equity	6,922	13,894	20,424	9,982	14,207	8,225	18,216	13,017	31,112	27,778
Borrowing	67,726	37,304	41,599	14,595	12,540	974	856			
<b>Total Sources of Funds</b>	<b>129,333</b>	<b>129,806</b>	<b>126,418</b>	<b>106,596</b>	<b>96,918</b>	<b>119,479</b>	<b>119,005</b>	<b>162,624</b>	<b>175,507</b>	<b>236,902</b>
Capital Expenditures	125,109	78,811	84,302	46,368	64,891	56,536	58,579	60,147	64,683	69,561
Debt Service	3,630	3,434	16,363	16,925	15,105	30,720	29,195	22,989	17,434	16,776
Operations	(883)	11,632	33,834	28,703	32,196	42,119	47,389	32,568	40,534	32,643
<b>Total Applications of Funds</b>	<b>124,226</b>	<b>90,443</b>	<b>118,136</b>	<b>75,070</b>	<b>97,087</b>	<b>98,655</b>	<b>105,969</b>	<b>92,714</b>	<b>105,218</b>	<b>102,204</b>
Cash Increase (Decrease)	5,107	39,363	8,282	31,525	(169)	20,824	13,036	69,910	70,290	134,697
DSCR (Net Revenues)	15.1	22.9	3.9	4.8	4.6	3.6	3.4	6.5	8.3	12.5

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The highlights of the balance sheet are presented in *Table 32*. The detailed balance sheet projections are in *Annex F*.

**Table 32 Summary Balance Sheet (In Rp Million, Except Ratios).**

	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Cash and Deposit	22,243	61,606	69,888	101,413	101,244	122,069	135,105	205,015	275,305	410,002
Current Assets, net of Cash	24,195	34,562	37,019	46,096	49,721	61,424	64,884	78,491	82,702	98,910
Current Assets	46,438	96,168	106,907	147,509	150,965	183,493	199,989	283,506	358,006	508,912
Net Fixed Assets	99,115	198,593	244,163	289,138	291,303	307,840	311,490	312,889	311,424	309,838
<b>Total Assets</b>	<b>280,228</b>	<b>382,768</b>	<b>444,229</b>	<b>491,559</b>	<b>515,704</b>	<b>556,413</b>	<b>578,603</b>	<b>665,086</b>	<b>742,658</b>	<b>896,856</b>
Current Liabilities	26,819	49,650	52,660	58,248	63,543	71,303	68,848	80,350	90,273	116,337
Long-Term Debt, Net	77,121	103,303	133,780	137,885	134,327	119,356	108,851	102,065	95,278	88,491
Equity	172,624	225,942	253,591	291,064	313,241	361,026	395,876	477,432	551,359	685,824
Total Liabilities	107,604	156,826	190,637	200,494	202,463	195,387	182,726	187,653	191,299	211,031
<b>Total Equity and Liabilities</b>	<b>280,228</b>	<b>382,768</b>	<b>444,229</b>	<b>491,558</b>	<b>515,704</b>	<b>556,413</b>	<b>578,602</b>	<b>665,085</b>	<b>742,658</b>	<b>896,855</b>
Current Ratio	1.7	1.9	2.0	2.5	2.4	2.6	2.9	3.5	4.0	4.4
Debt on Debt Plus Equity	45.8%	50.6%	57.1%	51.0%	48.0%	37.5%	30.4%	22.8%	18.5%	13.9%
No. of Days Accounts Receivable	63	62	61	60	60	60	60	60	60	60
Cash = No. of Months of Operating Exp.	2.7	5.7	5.1	6.1	5.4	5.8	5.8	8.0	9.7	13.1

# 7. CONCLUSIONS

## 7.1. OPERATIONS

The following observations and recommendations are offered regarding the PDAM's present operations:

1. **Recurrent costs need to be carefully monitored and controlled, especially overhead.** There seems to be a common pattern for a significant portion of any tariff increase to be allocated to the improvement of personnel welfare with little left for improving the service reach and delivery of the water enterprise. As mentioned, this cost component has been growing at a rate faster than personnel cost to which it is pegged. Without being reined in, the assumption that this will remain at less than one-third of personnel cost may not be sustainable during the 20-year projection period. For this purpose, the PDAM should be able to formulate definitive actions, which should then be incorporated into its annual work and financial budget.
2. **Data in the 2004 audited financial statement suggest that the PDAM should take definitive steps to resolve the issue of increasing receivable from government agencies and the armed forces, as well as its high inventory levels.** This could be done through close coordination and cooperation with *Perpamsi* (national association of local water supply enterprises). Inventories are also relatively quite high, even with the projected reductions. Some PDAMs set inventory of consumables at 30 days cover, and installation inventory at 60 days.
3. **The role of external parties in the development of the PDAM's water supply system needs to be standardized.** The present practice whereby the PDAM takes over fixed assets built by other parties is certainly a big boost toward extending the enterprise's service reach. This practice should however be done on a transparent and systematic manner, based on common guidelines/standards, preferably codified, and properly recognized in the PDAM's records. In the absence of established guidelines/standards, the PDAM could end up absorbing assets resulting from shoddy workmanship, which would then drag rather than enhance its operating efficiencies.
4. **The presence of the PDAM in the territorial jurisdictions of other local governments needs to be secured by long-term franchise agreements.** There is always the threat, although considered by the PDAM itself as remote at this time, to have that service reach cut off. The recent (and hopefully already resolved) controversy on the rejection by the city of Depok of the latest tariff increase is just but one manifestation of this. It is thus proposed that the presence of the PDAM in the territorial jurisdictions of other local governments be covered by clear and secure agreements, including such provisions as to what extent other local governments could influence the formulation and implementation of PDAM policies, plans, and programs, especially those that may be regarded as purely commercial in nature.

## 7.2. INVESTMENT

The following observations and recommendations are thus meant to further ensure that the desired/expected results from such programs are achieved:

1. **The proposed investment programs are found feasible, even under adverse scenarios.** There is thus enough justification for the PDAM to pursue the implementation of the investment programs. Care should however be exercised to ensure that the combined adverse development of a 10% increase in costs and 10% reduction in revenues is avoided.
2. **Assumptions on operating costs may however have to be revisited in view of current talks of an impending significant increase in the basic electricity tariff.** The justification for this is already amply provided by the ongoing talks about the increase of tariff for electricity, which at present, although still purely speculative, is estimated to range from 33% to 100%. When such increase is implemented, even under the low side of the estimate, the assumptions used in the financial projection will no longer be adequate and will therefore have to be adjusted.
3. **As a consequence of the foregoing, the costs of the investment programs may again have to be adjusted as prices of energy-intensive investment components rise.** Pipes are a major component of the investment program, and these are produced using energy-intensive methods. The mere increase in the prices of pipes should therefore trigger a review of the estimated investment costs.
4. **The volume of the investment program may exert undue strain on the PDAM's implementation capacity.** The nature of the investment programs as well as their individual components is neither unprecedented nor technically novel. The PDAM has successfully implemented similar projects in the past. What is worrisome, however, is the sheer volume of the work to be done, assuming that all the three investment programs are implemented simultaneously (as it is assumed in the financial projection). Such volume could exert undue strain on the PDAM's institutional capacity, which could result in implementation delays and cost overruns. Thus, assuming that the decision will be to pursue the investment programs, the PDAM needs to take careful stock of its project-implementation capacity. Where inadequacies are identified, remedial measures will need to be undertaken before and perhaps even alongside the implementation of the investment programs.
5. **The PDAM may need to launch a campaign to build constituency around the investment programs and their corresponding financing plans.** PDAM management has indicated that the local parliament is strongly averse to any loan whose repayment needs to be secured by the local government's allotment from the general appropriations fund (*dana alokasi umum* or DAU), which is the case of the proposed ADB loan. On the other hand, under existing laws the prior approval by the local parliament is a prerequisite for local governments and local government-owned enterprises to avail of medium- and long-term external financing. There thus appears a need for the PDAM to undertake advocacy efforts to convince the local parliament, and perhaps other stakeholders as well, emphasizing, for one, its debt-management track record.

6. **The 33 production facilities that are presently being operated and maintained could just be too much for the PDAM to be able to achieve maximum operational efficiency.** Thus, one area of investment that the PDAM should look into is the possibility of integrating or replacing very small production units. The ongoing program of shutting down deep wells and other production units with capacities of 5 l/sec and below and replacing them with more efficient and thus cheaper sources are steps in the right direction.



# ANNEXES

ANNEX A  
DETAILS OF INVESTMENT PROGRAM

ANNEX B  
DETAILED DEMAND FORECAST (RANGE B5-AD72)

ANNEX C  
LOAN DISBURSEMENT AND AMORTIZATION SCHEDULE (RANGE  
B491-AD580)

ANNEX D  
DETAILED INCOME STATEMENT (RANGE B181-AD227)

ANNEX E  
DETAILED SOURCES AND APPLICATIONS OF FUNDS (RANGE  
B231-AD280)

ANNEX F  
DETAILED BALANCE SHEET PROJECTIONS (RANGE B283-AD324)



# ANNEX A – DETAILS OF INVESTMENT PROGRAM



**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR  
PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**ANNEX A-I DETAILS OF INVESTMENT PROGRAM FOR EAST BOGOR**

COMPONENT	ANNUAL INVESTMENT SCHEDULE (In Rp Million)																	AGGREGATED COST (In Rp Million)				TOTAL COST (In Rp Million)	
	2006		2007		2008		2009		2010		2011		2012		2013		Unit	Vol.	Cost				
	Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks			Eqpt	Civil Wks			
<b>1</b>	<b>PREPARATORY WORK</b>	2.5%	892.98		65.32															958.30		<b>958.30</b>	
<b>2</b>	<b>PPRIMARY AND DISTRIBUTION NETWORK</b>																						
2.1	Primary Extension																						
2.1.1	Special Works - Land Acquisition for Trace Pipe		156.00		360.00													m2	400	516.00		<b>516.00</b>	
2.1.2	Pipeline - OD 500 mm (ID 457.6 mm)							4,704.69	3,136.46									m	5,150	4,704.69	3,136.46	<b>7,841.16</b>	
2.2	Distribution Extension																						
2.2.1	Special Works - Land Acquisition for Trace Pipe																	m2	135,022				
2.2.2	District Meters			59.19	49.38			117.95	78.64									Unit	3	177.15	128.02	<b>305.16</b>	
2.2.3	Pipeline - OD 400 mm (ID 366mm), OD 50 mm (ID 44.4 mm)			3,804.81	2,536.54	286.49	190.99	46.68	31.12	1,093.28	728.85	508.20	338.80					m	156,277	5,739.45	3,826.30	<b>9,565.75</b>	
2.3	Connection Extension New Meter- New Water Meters and Connections		434.32	289.55	492.23	328.15	492.23	328.15	492.23	328.15	492.23	328.15	434.32	289.55	361.93	241.29		Unit	9,900	3,691.71	2,461.14	<b>6,152.84</b>	
<b>3</b>	<b>PRODUCTION UNIT</b>																						
3.1	Land Acquisition and Preparation																						
3.2	Intake Facilities																						
3.2.1	Construction				422.63				656.25													1,078.88	<b>1,078.88</b>
3.2.2	Electrical and Mechanical Works			991.20				1,213.20													2,204.40		<b>2,204.40</b>
3.3	Water Treatment Plant																						

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR  
PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

COMPONENT	ANNUAL INVESTMENT SCHEDULE (In Rp Million)																AGGREGATED COST (In Rp Million)				TOTAL COST (In Rp Million)		
	2006		2007		2008		2009		2010		2011		2012		2013		Unit	Vol.	Cost				
	Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks			Eqpt	Civil Wks			
3.3.1	Construction				3,771.90				6,446.85											10,218.75	<b>10,218.75</b>		
3.3.2	Electrical and Mechanical Works			1,623.05				3,903.20												5,526.26	<b>5,526.26</b>		
3.3.3	Ancillary Works																						
3.4	Pipeline and Accessories																						
	<b>Sub-Total</b>	<b>1,483.30</b>	<b>289.55</b>	<b>7,395.80</b>	<b>7,108.60</b>	<b>778.71</b>	<b>519.14</b>	<b>10,477.96</b>	<b>10,677.47</b>	<b>1,585.50</b>	<b>1,057.00</b>	<b>1,000.43</b>	<b>666.95</b>	<b>434.32</b>	<b>289.55</b>	<b>361.93</b>	<b>241.29</b>			<b>23,517.95</b>	<b>20,849.54</b>	<b>44,367.49</b>	
<b>4</b>	<b>DESIGN AND SUPERVISION</b>	7.0%	103.83	20.27	517.71	497.60	54.51	36.34	733.46	747.42	110.99	73.99	70.03	46.69	30.40	20.27	25.34	16.89			676.05	554.21	<b>1,230.26</b>
	<b>Sub-Total</b>		<b>1,587.13</b>	<b>309.81</b>	<b>7,913.51</b>	<b>7,606.20</b>	<b>833.22</b>	<b>555.48</b>	<b>11,211.42</b>	<b>11,424.89</b>	<b>1,696.49</b>	<b>1,130.99</b>	<b>1,070.46</b>	<b>713.64</b>	<b>464.72</b>	<b>309.81</b>	<b>387.27</b>	<b>258.18</b>			<b>24,194.00</b>	<b>21,403.75</b>	<b>45,597.75</b>
5	CONTINGENCIES																						
5.1	Price	5.0%	79.36		395.68		41.66		560.57	84.82		53.52		23.24		19.36					1,258.21		<b>1,258.21</b>
5.2	Physical	10.0%		30.98		760.62		55.55		1,142.49		113.10		71.36		30.98		25.82				2,230.90	<b>2,230.90</b>
	<b>Sub-Total</b>		<b>1,666.48</b>	<b>340.80</b>	<b>8,309.18</b>	<b>8,366.82</b>	<b>874.88</b>	<b>611.03</b>	<b>11,771.99</b>	<b>12,567.38</b>	<b>1,781.31</b>	<b>1,244.09</b>	<b>1,123.98</b>	<b>785.00</b>	<b>487.96</b>	<b>340.80</b>	<b>406.63</b>	<b>284.00</b>			<b>26,422.42</b>	<b>24,539.91</b>	<b>50,962.33</b>
<b>6</b>	<b>TAX</b>	10.0%	166.65	34.08	830.92	836.68	87.49	61.10	1,177.20	1,256.74	178.13	124.41	112.40	78.50	48.80	34.08	40.66	28.40			2,642.24	2,453.99	<b>5,096.23</b>
	<b>TOTAL COST</b>		<b>1,833.13</b>	<b>374.87</b>	<b>9,140.10</b>	<b>9,203.50</b>	<b>962.37</b>	<b>672.13</b>	<b>12,949.19</b>	<b>13,824.12</b>	<b>1,959.44</b>	<b>1,368.50</b>	<b>1,236.38</b>	<b>863.50</b>	<b>536.75</b>	<b>374.87</b>	<b>447.29</b>	<b>312.40</b>			<b>11,935.61</b>	<b>10,250.51</b>	<b>56,058.56</b>

ANNEX A-2 DETAILS OF INVESTMENT FOR CENTRAL BOGOR

COMPONENT		ANNUAL INVESTMENT SCHEDULE (In Rp Million)						AGGREGATED COST (In Rp Million)				TOTAL COST (In Rp Million)	
		2007		2008		2009		Unit	Vol.	Cost			
		Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks			Eqpt	Civil Wks		
<b>1</b>	<b>PREPARATORY WORK</b>	2.5%	340.00	594.00	89.00	76.00	69.00	62.00			498.00	732.00	<b>1,230.00</b>
<b>2</b>	<b>PPRIMARY AND DISTRIBUTION NETWORK</b>												
2.1	Primary Extension												
2.1.1	Special Works – Land Acquisition for Trace Pipe			16.00					m2	7,720		16.00	<b>16.00</b>
2.1.2	Pipeline – OD 500 mm (ID 457.6 mm)		769.50	304.90	8.00	17.00	8.00	17.00	m	9,650	785.50	338.90	<b>1,124.40</b>
2.2	Distribution Extension												
2.2.1	Special Works – Land Acquisition for Trace Pipe		420.00		430.20		375.00		m2	107,599	1,225.20		<b>1,225.20</b>
2.2.2	District Meters		75.00	121.12					Unit	3	75.00	121.12	<b>196.12</b>
2.2.3	Booster Pump		440.00	176.00					unit	2	440.00	176.00	<b>616.00</b>
2.3	Pipeline												
2.3.1	Pipeline - OD 400 mm (ID 366mm), OD 50 mm (ID 44.4 mm)		2,638.28	2,726.39	2,925.71	2,827.85	2,150.71	2,289.60	m	134,624	7,714.70	7,843.84	<b>15,558.54</b>
2.3.2	Connection Extension New Meter- New Water Meters and Connections		211.70	179.52	211.70	179.52	211.70	179.52	Unit	8,000	635.10	538.56	<b>1,173.66</b>

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR  
PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

COMPONENT		ANNUAL INVESTMENT SCHEDULE (In Rp Million)						AGGREGATED COST (In Rp Million)				TOTAL COST (In Rp Million)
		2007		2008		2009		Unit	Vol.	Cost		
		Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks			Eqpt	Civil Wks	
<b>3</b>	<b>PRODUCTION UNIT</b>											
3.1	Land Acquisition and Preparation		420.00								420.00	<b>420.00</b>
3.2	Intake Facilities											
3.2.1	Construction		911.03								911.03	<b>911.03</b>
3.2.2	Electrical and Mechanical Works	1,114.57	600.15							1,114.57	600.15	<b>1,714.72</b>
3.3	Water Treatment Plant											
3.3.1	Construction		12,434.50								12,434.50	<b>12,434.50</b>
3.3.2	Electrical and Mechanical Works	7,552.65	4,066.81							7,552.65	4,066.81	<b>11,619.46</b>
3.3.3	Ancillary Works		1,628.43								1,628.43	<b>1,628.43</b>
3.4	Pipeline and Accessories	360.49	194.11							360.49	194.11	<b>554.60</b>
<b>4</b>	<b>NRW REDUCTION PROGRAM</b>											
4.1	Rehabilitation of Transmission System Pipeline OD 500 mm (ID 411.6 mm)											
4.2	Rehabilitation of Distribution System											
4.2.1	District Meters							Unit	2			
4.2.2	Pipeline OD 400 mm (ID 366 mm) OD 50 mm (ID 44.4 mm)							m	73,120			
4.3	Rehabilitation of Connections (Replacement of Water Meters)							Unit	15,000			
	Sub-Total	13,922.19	24,372.96	3,664.61	3,100.37	2,814.41	2,548.12			20,401.21	30,021.45	<b>50,422.66</b>

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR  
PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

COMPONENT			ANNUAL INVESTMENT SCHEDULE (In Rp Million)						AGGREGATED COST (In Rp Million)				TOTAL COST (In Rp Million)
			2007		2008		2009		Unit	Vol.	Cost		
			Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks			Eqpt	Civil Wks	
<b>5</b>	<b>DESIGN AND SUPERVISION</b>	7.0%	974.55	1,706.11	256.52	217.03	197.01	178.37			1,428.08	2,101.50	<b>3,529.59</b>
	Sub-Total		14,896.74	26,079.07	3,921.13	3,317.40	3,011.42	2,726.49			21,829.29	32,122.95	<b>53,952.25</b>
<b>6</b>	<b>CONTINGENCIES</b>												
5.1	Price	5.0%	744.84	1,303.95	196.06	165.87	150.57	136.32			1,091.46	1,606.15	<b>2,697.61</b>
5.2	Physical	10.0%	1,489.67	2,607.91	392.11	331.74	301.14	272.65			2,182.93	3,212.30	<b>5,395.22</b>
	Sub-Total		17,131.25	29,990.93	4,509.30	3,815.01	3,463.13	3,135.46			25,103.69	36,941.39	<b>62,045.08</b>
<b>7</b>	<b>TAX</b>	10.0%	1,713.13	2,999.09	450.93	381.50	346.31	313.55			2,510.37	3,694.14	<b>6,204.51</b>
	<b>TOTAL COST</b>		<b>18,844.38</b>	<b>32,990.02</b>	<b>4,960.23</b>	<b>4,196.51</b>	<b>3,809.44</b>	<b>3,449.01</b>			<b>27,614.06</b>	<b>40,635.53</b>	<b>68,249.59</b>

ANNEX A-3 DETAILS OF INVESTMENT PROGRAM FOR WEST BOGOR

COMPONENT		ANNUAL INVESTMENT SCHEDULE (In Rp Million)						AGGREGATED COST (In Rp Million)				TOTAL COST (In Rp Million)	
		2007		2008		2009		Unit	Vol.	Cost			
		Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks			Eqpt	Civil Wks		
<b>1</b>	<b>PREPARATORY WORK</b>	2.5%	127.00	107.00	328.00	123.00	57.00	46.00			512.00	276.00	<b>788.00</b>
<b>2</b>	<b>PPRIMARY AND DISTRIBUTION NETWORK</b>												
2.1	Primary Extension												
2.1.1	Special Works – Land Acquisition for Trace Pipe			41.60		104.00			m2	7,280		145.60	<b>145.60</b>
2.1.2	Pipeline – OD 500 mm (ID 457.6 mm)		393.38	283.79	11,475.75	3,146.00			m	9,100	11,869.13	3,429.79	<b>15,298.92</b>
2.2	Distribution Extension												
2.2.1	Special Works – Land Acquisition for Trace Pipe			128.76		171.84		213.96	m2	41,432		514.56	<b>514.56</b>
2.2.2	District Meters		50.00	80.75					Unit	2	50.00	80.75	<b>130.75</b>
2.3	Pipeline												
2.3.1	Pipeline – OD 400 mm (ID 366mm), OD 50 mm (ID 44.4 mm)		4,050.43	1,668.41	1,604.26	1,446.34	1,830.56	1,575.10	m	51,790	7,485.25	4,689.85	<b>12,175.10</b>
2.3.2	Booster Pump						360.00		Unit	3	360.00		<b>360.00</b>
2.3.2	Connection Extension New Meter- New Water Meters and Connections		79.39	67.32	52.93	44.88	79.39	67.32	Unit	2,808	211.71	179.52	<b>391.23</b>

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR  
PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

COMPONENT		ANNUAL INVESTMENT SCHEDULE (In Rp Million)						AGGREGATED COST (In Rp Million)			TOTAL COST (In Rp Million)	
		2007		2008		2009		Unit	Vol.	Cost		
		Eqpt	Civil Wks	Eqpt	Civil Wks	Eqpt	Civil Wks			Eqpt		Civil Wks
<b>3</b>	<b>PRODUCTION UNIT</b>											
3.1	Ciomas 30 l/sec											
3.1.1	Land Acquisition and Preparation		156.00								156.00	<b>156.00</b>
3.1.2	Intake 70 l/sec		175.00								175.00	<b>175.00</b>
3.1.3	Reservoir 700 m3	238.00	952.00							238.00	952.00	<b>1,190.00</b>
3.1.4	Ancillary Works		555.20								555.20	<b>555.20</b>
3.1.5	Water Pressure-Release Facility 9 m3	3.06	12.24							3.06	12.24	<b>15.30</b>
3.1.6	Pipeline and Accessories	271.83	146.37							271.83	146.37	<b>418.20</b>
3.2	Ciampas 50 l/sec											
3.2.1	Pump Housing											
3.2.2	Distribution Pump 40 l/sec											
3.2.3	Power Supply PLN											
3.2.4	Power Generator											
3.2.5	Pipeline and Accessories											
	Sub-Total	5,213.09	4,374.44	13,460.94	5,036.06	2,326.95	1,902.38			21,000.98	11,312.88	<b>32,313.86</b>
<b>4</b>	<b>DESIGN AND SUPERVISION</b>	7.0%	364.92	306.21	942.27	352.52	162.89	133.17		1,470.07	791.90	<b>2,261.97</b>
	Sub-Total		5,578.01	4,680.65	14,403.21	5,388.58	2,489.84	2,035.55		22,471.05	12,104.78	<b>34,575.83</b>
<b>5</b>	<b>CONTINGENCIES</b>											
5.1	Price	5.0%	278.90	234.03	720.16	269.43	124.49	101.78		1,123.55	605.24	<b>1,728.79</b>
5.2	Physical	10.0%	557.80	468.07	1,440.32	538.86	248.98	203.55		2,247.10	1,210.48	<b>3,457.58</b>
	Sub-Total		6,414.71	5,382.75	16,563.69	6,196.87	2,863.31	2,340.88		25,841.71	13,920.50	<b>39,762.20</b>
<b>6</b>	<b>TAX</b>	10.0%	641.47	538.27	1,656.37	619.69	286.33	234.09		2,584.17	1,392.05	<b>3,976.22</b>
	<b>TOTAL COST</b>		<b>7,056.18</b>	<b>5,921.02</b>	<b>18,220.06</b>	<b>6,816.56</b>	<b>3,149.64</b>	<b>2,574.97</b>		<b>28,425.88</b>	<b>15,312.55</b>	<b>43,738.43</b>



## ANNEX B - DETAILED DEMAND FORECAST (RANGE B5-AD72)



**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**Maximum Cash and PFC**

WATER DEMAND AND PRODUCTION PROJECTIONS			TARIFF INCREASE			2%	36%	29%	5%	43%	5%
			2001	2002	2003	2004	2005	2006	2007	2008	2009
NEW PROJECTS FUNDED BY LOAN											
ALL OPERATIONS			Audited	Audited	Audited	Actual	Forecast				
KABUPATEN POPULATION (000)	3.16%	growth/year	3,170	3,250	3,409	3,494	3,604	3,718	3,836	3,957	4,082
SERVICE AREA POPULATION (000)	1.00%	growth/year	1,729	1,890	1,958	2,038	2,058	2,079	2,100	2,121	2,142
POPULATION SERVED (000)			408	428	465	492	539	650	790	903	1,006
POPULATION SERVED HC (000)			401	420	455	482	515	549	590	618	646
% KABUPATEN POPULATION SERVED			12.9%	13.2%	13.6%	14.1%	15.0%	17.5%	20.6%	22.8%	24.6%
% KABUPATEN POP. SERVED HC			12.7%	12.9%	13.4%	13.8%	14.3%	14.8%	15.4%	15.6%	15.8%
% SERVICE AREA POPULATION SERVED			23.6%	22.6%	23.8%	24.1%	26.2%	31.3%	37.6%	42.6%	47.0%
% SERVICE AREA POP. SERVED HC			23.2%	22.2%	23.3%	23.7%	25.0%	26.4%	28.1%	29.1%	30.2%
<b>AVAILABLE CONNECTIONS</b>							2%				
Other Household	0.6%	94.7%	70,426	73,732	80,367	85,135	91,539	97,461	104,741	109,649	114,627
Very Poor Households	0.6%	1.8%	3,024	2,652	2,002	1,650	1,798	1,913	2,054	2,149	2,245
Public Tap	0.6%	0.6%	491	518	535	564	576	615	663	696	729
Commerce	0.6%	2.1%	1,438	1,487	1,929	1,929	1,791	1,925	2,090	2,201	2,314
Services	0.6%	0.6%	422	465	491	513	466	502	546	575	605
Industry	0.6%	0.1%	65	70	94	76	178	183	190	194	199
Harbour & Water Tankers		0.0%	14	15	8	11	14	15	16	16	17
Sub-total, Non-domestic	2.8%		1,939	2,037	2,522	2,529	2,449	2,625	2,841	2,987	3,135
<b>Total</b>	<b>100.0%</b>		<b>75,880</b>	<b>78,939</b>	<b>85,426</b>	<b>89,878</b>	<b>96,362</b>	<b>102,614</b>	<b>110,299</b>	<b>115,481</b>	<b>120,736</b>
Increase in Service Connections				3,059	6,487	4,452	6,484	6,252	7,685	5,182	5,255
<b>PERSONS PER CONNECTION</b>											
Other Household			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Very Poor Households			7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Public Tap			100	100	100	100	100	100	100	100	100
<b>UNIT CONSUMPTION</b>											
<b>H'hold Demand Based On Income &amp; Price Elasticities</b>											
Other Household (lcd)			143	155	151	153	152	152	146	146	146
Very Poor Households (lcd)			98	114	119	140	149	149	116	116	116
Public Tap (ltr/cap/day)			18	21	18	21	20	26	21	21	21
Commerce (m3/conn/month)			25	25	25	26	36	49	25	26	26
Services (m3/conn/month)			199	174	183	207	233	198	199	202	202
Industry (m3/conn/month)			6,088	821	686	745	334	399	732	737	737
Harbour & Tankers (m3/month)			3,418	27,862	29,909	17,228	13,738	9,369	9,088	9,187	9,191
<b>Total (m3/conn/month)</b>			<b>28.8</b>	<b>30.7</b>	<b>27.7</b>	<b>27.5</b>	<b>26.5</b>	<b>26.8</b>	<b>25.2</b>	<b>25.5</b>	<b>25.5</b>

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**Maximum Cash and PFC**

<b>WATER DEMAND AND PRODUCTION PROJECTIONS</b>			<b>27%</b>	<b>5%</b>	<b>25%</b>	<b>6%</b>	<b>23%</b>	<b>5%</b>	<b>21%</b>	<b>5%</b>
<b>NEW PROJECTS FUNDED BY LOAN</b>			2010	2011	2012	2013	2014	2015	2016	2017
<b>ALL OPERATIONS</b>										
KABUPATEN POPULATION (000)	3.16%	growth/year	4,211	4,344	4,481	4,623	4,769	4,920	5,075	5,236
SERVICE AREA POPULATION (000)	1.00%	growth/year	2,163	2,185	2,207	2,229	2,251	2,274	2,296	2,319
POPULATION SERVED (000)			1,078	1,114	1,141	1,155	1,159	1,164	1,168	1,173
POPULATION SERVED HC (000)			670	688	699	705	710	714	718	722
% KABUPATEN POPULATION SERVED			25.6%	25.7%	25.5%	25.0%	24.3%	23.7%	23.0%	22.4%
% KABUPATEN POP. SERVED HC			15.9%	15.8%	15.6%	15.3%	14.9%	14.5%	14.2%	13.8%
% SERVICE AREA POPULATION SERVED			49.8%	51.0%	51.7%	51.8%	51.5%	51.2%	50.9%	50.6%
% SERVICE AREA POP. SERVED HC			31.0%	31.5%	31.7%	31.6%	31.5%	31.4%	31.3%	31.1%
<b>AVAILABLE CONNECTIONS</b>										
Other Household	0.6%	94.7%	118,910	122,052	123,913	125,110	125,860	126,616	127,375	128,139
Very Poor Households	0.6%	1.8%	2,328	2,389	2,425	2,449	2,463	2,478	2,493	2,508
Public Tap	0.6%	0.6%	757	778	790	798	803	808	813	818
Commerce	0.6%	2.1%	2,411	2,482	2,525	2,552	2,567	2,582	2,598	2,613
Services	0.6%	0.6%	631	650	661	668	672	676	680	684
Industry	0.6%	0.1%	202	205	207	208	209	210	212	213
Harbour & Water Tankers		0.0%	18	18	18	18	18	19	19	19
Sub-total, Non-domestic		2.8%	3,262	3,355	3,411	3,446	3,467	3,488	3,509	3,530
<b>Total</b>	<b>100.0%</b>		<b>125,258</b>	<b>128,575</b>	<b>130,540</b>	<b>131,803</b>	<b>132,594</b>	<b>133,389</b>	<b>134,190</b>	<b>134,995</b>
Increase in Service Connections			4,522	3,317	1,965	1,263	791	796	800	805
<b>PERSONS PER CONNECTION</b>										
Other Household			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Very Poor Households			7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Public Tap			100	100	100	100	100	100	100	100
<b>UNIT CONSUMPTION</b>										
			<b>H'hold Demand Based On Income &amp; Price Elasticities</b>							
Other Household (lcd)			146	146	146	146	146	146	146	146
Very Poor Households (lcd)			116	116	116	116	116	116	116	116
Public Tap (ltr/cap/day)			21	21	21	21	21	21	21	21
Commerce (m3/conn/month)			26	26	26	26	26	26	26	26
Services (m3/conn/month)			203	204	205	206	207	207	207	207
Industry (m3/conn/month)			738	740	742	743	743	743	743	743
Harbour & Tankers (m3/month)			9,221	9,263	9,307	9,329	9,341	9,341	9,341	9,341
<b>Total (m3/conn/month)</b>			<b>25.5</b>	<b>25.6</b>	<b>25.8</b>	<b>25.8</b>	<b>25.9</b>	<b>25.9</b>	<b>25.9</b>	<b>25.9</b>

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**Maximum Cash and PFC**

<b>WATER DEMAND AND PRODUCTION PROJECTIONS</b>			<b>20%</b>	<b>6%</b>	<b>18%</b>	<b>5%</b>	<b>17%</b>	<b>5%</b>	<b>16%</b>	<b>5%</b>
<b>NEW PROJECTS FUNDED BY LOAN</b>			2018	2019	2020	2021	2022	2023	2024	2025
<b>ALL OPERATIONS</b>										
KABUPATEN POPULATION (000)	3.16%	growth/year	5,401	5,572	5,748	5,929	6,117	6,310	6,510	6,715
SERVICE AREA POPULATION (000)	1.00%	growth/year	2,343	2,366	2,390	2,414	2,438	2,462	2,487	2,512
POPULATION SERVED (000)			1,177	1,182	1,187	1,191	1,196	1,200	1,205	1,210
POPULATION SERVED HC (000)			727	731	736	740	744	749	753	758
% KABUPATEN POPULATION SERVED			21.8%	21.2%	20.6%	20.1%	19.5%	19.0%	18.5%	18.0%
% KABUPATEN POP. SERVED HC			13.5%	13.1%	12.8%	12.5%	12.2%	11.9%	11.6%	11.3%
% SERVICE AREA POPULATION SERVED			50.3%	50.0%	49.7%	49.4%	49.1%	48.8%	48.5%	48.2%
% SERVICE AREA POP. SERVED HC			31.0%	30.9%	30.8%	30.7%	30.5%	30.4%	30.3%	30.2%
<b>AVAILABLE CONNECTIONS</b>										
Other Household	0.6%	94.7%	128,908	129,682	130,460	131,243	132,030	132,822	133,619	134,421
Very Poor Households	0.6%	1.8%	2,523	2,538	2,553	2,569	2,584	2,600	2,615	2,631
Public Tap	0.6%	0.6%	823	828	833	838	843	848	853	858
Commerce	0.6%	2.1%	2,629	2,645	2,661	2,677	2,693	2,709	2,725	2,742
Services	0.6%	0.6%	689	693	697	701	705	709	714	718
Industry	0.6%	0.1%	214	216	217	218	219	221	222	223
Harbour & Water Tankers		0.0%	19	19	19	19	19	19	20	20
Sub-total, Non-domestic		2.8%	3,551	3,572	3,594	3,615	3,637	3,659	3,681	3,703
<b>Total</b>	<b>100.0%</b>		<b>135,805</b>	<b>136,620</b>	<b>137,439</b>	<b>138,264</b>	<b>139,094</b>	<b>139,928</b>	<b>140,768</b>	<b>141,612</b>
Increase in Service Connections			810	815	820	825	830	835	840	845
<b>PERSONS PER CONNECTION</b>										
Other Household			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Very Poor Households			7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Public Tap			100	100	100	100	100	100	100	100
<b>UNIT CONSUMPTION</b>										
Other Household (lcd)			146	146	146	146	146	146	146	146
Very Poor Households (lcd)			116	116	116	116	116	116	116	116
Public Tap (ltr/cap/day)			21	21	21	21	21	21	21	21
Commerce (m3/conn/month)			26	26	26	26	26	26	26	26
Services (m3/conn/month)			207	207	207	207	207	207	207	207
Industry (m3/conn/month)			743	743	743	743	743	743	743	743
Harbour & Tankers (m3/month)			9,341	9,341	9,341	9,341	9,341	9,341	9,341	9,341
<b>Total (m3/conn/month)</b>			<b>25.9</b>							

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**Maximum Cash and PFC**

<b>WATER DEMAND AND PRODUCTION PROJECTIONS</b>	<b>TARIFF INCREASE</b>				<b>2%</b>	<b>36%</b>	<b>29%</b>	<b>5%</b>	<b>43%</b>	<b>5%</b>
<b>NEW PROJECTS FUNDED BY LOAN</b>	2001	2002	2003	2004	2005	2006	2007	2008	2009	
<b>WATER DEMAND (000M3/YEAR)</b>										
Other Household	18,337	20,790	22,128	23,726	24,524	27,358	26,941	28,565	29,882	
Very Poor Households	759	774	611	655	656	264	588	623	651	
Public Tap	331	401	357	422	414	557	479	509	533	
Commerce	439	444	587	612	780	1,136	637	681	716	
Services	1,008	973	1,081	1,276	1,302	1,190	1,302	1,393	1,467	
Industry	4,749	689	773	679	714	878	1,668	1,716	1,756	
Harbour	574	5,015	2,871	2,274	2,308	1,660	1,713	1,801	1,873	
Sub-total, Non-domestic	6,769	7,122	5,313	4,841	5,104	4,864	5,320	5,592	5,813	
<b>Total (CONTINUED)</b>	<b>26,196</b>	<b>29,087</b>	<b>28,409</b>	<b>29,644</b>	<b>30,698</b>	<b>33,043</b>	<b>33,327</b>	<b>35,289</b>	<b>36,880</b>	
<b>REQUIRED PRODUCTION/PURCHASES (000M3/YEAR)</b>										
Production Losses (%)	9.9%	0.3%	0.2%	0.1%	0.0%	4.2%	0.1%	0.1%	0.1%	
Distribution Losses (%)	35.9%	37.3%	40.8%	39.5%	36.9%	29.2%	29.5%	25.9%	24.8%	
Total Losses (%)	42.3%	37.5%	40.9%	39.6%	36.9%	32.2%	29.6%	26.0%	24.9%	
Distribution Required (000m3/year)	40,897	46,386	47,990	48,985	50,726	57,039	62,984	72,102	78,825	
PDAM Distribution Capacity (000m3/year)	39,230	54,640	55,455	57,462	57,468	57,468	67,877	67,877	67,877	
PDAM Production	45,369	46,537	48,091	49,056	48,616	48,706	47,318	47,688	49,099	
PDAM Distribution	40,897	46,386	47,990	48,985	48,616	46,656	47,251	47,640	49,050	
Volume purchased from Ar 0 2004 Rp/m3	-	-	-	-	-	-	-	-	-	
Volume sold to another PC 0 2004 Rp/m3	-	-	-	-	-	-	-	-	-	
Net purchases (sales) from/to other PDAMs	-	-	-	-	-	-	-	-	-	
Volume Sold to PDAM Consumers	26,196	29,087	28,409	29,645	30,698	35,003	34,908	38,249	39,801	
% Connected Demand Satisfied	100%	100%	100%	100%	100%	106%	105%	108%	108%	
<b>CAPACITY UTILISATION</b>										
PDAM Installed Production Capacity (Peak Hour in ltr/sec) 115%										
Existing, Not Used by WSSP	1,587	1,999	2,027	2,099	2,099	2,086	2,099	2,099	2,099	
Existing Used by WSSP Project	-	-	-	-	-	13	-	-	-	
Project Extensions	-	-	-	-	0	0	380	380	380	
PDAM Installed Production Capacity (000m3/year)	1587	1999	2026.5	2098.5	2098.7	2098.71	2478.5	2478.5	2478.5	
Existing	43,520	54,818	55,572	57,546	57,546	57,194	57,546	57,546	57,546	
Existing Used by WSSP Project	-	-	-	-	-	352	-	-	-	
Project Extensions	-	-	-	-	5	6	10,421	10,421	10,421	
PDAM Plant Utilization Factor	104.2%	84.9%	86.5%	85.2%	84.5%	84.6%	69.6%	70.2%	72.2%	

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**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**Maximum Cash and PFC**

<b>WATER DEMAND AND PRODUCTION PROJECTIONS</b>	<b>27%</b>	<b>5%</b>	<b>25%</b>	<b>6%</b>	<b>23%</b>	<b>5%</b>	<b>21%</b>	<b>5%</b>
<b>NEW PROJECTS FUNDED BY LOAN</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>WATER DEMAND (000M3/YEAR)</b>								
Other Household	31,116	32,106	32,772	33,180	33,439	33,640	33,842	34,045
Very Poor Households	678	699	714	722	728	732	737	741
Public Tap	556	575	587	595	599	603	607	610
Commerce	750	776	794	805	812	817	822	827
Services	1,537	1,592	1,630	1,653	1,667	1,677	1,687	1,697
Industry	1,793	1,822	1,842	1,855	1,865	1,876	1,887	1,899
Harbour	1,940	1,994	2,031	2,053	2,068	2,080	2,093	2,105
Sub-total, Non-domestic	6,020	6,186	6,297	6,366	6,412	6,450	6,489	6,528
<b>Total (CONTINUED)</b>	<b>38,370</b>	<b>39,565</b>	<b>40,370</b>	<b>40,863</b>	<b>41,178</b>	<b>41,425</b>	<b>41,674</b>	<b>41,924</b>
<b>REQUIRED PRODUCTION/PURCHASES (000M3/YEAR)</b>								
Production Losses (%)	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Distribution Losses (%)	23.7%	22.5%	21.9%	20.6%	20.6%	20.6%	20.6%	20.6%
Total Losses (%)	23.7%	22.6%	22.0%	20.7%	20.7%	20.7%	20.7%	20.7%
Distribution Required (000m3/year)	84,838	88,409	90,936	92,113	92,870	92,877	93,272	93,336
PDAM Distribution Capacity (000m3/year)	67,877	67,877	67,877	67,878	67,878	67,878	67,878	67,878
PDAM Production	50,315	51,090	51,726	51,538	51,936	52,248	52,562	52,877
PDAM Distribution	50,265	51,039	51,674	51,487	51,885	52,196	52,509	52,824
Volume purchased from Ar 0 2004 Rp/m3	-	-	-	-	-	-	-	-
Volume sold to another PC 0 2004 Rp/m3	-	-	-	-	-	-	-	-
Net purchases (sales) from/to other PDAMs	-	-	-	-	-	-	-	-
Volume Sold to PDAM Consumers	41,255	42,399	42,944	43,079	43,118	43,118	43,118	43,118
% Connected Demand Satisfied	108%	107%	106%	105%	105%	104%	103%	103%
<b>CAPACITY UTILISATION</b>								
PDAM Installed Production Capacity (Peak Hour in ltr/sec)								
Existing, Not Used by WSSP	2,099	2,097	2,074	2,044	2,035	2,035	2,035	2,035
Existing Used by WSSP Project	-	1	25	55	64	64	64	64
Project Extensions	380	380	380	380	380	380	380	380
PDAM Installed Production Capacity (000m3/year)	2478.5	2478.5	2478.5	2478.5	2478.5	2478.5	2478.5	2478.5
Existing	57,546	57,508	56,870	56,045	55,793	55,793	55,793	55,793
Existing Used by WSSP Project	-	38	677	1,502	1,753	1,753	1,753	1,753
Project Extensions	10,421	10,421	10,421	10,421	10,421	10,421	10,421	10,421
PDAM Plant Utilization Factor	74.0%	75.2%	76.1%	75.8%	76.4%	76.9%	77.3%	77.8%

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**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**Maximum Cash and PFC**

<b>WATER DEMAND AND PRODUCTION PROJECTIONS</b>	<b>20%</b>	<b>6%</b>	<b>18%</b>	<b>5%</b>	<b>17%</b>	<b>5%</b>	<b>16%</b>	<b>5%</b>
<b>NEW PROJECTS FUNDED BY LOAN</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>WATER DEMAND (000M3/YEAR)</b>								
Other Household	34,249	34,455	34,661	34,869	35,078	35,289	35,501	35,714
Very Poor Households	746	750	755	759	764	768	773	778
Public Tap	614	618	621	625	629	633	636	640
Commerce	832	837	842	847	852	857	862	867
Services	1,707	1,717	1,728	1,738	1,748	1,759	1,769	1,780
Industry	1,910	1,922	1,933	1,945	1,956	1,968	1,980	1,992
Harbour	2,118	2,131	2,143	2,156	2,169	2,182	2,195	2,208
Sub-total, Non-domestic	6,567	6,606	6,646	6,686	6,726	6,766	6,807	6,848
<b>Total (CONTINUED)</b>	<b>42,175</b>	<b>42,428</b>	<b>42,683</b>	<b>42,939</b>	<b>43,197</b>	<b>43,456</b>	<b>43,717</b>	<b>43,979</b>
<b>REQUIRED PRODUCTION/PURCHASES (000M3/YEAR)</b>								
Production Losses (%)	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Distribution Losses (%)	20.6%	20.6%	20.6%	20.6%	20.6%	20.6%	20.6%	20.6%
Total Losses (%)	20.7%	20.7%	20.7%	20.7%	20.7%	20.7%	20.7%	20.7%
Distribution Required (000m3/year)	93,736	93,848	94,254	94,408	94,820	95,010	95,428	95,651
PDAM Distribution Capacity (000m3/year)	67,878	67,878	67,878	67,878	67,878	67,878	67,878	67,878
PDAM Production	53,194	53,513	53,834	54,157	54,482	54,809	55,138	55,469
PDAM Distribution	53,141	53,460	53,781	54,103	54,428	54,755	55,083	55,414
Volume purchased from Ar 0 2004 Rp/m3	-	-	-	-	-	-	-	-
Volume sold to another PC 0 2004 Rp/m3	-	-	-	-	-	-	-	-
Net purchases (sales) from/to other PDAMs	-	-	-	-	-	-	-	-
Volume Sold to PDAM Consumers	43,118	43,118	43,118	43,118	43,118	43,118	43,118	43,118
% Connected Demand Satisfied	102%	102%	101%	100%	100%	99%	99%	98%
<b>CAPACITY UTILISATION</b>								
PDAM Installed Production Capacity (Peak Hour in ltr/sec) 115%								
Existing, Not Used by WSSP	2,035	2,035	2,035	2,035	2,035	2,035	2,035	2,035
Existing Used by WSSP Project	64	64	64	64	64	64	64	64
Project Extensions	380	380	380	380	380	380	380	380
PDAM Installed Production Capacity (000m3/year)	2478.5	2478.5	2478.5	2478.5	2478.5	2478.5	2478.5	2478.5
Existing	55,793	55,793	55,793	55,793	55,793	55,793	55,793	55,793
Existing Used by WSSP Project	1,753	1,753	1,753	1,753	1,753	1,753	1,753	1,753
Project Extensions	10,421	10,421	10,421	10,421	10,421	10,421	10,421	10,421
PDAM Plant Utilization Factor	78.3%	78.7%	79.2%	79.7%	80.2%	80.6%	81.1%	81.6%

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## ANNEX C – LOAN DISBURSEMENT AND AMORTIZATION SCHEDULE (RANGE B49 I-AD580)



**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**No Asset Revaluation**

Maximum Cash and PFC	TARIFF INCREASE			2%	36%	29%	5%	43%	5%	27%	5%	25%	
DEBT SERVICE ANALYSIS	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
<b>EXISTING LOANS (PDAM data if available)</b>													
Loan Balance	22,131	20,803	18,280	16,620	15,938	14,106	12,274	10,442	8,610	6,778	5,579	4,543	
Amortization	1,705	1,705	2,072	2,640	1,832	1,832	1,832	1,832	1,832	1,832	1,199	1,036	
Interest	2,348	2,585	2,416	2,111	1,826	1,642	1,458	1,274	1,090	906	722	596	
<b>EXISTING LOANS (calculated)</b>													
Loan Balance	Total			2,640	2,508	2,376	2,244	2,112	1,980	1,848	1,716	1,584	
Amortization	20 years				132	132	132	132	132	132	132	132	
Interest	9.00%			119	232	220	208	196	184	172	160	149	
Interest Cap/Acum													
Repayment of Accumulated Interest													
<b>Ongoing Loan 2</b>													
Disbursement	Total			0	0	0	0	0	0	0	0	0	
Loan Balance				0	0	0	0	0	0	0	0	0	
Amortization	20 years												
Interest	9.00%			0	0	0	0	0	0	0	0	0	
Interest Cap/Acum													
Repayment of Accumulated Interest													
<b>LOANS WITH CONSTANT PRINCIPAL REPAYMENT:</b>													
<b>COMMITTED/OTHER PROJECTS</b>	Loan=	45,758.75	million	Interest =	17.00%	Commitment interest	0.00%	Up-front int.	0.00%				
Loan Start Year	0	Grace Interest (years)	2	2	Grace Amortization	2	5	Years to repay	7				
Disbursements				0	0	0	0	14455.23	1801.977	22542.27	3153.079	1975.74	974.2496
Annual Amortization:	6,537	0	Inter. Y1	1	2	Year interest paid		5	Amort. Y1	1			
Cumulative Disburs.				0	0	0	0	14455.23	16257.21	38799.48	41952.56	43928.3	44902.55
Amortization				0	0	0	0	0	0	0	0	0	
Loan Balance				0	0	0	0	0	0	0	0	0	
Commit+Gen.Interest, unadjusted				0	0	0	0	0	0	0	0	0	
Up-Front Charge				0	0	0	0	0	0	0	0	0	
Total interest, adjusted				0	0	0	0	0	0	0	0	0	
Of which interest capitalized is				0	0	0	0	0	0	0	0	0	
Balance of Accumulated Interest				0	0	0	0	0	0	0	0	0	
Repayment of Accumulated Interest				0	0	0	0	0	0	0	0	0	

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**No Asset Revaluation**

Maximum Cash and PFC	TARIFF	6%	23%	5%	21%	5%	20%	6%	18%	5%	17%	5%	16%	5%
DEBT SERVICE ANALYSIS		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>EXISTING LOANS (PDAM data if available)</b>														
Loan Balance		3,660	2,777	1,894	1,011	127	0	-	-	-	-	-	-	-
Amortization		883	883	883	883	883	127	-	-	-	-	-	-	-
Interest		486	392	297	203	108	13	-	-	-	-	-	-	-
<b>EXISTING LOANS (calculated)</b>														
	Total													
Loan Balance		1,452	1,320	1,188	1,056	924	792	660	528	396	264	132	0	(132)
Amortization	20 years	132	132	132	132	132	132	132	132	132	132	132	132	132
Interest	9.00%	137	125	113	101	89	77	65	53	42	30	18	6	(6)
Interest Cap/Acum														
Repayment of Accumulated Interest														
<b>Ongoing Loan 2</b>														
	Total													
Disbursement														
Loan Balance		0	0	0	0	0	0	0	0	0	0	0	0	0
Amortization	20 years	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest	9.00%	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest Cap/Acum														
Repayment of Accumulated Interest														
<b>LOANS WITH CONSTANT PRINCIPAL REPAYMENT:</b>														
<b>COMMITTED/OTHER PROJECTS</b>														
Loan=	45,758.75	million												
Loan Start Year	0	Grace Interest (years)												
Disbursements	856.2034	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Amortization:	6,537	0												
Cumulative Disburs.	45758.75	45758.75	45758.75	45758.75	45758.75	45758.75	45758.75	45758.75	45758.75	45758.75	45758.75	45758.75	45758.75	45758.75
Amortization	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loan Balance	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commit+Gen.Interest, unadjusted	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Up-Front Charge	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total interest, adjusted	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Of which interest capitalized is	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Balance of Accumulated Interest	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Repayment of Accumulated Interest	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**  
**No Asset Revaluation**

Maximum Cash and PFC		TARIFF INCREASE				2%		36%		29%		5%		43%		5%		27%		5%		25%	
DEBT SERVICE ANALYSIS		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012										
<b>PROPOSED WSPP LOAN SLA</b>	Loan=	87,510.97	million	Interest =	9.6%	Commitment interest	0.75%	Up-front int.	1.00%														
Loan Start Year	2007	Grace Interest (years)		5	2012	Grace Amortization		5	0	Years to repay													
Disbursements					0	0	0	0	48,382	26,631	10,681	1,817	-	-									
Annual Amortization:	4,376	2007	Inter. Y1		1	2012	Year interest paid		0	0	Amort. Y1	0.9925											
Cumulative Disburs.							0	0	48,382	75,013	85,694	87,511	87,511	87,511									
Amortization							2009	0	-	-	-	-	-	-	-	-	-	-	-	-	-	4,376	
Loan Balance							-2009	-2009	46,373	76,665	93,606	103,799	113,423	118,216									
Commit+Gen.Interest, unadjusted							0	0	2,785	6,261	8,376	9,625	10,564	11,319									
Up-Front Charge							0	0	875	-	-	-	-	-									
Total interest, adjusted							0	0	3,660	6,261	8,376	9,625	10,564	11,319									
Of which interest accumulated is							0	0	3,660	6,261	8,376	9,625	10,564	-									
Balance of Accumulated Interest		9920.770799	end 2008				0	0	3,660	9,921	18,297	27,921	38,486	37,090									
Repayment of Accumulated Interest							0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	1,396	
<b>OTHER NEW LOANS</b>	Loan=	41,953		Interest=	17.0%	Commitem.Interest	0.00%	Up-front%	0%														
Loan Start Year	2007	Grace Interest (years)		2	2009	Amortization		2	2009	Years to repay													
Disbursements									0	14,455	1,802	22,542	3,153	1,976	974								
Annual Amortization:	8,391	2007	Inter. Y1		1	2009	Year interest paid		0	2,009	mort. th 1	1											
Cumulative Disburs.							0	0	14,455	16,257	38,799	41,953	43,928	44,903									
Amortization							0	0	-	-	8,391	8,391	8,391	8,391									
Loan Balance							0	0	14,455	16,257	30,409	25,172	18,757	11,341									
Commit+Gen.Interest, unadjusted							0	0	1,229	2,611	3,967	4,724	3,734	2,558									
Up-Front Charge							0	0	-	-	-	-	-	-									
Total interest, adjusted							0	0	1,229	2,611	3,967	4,724	3,734	2,558									
Of which interest capitalized is							0	0	1,229	2,611	-	-	-	-									
Balance of Accumulated Interest							0	0	1,229	3,839	3,071	2,304	1,536	768									
Repayment of Accumulated Interest							0	0	-	-	768	768	768	768									

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**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**No Asset Revaluation**

Maximum Cash and PFC	TARIFF	6%	23%	5%	21%	5%	20%	6%	18%	5%	17%	5%	16%	5%
DEBT SERVICE ANALYSIS		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>PROPOSED WSPP LOAN SLA</b>	Loan= 87,510.97 million													
Loan Start Year	2007 Grace Interest (years)													
Disbursements		-	-	-	-	-	-	-	-	-	-	-	-	-
Annual Amortization:	4,376 2007													
Cumulative Disburs.		87,511	87,511	87,511	87,511	87,511	87,511	87,511	87,511	87,511	87,511	87,511	87,511	87,511
Amortization		4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376
Loan Balance		112,444	106,673	100,901	95,130	89,358	83,586	77,815	72,043	66,271	60,500	54,728	48,957	43,185
Commit+Gen.Interest, unadjusted		11,339	10,788	10,237	9,686	9,134	8,583	8,032	7,481	6,930	6,379	5,827	5,276	4,725
Up-Front Charge		-	-	-	-	-	-	-	-	-	-	-	-	-
Total interest, adjusted		11,339	10,788	10,237	9,686	9,134	8,583	8,032	7,481	6,930	6,379	5,827	5,276	4,725
Of which interest accumulated is		-	-	-	-	-	-	-	-	-	-	-	-	-
Balance of Accumulated Interest	9920.770799 end 2008	35,694	34,297	32,901	31,505	30,109	28,713	27,317	25,921	24,525	23,129	21,733	20,337	18,941
Repayment of Accumulated Interest		1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,396
<b>OTHER NEW LOANS</b>	Loan= 41,953													
Loan Start Year	2007 Grace Interest (years)													
Disbursements		856	-	-	-	-	-	-	-	-	-	-	-	-
Annual Amortization:	8,391 2007													
Cumulative Disburs.		45,759	45,759	45,759	45,759	45,759	45,759	45,759	45,759	45,759	45,759	45,759	45,759	45,759
Amortization		8,391	3,806	-	-	-	-	-	-	-	-	-	-	-
Loan Balance		3,806	-	-	-	-	-	-	-	-	-	-	-	-
Commit+Gen.Interest, unadjusted		1,287	324	-	-	-	-	-	-	-	-	-	-	-
Up-Front Charge		-	-	-	-	-	-	-	-	-	-	-	-	-
Total interest, adjusted		1,287	324	-	-	-	-	-	-	-	-	-	-	-
Of which interest capitalized is		-	-	-	-	-	-	-	-	-	-	-	-	-
Balance of Accumulated Interest		-	-	-	-	-	-	-	-	-	-	-	-	-
Repayment of Accumulated Interest		768	768	-	-	-	-	-	-	-	-	-	-	-

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**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**No Asset Revaluation**

Maximum Cash and PFC	TARIFF INCREASE											
	2001	2002	2003	2%	36%	29%	5%	43%	5%	27%	5%	25%
<b>DEBT SERVICE ANALYSIS</b>	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>DEBT SUMMARY</b>	<b>TARIFF INCREASE</b>											
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>DEBT SUMMARY. AMORTIZATION:</b>												
AMORTIZATION OF LOAN PRINCIPAL												
Existing Loans	1,705	1,705	2,072	2,640	1,964	1,964	1,964	1,964	1,964	1,964	1,331	1,168
Committed SLA/RPD	-	-	-	-	-	-	-	-	-	-	-	-
Proposed SLA	-	-	-	-	2,009	-	-	-	-	-	-	4,376
Other Loans	-	-	-	-	-	-	-	-	8,391	8,391	8,391	8,391
<b>SUB-TOTAL AMORTIZATION OF PRINCIPAL LOAN</b>	<b>1,705</b>	<b>1,705</b>	<b>2,072</b>	<b>2,640</b>	<b>3,973</b>	<b>1,964</b>	<b>1,964</b>	<b>1,964</b>	<b>10,355</b>	<b>10,355</b>	<b>9,722</b>	<b>13,934</b>
AMORTIZATION OF ACCUMULATED INTEREST												
Existing Loans	-	-	-	-	-	-	-	-	-	-	-	-
Committed SLA/RPD	-	-	-	-	-	-	-	-	-	-	-	-
Proposed SLA	-	-	-	-	-	-	-	-	-	-	-	1,396
Other Loans	-	-	-	-	-	-	-	-	768	768	768	768
<b>SUB-TOTAL AMORT OF INTEREST ACCUM'D</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>768</b>	<b>768</b>	<b>768</b>	<b>2,164</b>
<b>TOTAL AMORT OF L/T DEBT</b>	<b>1,705</b>	<b>1,705</b>	<b>2,072</b>	<b>2,640</b>	<b>3,973</b>	<b>1,964</b>	<b>1,964</b>	<b>1,964</b>	<b>11,122</b>	<b>11,122</b>	<b>10,489</b>	<b>16,098</b>
INTEREST ACCUMULATED												
Existing Loans	0	-	-	-	-	-	-	-	-	-	-	-
Committed SLA/RPD	0	-	-	-	-	-	-	-	-	-	-	-
Proposed SLA	-	-	-	-	-	-	3,660	6,261	8,376	9,625	10,564	-
Other Loans	3,839	-	-	-	-	-	1,229	2,611	-	-	-	-
<b>TOTAL</b>	<b>3,839</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>4,889</b>	<b>8,871</b>	<b>8,376</b>	<b>9,625</b>	<b>10,564</b>	<b>-</b>
OPERATIONAL INTEREST:												
Existing Loans	2,348	2,585	2,416	2,111	2,058	1,862	1,666	1,470	1,274	1,078	882	745
Committed SLA/RPD	-	-	-	-	-	-	-	-	-	-	-	-
Proposed SLA	-	-	-	-	-	-	-	-	-	-	-	11,319
Other Loans	-	-	-	-	-	-	-	-	3,967	4,724	3,734	2,558
<b>TOTAL</b>	<b>2,348</b>	<b>2,585</b>	<b>2,416</b>	<b>2,111</b>	<b>2,058</b>	<b>1,862</b>	<b>1,666</b>	<b>1,470</b>	<b>5,241</b>	<b>5,802</b>	<b>4,616</b>	<b>14,622</b>
Long-Term Debt (Gross)												

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**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**No Asset Revaluation**

Maximum Cash and PFC	TARIFF	6%	23%	5%	21%	5%	20%	6%	18%	5%	17%	5%	16%	5%
DEBT SERVICE ANALYSIS	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
<b>DEBT SUMMARY</b>	<b>TARIFF IN</b>	6%	23%	5%	21%	5%	20%	6%	18%	5%	17%	5%	16%	5%
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
<b>DEBT SUMMARY. AMORTIZATION:</b>														
AMORTIZATION OF LOAN PRINCIPAL														
Existing Loans	1,015	1,015	1,015	1,015	1,015	259	132	132	132	132	132	132	132	132
Committed SLA/RPD	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Proposed SLA	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376	4,376
Other Loans	8,391	3,806	-	-	-	-	-	-	-	-	-	-	-	-
<b>SUB-TOTAL AMORTIZATION OF PRINCIPAL LOAN</b>	<b>13,781</b>	<b>9,197</b>	<b>5,391</b>	<b>5,391</b>	<b>5,391</b>	<b>4,635</b>	<b>4,508</b>							
AMORTIZATION OF ACCUMULATED INTEREST														
Existing Loans	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Committed SLA/RPD	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Proposed SLA	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,396
Other Loans	768	768	-	-	-	-	-	-	-	-	-	-	-	-
<b>SUB-TOTAL AMORT OF INTEREST ACCUM'D</b>	<b>2,164</b>	<b>2,164</b>	<b>1,396</b>	<b>1,396</b>	<b>1,396</b>	<b>1,396</b>	<b>1,396</b>	<b>1,396</b>	<b>1,396</b>	<b>1,396</b>	<b>1,396</b>	<b>1,396</b>	<b>1,396</b>	<b>1,396</b>
<b>TOTAL AMORT OF L/T DEBT</b>	<b>15,945</b>	<b>11,361</b>	<b>6,787</b>	<b>6,787</b>	<b>6,787</b>	<b>6,031</b>	<b>5,904</b>							
INTEREST ACCUMULATED														
Existing Loans	0	-	-	-	-	-	-	-	-	-	-	-	-	-
Committed SLA/RPD	0	-	-	-	-	-	-	-	-	-	-	-	-	-
Proposed SLA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Loans	3,839	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>3,839</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
OPERATIONAL INTEREST:														
Existing Loans	623	517	410	304	197	91	65	53	42	30	18	6	(6)	
Committed SLA/RPD	-	-	-	-	-	-	-	-	-	-	-	-	-	
Proposed SLA	11,339	10,788	10,237	9,686	9,134	8,583	8,032	7,481	6,930	6,379	5,827	5,276	4,725	
Other Loans	1,287	324	-	-	-	-	-	-	-	-	-	-	-	
<b>TOTAL</b>	<b>13,250</b>	<b>11,628</b>	<b>10,647</b>	<b>9,989</b>	<b>9,332</b>	<b>8,674</b>	<b>8,097</b>	<b>7,534</b>	<b>6,971</b>	<b>6,408</b>	<b>5,845</b>	<b>5,282</b>	<b>4,719</b>	
Long-Term Debt (Gross)														

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## ANNEX D - DETAILED INCOME STATEMENT (RANGE B181-AD227)



**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

<b>Maximum Cash and PFC</b>	<b>No Asset Revaluation</b>		<b>TARIFF INCREASE</b>									
			2%	36%	29%	5%	43%	5%	27%	5%	25%	
<b>TABLE B4 - PROFIT AND LOSS ACCOUNT</b>	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>(CURRENT RP MILLION)</b>	Audited	Audited	Audited	Actual								
Number of Service Connections - '000	76	79	85	90	96	103	110	115	121	125	129	131
Average Consumption - m3/conn/month	29	31	28	27	27	28	26	28	27	27	27	27
Volume Sold - 000m3	26,196	29,087	28,409	29,645	30,698	35,003	34,908	38,249	39,801	41,255	42,399	42,944
% Unaccounted-for Water	42%	37%	41%	40%	37%	32%	30%	26%	25%	24%	23%	22%
Water Produced - 000m3	45,369	46,537	48,091	49,056	48,616	48,706	47,318	47,688	49,099	50,315	51,090	51,726
Average Tariff - Current Rp/M3 :	1,082	1,302	1,582	1,620	2,206	2,844	3,000	4,280	4,516	5,752	6,068	7,594
Tariff Revenues	28,338	37,857	44,933	48,034	67,714	99,540	104,732	163,721	179,734	237,286	257,277	326,116
Net Connection Fees	2,841	2,530	5,349	7,170	6,210	7,002	31,940	27,062	25,956	19,305	10,368	8,127
Sales of water to other PDAMs	-	-	-	-	-	-	-	-	-	-	-	-
Other Operating Revenues	5,172	8,022	10,415	11,344	-	-	14,982	17,138	19,097	20,479	21,181	21,703
<b>Total Operating Revenues</b>	<b>36,351</b>	<b>48,409</b>	<b>60,697</b>	<b>66,548</b>	<b>73,924</b>	<b>106,542</b>	<b>151,653</b>	<b>207,921</b>	<b>224,787</b>	<b>277,069</b>	<b>288,825</b>	<b>355,946</b>
Personnel	10,766	14,282	18,480	19,805	21,938	30,392	44,429	56,492	69,736	82,830	96,155	110,752
Power	4,927	6,866	7,837	8,933	10,018	14,091	26,607	37,912	49,287	61,832	67,772	73,662
Chemical	1,898	1,797	2,212	2,402	2,751	3,211	5,714	7,879	10,026	12,382	13,571	14,751
Maintenance Material	2,329	4,131	4,022	3,968	5,928	8,191	6,870	10,433	12,772	15,461	16,524	17,517
Administration - General	2,633	3,964	5,529	6,013	6,088	8,820	12,764	16,153	19,856	23,724	27,540	31,721
Bad Debts & Write Off	132	83	429	295	12	0	619	651	1,018	1,118	1,476	1,600
Raw Water Purchases	-	-	-	-	-	-	-	-	-	-	-	-
Raw Water Retribution	470	348	643	687	661	866	994	1,103	1,171	1,635	1,281	1,319
<b>Total Operating Expenses</b>	<b>23,155</b>	<b>31,471</b>	<b>39,152</b>	<b>42,103</b>	<b>47,396</b>	<b>65,571</b>	<b>97,998</b>	<b>130,623</b>	<b>163,867</b>	<b>198,981</b>	<b>224,319</b>	<b>251,322</b>

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

<b>Maximum Cash and PFC</b>	<b>No Asset Revaluation</b>	6%	23%	5%	21%	5%	20%	6%	18%	5%	17%	5%	16%	5%
<b>TABLE B4 - PROFIT AND LOSS ACCOUNT</b>		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>(CURRENT RP MILLION)</b>														
Number of Service Connections - '000		132	133	133	134	135	136	137	137	138	139	140	141	142
Average Consumption - m3/conn/month		27	27	27	27	27	26	26	26	26	26	26	26	25
Volume Sold - 000m3		43,079	43,118	43,118	43,118	43,118	43,118	43,118	43,118	43,118	43,118	43,118	43,118	43,118
% Unaccounted-for Water		21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Water Produced - 000m3		51,538	51,936	52,248	52,562	52,877	53,194	53,513	53,834	54,157	54,482	54,809	55,138	55,469
Average Tariff - Current Rp/M3 :		8,012	9,866	10,409	12,632	13,327	15,959	16,837	19,918	21,014	24,586	25,938	30,045	31,698
Tariff Revenues		345,131	425,416	448,814	544,676	574,633	688,114	725,960	858,821	906,057	1,060,100	1,118,406	1,295,490	1,366,742
Net Connection Fees		4,397	1,458	1,543	1,636	1,735	1,841	1,954	2,073	2,201	2,335	2,479	2,631	2,792
Sales of water to other PDAMs		-	-	-	-	-	-	-	-	-	-	-	-	-
Other Operating Revenues		21,970	22,054	22,138	22,223	22,308	22,394	22,480	22,567	22,654	22,742	22,831	22,920	23,009
<b>Total Operating Revenues</b>		<b>371,498</b>	<b>448,929</b>	<b>472,496</b>	<b>568,535</b>	<b>598,676</b>	<b>712,349</b>	<b>750,394</b>	<b>883,462</b>	<b>930,912</b>	<b>1,085,178</b>	<b>1,143,715</b>	<b>1,321,040</b>	<b>1,392,543</b>
Personnel		126,138	142,531	161,196	182,458	206,687	234,307	265,802	301,729	342,721	389,507	442,918	503,906	573,561
Power		78,502	83,667	88,698	94,032	99,687	105,682	112,039	118,779	125,925	133,502	141,535	150,053	159,084
Chemical		15,720	16,755	17,762	18,830	19,962	21,163	22,436	23,786	25,217	26,734	28,343	30,048	31,857
Maintenance Material		18,518	19,570	20,646	21,782	22,980	24,244	25,577	26,984	28,468	30,034	31,686	33,429	35,267
Administration - General		36,128	40,823	46,169	52,258	59,198	67,109	76,129	86,419	98,160	111,560	126,858	144,325	164,276
Bad Debts & Write Off		2,029	2,147	2,646	2,792	3,388	3,574	4,280	4,516	5,342	5,636	6,594	6,957	8,058
Raw Water Purchases		-	-	-	-	-	-	-	-	-	-	-	-	-
Raw Water Retribution		1,333	1,346	2,346	2,487	2,637	2,795	2,963	3,142	3,331	3,531	3,743	3,969	4,208
<b>Total Operating Expenses</b>		<b>278,367</b>	<b>306,838</b>	<b>339,463</b>	<b>374,639</b>	<b>414,539</b>	<b>458,874</b>	<b>509,228</b>	<b>565,354</b>	<b>629,164</b>	<b>700,504</b>	<b>781,677</b>	<b>872,687</b>	<b>976,311</b>

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

<b>Maximum Cash and PFC</b>	<b>No Asset Revaluation</b>	<b>TARIFF INCREASE</b>											
		2%	36%	29%	5%	43%	5%	27%	5%	25%			
<b>TABLE B4 - PROFIT AND LOSS ACCOUNT</b>		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>(CURRENT RP MILLION)</b>		Audited	Audited	Audited	Actual								
Income (Loss) before Depreciation		13,196	16,939	21,545	24,445	26,528	40,972	53,656	77,297	60,920	78,088	64,506	104,624
Depreciation	7.5% unvalued assets	9,264	10,980	14,349	18,375	20,532	25,126	19,712	25,631	33,240	39,327	44,203	48,354
Operating Income (Loss)		3,932	5,959	7,196	6,070	5,995	15,846	33,943	51,667	27,680	38,762	20,304	56,270
Operational Interest		2,348	2,585	2,416	2,111	1,788	1,763	1,666	1,470	5,241	5,802	4,616	14,622
Net Operating Income (Loss)		1,584	3,374	4,780	3,959	4,207	14,083	32,277	50,197	22,439	32,959	15,688	41,648
Royalties		-	-	-	-	-	-	-	-	-	-	-	-
Non-Operating Income (Loss) - Other		1,435	2,073	745	1,538	1,229	799	1,029	1,310	3,475	3,931	5,665	5,655
Before Tax Income		3,019	5,447	5,526	5,497	5,436	14,882	33,307	51,507	25,915	36,890	21,352	47,303
Taxable Income After Losses Carried Forward (5 Years)		3,019	5,447	5,526	5,497	5,436	14,882	33,307	51,507	25,915	36,890	21,352	47,303
Income Tax		594	1,311	1,739	1,806	1,613	4,447	9,983	15,443	7,766	11,058	6,397	14,182
<b>Net Income (Loss)</b>		<b>2,425</b>	<b>4,137</b>	<b>3,787</b>	<b>3,691</b>	<b>3,823</b>	<b>10,435</b>	<b>23,323</b>	<b>36,064</b>	<b>18,149</b>	<b>25,832</b>	<b>14,955</b>	<b>33,121</b>
Staff Funds Share of Net Income	10.0% of net income	-	-	-	-	369	382	1,044	2,332	3,606	1,815	2,583	1,496
Kotamadya Share of Net Income	55.0% ditto	-	-	-	-	2,030	2,103	5,739	12,828	19,835	9,982	14,207	8,225
Payment to Staff Funds	90.0% of share	-	-	-	-	332	344	939	2,099	3,246	1,633	2,325	1,346
Payment to Kotamadya	0.0% of share	-	-	-	-	-	-	-	-	-	-	-	-
<b>RATIOS AND COMPARATORS:</b>													
Ave.Expenses per M3 Sold (Rp)		884	1,082	1,378	1,420	1,544	1,873	2,807	3,415	4,117	4,823	5,291	5,852
Operating Ratio		89%	88%	88%	91%	92%	85%	78%	75%	88%	86%	93%	84%
Before Tax Income/Sales		11%	14%	12%	11%	8%	15%	32%	31%	14%	16%	8%	15%
Increases in Weighted Average Tariffs			20%	22%	2%	36%	29%	5%	43%	5%	27%	5%	25%
Average Asset's Rate Base (Nom. Rp M.)		73,248	75,900	90,600	114,541	116,204	95,654	92,223	148,854	221,378	266,651	290,221	299,571
Assets/Water Sales		2.58	2.00	2.02	2.38	1.72	0.96	0.88	0.91	1.23	1.12	1.13	0.92
Operating Income/Assets		2.2%	4.4%	5.3%	3.5%	3.6%	14.7%	35.0%	33.7%	10.1%	12.4%	5.4%	13.9%
Before Tax Income/Assets		4.1%	7.2%	6.1%	4.8%	4.7%	15.6%	36.1%	34.6%	11.7%	13.8%	7.4%	15.8%

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**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

<b>Maximum Cash and PFC</b>	<b>No Asset Revaluation</b>	6%	23%	5%	21%	5%	20%	6%	18%	5%	17%	5%	16%	5%
<b>TABLE B4 - PROFIT AND LOSS ACCOUNT</b>		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>(CURRENT RP MILLION)</b>														
Income (Loss) before Depreciation		93,131	142,090	133,032	193,896	184,137	253,474	241,166	318,108	301,747	384,674	362,038	448,353	416,232
Depreciation	7.5% unrevalued assets	52,885	57,181	61,611	66,269	71,279	76,666	82,459	88,689	95,389	102,593	110,341	118,672	127,631
Operating Income (Loss)		40,246	84,909	71,421	127,626	112,859	176,809	158,707	229,419	206,358	282,081	251,697	329,681	288,601
Operational Interest		13,250	11,628	10,647	9,989	9,332	8,674	8,097	7,534	6,971	6,408	5,845	5,282	4,719
Net Operating Income (Loss)		26,996	73,281	60,774	117,637	103,527	168,135	150,610	221,884	199,387	275,672	245,852	324,399	283,882
Royalties		-	-	-	-	-	-	-	-	-	-	-	-	-
Non-Operating Income (Loss) - Other		6,801	7,518	11,363	15,229	22,637	29,915	41,372	52,728	68,786	84,700	105,805	126,605	152,925
Before Tax Income		33,797	80,799	72,137	132,866	126,164	198,050	191,981	274,612	268,173	360,372	351,657	451,004	436,807
Taxable Income After Losses Carried Forward (5 Years)		33,797	80,799	72,137	132,866	126,164	198,050	191,981	274,612	268,173	360,372	351,657	451,004	436,807
Income Tax		10,130	24,231	21,632	39,851	37,841	59,406	57,586	82,375	80,443	108,103	105,488	135,292	131,033
<b>Net Income (Loss)</b>		<b>23,667</b>	<b>56,568</b>	<b>50,505</b>	<b>93,015</b>	<b>88,324</b>	<b>138,644</b>	<b>134,395</b>	<b>192,237</b>	<b>187,730</b>	<b>252,269</b>	<b>246,169</b>	<b>315,711</b>	<b>305,773</b>
Staff Funds Share of Net Income	10.0% of net income	3,312	2,367	5,657	5,050	9,301	8,832	13,864	13,440	19,224	18,773	25,227	24,617	31,571
Kotamadya Share of Net Income	55.0% ditto	18,216	13,017	31,112	27,778	51,158	48,578	76,254	73,918	105,730	103,252	138,748	135,393	173,641
Payment to Staff Funds	90.0% of share	2,981	2,130	5,091	4,545	8,371	7,949	12,478	12,096	17,301	16,896	22,704	22,155	28,414
Payment to Kotamadya	0.0% of share	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>RATIOS AND COMPARATORS:</b>														
Ave.Expenses per M3 Sold (Rp)		6,462	7,116	7,873	8,689	9,614	10,642	11,810	13,112	14,592	16,246	18,129	20,240	22,643
Operating Ratio		89%	81%	85%	78%	81%	75%	79%	74%	78%	74%	78%	75%	79%
Before Tax Income/Sales		10%	19%	16%	24%	22%	29%	26%	32%	30%	34%	31%	35%	32%
Increases in Weighted Average Tariffs		6%	23%	5%	21%	5%	20%	6%	18%	5%	17%	5%	16%	5%
Average Asset's Rate Base (Nom. Rp M.)		309,665	312,190	312,157	310,631	308,980	307,192	305,256	303,161	300,893	298,440	295,785	292,914	289,808
Assets/Water Sales		0.90	0.73	0.70	0.57	0.54	0.45	0.42	0.35	0.33	0.28	0.26	0.23	0.21
Operating Income/Assets		8.7%	23.5%	19.5%	37.9%	33.5%	54.7%	49.3%	73.2%	66.3%	92.4%	83.1%	110.7%	98.0%
Before Tax Income/Assets		10.9%	25.9%	23.1%	42.8%	40.8%	64.5%	62.9%	90.6%	89.1%	120.8%	118.9%	154.0%	150.7%

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## ANNEX E – DETAILED SOURCES AND APPLICATIONS OF FUNDS (RANGE B23 I-AD280)



**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**No Asset Revaluation**

<b>Maximum Cash and PFC</b>	<b>TARIFF INCREASE</b>			2%	36%	29%	5%	43%	5%	27%	5%	25%	6%
<b>TABLE B5 - SOURCES AND APPLICATION OF FUNDS</b> <b>(CURRENT RP MILLION)</b>	2001 Audited	2002 Audited	2003 Audited	2004 Actual	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>SOURCES OF FUNDS:</b>													
Income before Depreciation and Interest	13,196	16,939	21,545	24,445	26,528	40,972	53,656	77,297	60,920	78,088	64,506	104,624	93,131
Royalties	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-Operating Income (Loss) - Net	1,435	2,073	745	1,538	1,229	799	1,029	1,310	3,475	3,931	5,665	5,655	6,801
Gross Internal Cash Generation	14,631	19,012	22,291	25,983	27,757	41,771	54,685	78,608	64,395	82,019	70,171	110,279	99,932
GOI Construction Grant	-	606	1,083	-	-	156	-	360	-	-	-	-	-
GOI Feasibility Study Grant	-	-	-	-	-	-	-	-	-	-	-	-	-
GOI Technical Assistance Grant (APBN)	-	-	-	-	-	-	-	-	-	-	-	-	-
PPN Grant	-	-	-	-	-	-	-	-	-	-	-	-	-
RG Equity (Land)					-	-	1,182	706	589	-			
Other RG Equity/Advance					-	-	-	-	-	-			
Reinvestment by Kotamadya	-	-	-	-	2,030	2,103	5,739	12,828	19,835	9,982	14,207	8,225	18,216
Total Equity	-	606	1,083	-	2,030	2,259	6,922	13,894	20,424	9,982	14,207	8,225	18,216
<b>Borrowing :</b>													
Proposed Loan			-	-	-	-	48,382	26,631	10,681	1,817	-	-	-
Committed Loan			-	-	-	-	14,455	1,802	22,542	3,153	1,976	974	856
Ongoing Loans	23,836	-	(2,276)	(1,092)	-	-	-	-	-	-	-	-	-
Interest Accumulated	-	-	-	-	-	-	4,889	8,871	8,376	9,625	10,564	-	-
Total Borrowing	23,836	-	(2,276)	(1,092)	-	-	67,726	37,304	41,599	14,595	12,540	974	856
<b>TOTAL SOURCES OF FUNDS</b>	<b>38,467</b>	<b>19,618</b>	<b>21,098</b>	<b>24,891</b>	<b>29,787</b>	<b>44,030</b>	<b>129,333</b>	<b>129,806</b>	<b>126,418</b>	<b>106,596</b>	<b>96,918</b>	<b>119,479</b>	<b>119,005</b>
<b>APPLICATIONS OF FUNDS:</b>													
Proposed WSSP Projects	-	-	-	-	-	-	69,117	38,044	15,258	2,596	-	-	-
Committed/Other Projects	-	-	-	-	-	3,304	20,650	2,574	32,203	4,504	2,822	1,392	1,223
Past Projects	-	16,582	37,192	42,137	-	-	-	-	-	-	-	-	-

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**No Asset Revaluation**

<b>Maximum Cash and PFC</b>	23%	5%	21%	5%	20%	6%	18%	5%	17%	5%	16%	5%
<b>TABLE B5 - SOURCES AND APPLICATION OF FUNDS (CURRENT RP MILLION)</b>	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>SOURCES OF FUNDS:</b>												
Income before Depreciation and Interest	142,090	133,032	193,896	184,137	253,474	241,166	318,108	301,747	384,674	362,038	448,353	416,232
Royalties	-	-	-	-	-	-	-	-	-	-	-	-
Non-Operating Income (Loss) - Net	7,518	11,363	15,229	22,637	29,915	41,372	52,728	68,786	84,700	105,805	126,605	152,925
Gross Internal Cash Generation	149,608	144,395	209,124	206,774	283,389	282,538	370,835	370,533	469,374	467,844	574,958	569,157
GOI Construction Grant	-	-	-	-	-	-	-	-	-	-	-	-
GOI Feasibility Study Grant	-	-	-	-	-	-	-	-	-	-	-	-
GOI Technical Assistance Grant (APBN)	-	-	-	-	-	-	-	-	-	-	-	-
PPN Grant	-	-	-	-	-	-	-	-	-	-	-	-
RG Equity (Land)												
Other RG Equity/Advance												
Reinvestment by Kotamadya	13,017	31,112	27,778	51,158	48,578	76,254	73,918	105,730	103,252	138,748	135,393	173,641
Total Equity	13,017	31,112	27,778	51,158	48,578	76,254	73,918	105,730	103,252	138,748	135,393	173,641
<b>Borrowing :</b>												
Proposed Loan	-	-	-	-	-	-	-	-	-	-	-	-
Committed Loan	-	-	-	-	-	-	-	-	-	-	-	-
Ongoing Loans	-	-	-	-	-	-	-	-	-	-	-	-
Interest Accumulated	-	-	-	-	-	-	-	-	-	-	-	-
Total Borrowing	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL SOURCES OF FUNDS</b>	<b>162,624</b>	<b>175,507</b>	<b>236,902</b>	<b>257,932</b>	<b>331,967</b>	<b>358,792</b>	<b>444,753</b>	<b>476,264</b>	<b>572,626</b>	<b>606,592</b>	<b>710,351</b>	<b>742,798</b>
<b>APPLICATIONS OF FUNDS:</b>												
Proposed WSSP Projects	-	-	-	-	-	-	-	-	-	-	-	-
Committed/Other Projects	-	-	-	-	-	-	-	-	-	-	-	-
Past Projects	-	-	-	-	-	-	-	-	-	-	-	-

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**No Asset Revaluation**

<b>Maximum Cash and PFC</b>	<b>TARIFF INCREASE</b>			2%	36%	29%	5%	43%	5%	27%	5%	25%	6%
<b>TABLE B5 - SOURCES AND APPLICATION OF FUNDS (CURRENT RP MILLION)</b>	2001 Audited	2002 Audited	2003 Audited	2004 Actual	2005	2006	2007	2008	2009	2010	2011	2012	2013
PDAM Replacement/Connection Programme	-	-	-	-	4,481	30,191	30,452	29,321	28,464	29,643	51,504	55,144	57,356
Master Plan	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest Accumulated	-	-	-	-	-	-	4,889	8,871	8,376	9,625	10,564	-	-
Total Capital Expenditures	-	16,582	37,192	42,137	4,481	33,496	125,109	78,811	84,302	46,368	64,891	56,536	58,579
Amortization of L/T Debt	1,705	1,705	2,072	2,640	3,973	1,964	1,964	1,964	11,122	11,122	10,489	16,098	15,945
Operational Interest of L/T Debt	2,348	2,585	2,416	2,111	2,058	1,862	1,666	1,470	5,241	5,802	4,616	14,622	13,250
Total Debt Service of L/T Debt	4,053	4,290	4,488	4,751	6,031	3,826	3,630	3,434	16,363	16,925	15,105	30,720	29,195
Working Capital Needs	-	1,285	(6,502)	4,071	5,412	1,041	(9,403)	(3,305)	(553)	2,855	3,940	3,790	1,329
Other Assets/Liabil. Changes	-	5,393	(12,393)	(4,271)	3,041	(471)	(496)	(580)	(665)	(476)	(232)	(135)	(298)
Kotamadya Share of Net Income	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Profit Sharing	-	-	-	-	332	344	939	2,099	3,246	1,633	2,325	1,346	2,981
Income Tax	-	594	1,311	1,739	1,806	1,613	4,447	9,983	15,443	7,766	11,058	6,397	14,182
<b>TOTAL APPLICATIONS OF FUNDS</b>	<b>4,053</b>	<b>28,145</b>	<b>24,096</b>	<b>48,427</b>	<b>21,103</b>	<b>39,848</b>	<b>124,226</b>	<b>90,443</b>	<b>118,136</b>	<b>75,070</b>	<b>97,087</b>	<b>98,655</b>	<b>105,969</b>
<b>CASH INCREASE (DECREASE)</b>	<b>34,414</b>	<b>(8,527)</b>	<b>(2,998)</b>	<b>(23,536)</b>	<b>8,683</b>	<b>4,181</b>	<b>5,107</b>	<b>39,363</b>	<b>8,282</b>	<b>31,525</b>	<b>(169)</b>	<b>20,824</b>	<b>13,036</b>
Cash Balance, Beginning	(17,221)	17,193	8,666	5,668	3,902	12,855	17,136	22,243	61,606	69,888	101,413	101,244	122,069
Cash Balance, Ending	17,193	8,666	5,668	3,902	12,855	17,136	22,243	61,606	69,888	101,413	101,244	122,069	135,105
Minimum Cash Requirement	2,267	2,980	3,637	3,904	4,452	5,783	8,469	11,171	15,019	17,992	19,952	23,504	25,630
DSCR (SLAP, Cash balance less minimum cash)	5	2	1	1	2	4	5	16	4	6	6	4	5
DSCR (ADB and Perpamsi, Net revenues)	4	4	5	5	5	11	15	23	4	5	5	4	3
DSCR (Cashflow )	4	4	5	5	4	3	7	14	2	3	1	2	1
DSCR (BPKP, Net Income)	1	1	1	1	1	3	6	11	1	2	1	1	1
Contribution to Investment	na	45%	95%	47%	294%	112%	49%	101%	60%	137%	80%	135%	121%
Contr. to Investment, 3 Yr Average			107%	56%	524%	111%	48%	81%	77%	119%	99%	118%	158%

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**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

**No Asset Revaluation**

<b>Maximum Cash and PFC</b>	23%	5%	21%	5%	20%	6%	18%	5%	17%	5%	16%	5%
<b>TABLE B5 - SOURCES AND APPLICATION OF FUNDS (CURRENT RP MILLION)</b>	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
PDAM Replacement/Connection Programme	60,147	64,683	69,561	74,807	80,447	86,511	93,032	100,043	107,582	115,688	124,404	133,775
Master Plan	-	-	-	-	-	-	-	-	-	-	-	-
Interest Accumulated	-	-	-	-	-	-	-	-	-	-	-	-
Total Capital Expenditures	60,147	64,683	69,561	74,807	80,447	86,511	93,032	100,043	107,582	115,688	124,404	133,775
Amortization of L/T Debt	11,361	6,787	6,787	6,787	6,031	5,904	5,904	5,904	5,904	5,904	5,904	5,904
Operational Interest of L/T Debt	11,628	10,647	9,989	9,332	8,674	8,097	7,534	6,971	6,408	5,845	5,282	4,719
Total Debt Service of L/T Debt	22,989	17,434	16,776	16,118	14,705	14,001	13,438	12,875	12,312	11,749	11,186	10,623
Working Capital Needs	(2,469)	(5,712)	(9,856)	(12,707)	(16,480)	(18,831)	(22,165)	(23,942)	(26,650)	(27,553)	(29,215)	(28,719)
Other Assets/Liabil. Changes	(213)	(509)	(455)	(837)	(795)	(1,248)	(1,210)	(1,730)	(1,690)	(2,270)	(2,216)	(2,841)
Kotamadya Share of Net Income	-	-	-	-	-	-	-	-	-	-	-	-
Other Profit Sharing	2,130	5,091	4,545	8,371	7,949	12,478	12,096	17,301	16,896	22,704	22,155	28,414
Income Tax	10,130	24,231	21,632	39,851	37,841	59,406	57,586	82,375	80,443	108,103	105,488	135,292
<b>TOTAL APPLICATIONS OF FUNDS</b>	<b>92,714</b>	<b>105,218</b>	<b>102,204</b>	<b>125,603</b>	<b>123,667</b>	<b>152,318</b>	<b>152,776</b>	<b>186,922</b>	<b>188,894</b>	<b>228,420</b>	<b>231,802</b>	<b>276,543</b>
<b>CASH INCREASE (DECREASE)</b>	<b>69,910</b>	<b>70,290</b>	<b>134,697</b>	<b>132,329</b>	<b>208,301</b>	<b>206,474</b>	<b>291,976</b>	<b>289,342</b>	<b>383,732</b>	<b>378,171</b>	<b>478,549</b>	<b>466,255</b>
Cash Balance, Beginning	135,105	205,015	275,305	410,002	542,331	750,632	957,106	1,249,082	1,538,424	1,922,156	2,300,327	2,778,876
Cash Balance, Ending	205,015	275,305	410,002	542,331	750,632	957,106	1,249,082	1,538,424	1,922,156	2,300,327	2,778,876	3,245,131
Minimum Cash Requirement	27,486	29,741	32,618	35,888	39,465	43,602	48,233	53,503	59,401	66,119	73,656	82,244
DSCR (SLAP, Cash balance less minimum cash)	9	15	23	32	49	66	90	116	152	191	243	299
DSCR (ADB and Perpamsi, Net revenues)	7	8	12	13	19	20	28	29	38	40	51	54
DSCR (Cashflow )	4	5	8	8	14	14	21	21	29	30	40	41
DSCR (BPKP, Net Income)	2	3	6	5	9	10	14	15	20	21	28	29
Contribution to Investment	216%	209%	294%	277%	359%	339%	414%	389%	457%	427%	485%	449%
Contr. to Investment, 3 Yr Average	186%	137%	163%	183%	205%	224%	243%	258%	273%	#REF!	#REF!	#REF!

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# ANNEX F - DETAILED BALANCE SHEET PROJECTIONS (RANGE B283-AD324)



**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

Maximum Cash and PFC			TARIFF INCREASE		2%	36%	29%	5%	43%	5%	27%	5%	25%			
TABLE B6 - BALANCE SHEET			No Asset Revaluation		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
(CURRENT RP MILLION)			Audited	Audited	Audited	Actual										
Assets in Operation	reval after	2004	144,533	161,006	199,820	242,830	242,906	247,387	280,882	405,991	484,802	569,104	615,471	680,362		
Accumulated Depreciation			71,285	82,454	97,171	116,397	136,929	162,055	181,768	207,399	240,639	279,965	324,168	372,522		
Net Fixed Assets			73,248	78,552	102,649	126,432	105,977	85,331	99,115	198,593	244,163	289,138	291,303	307,840		
Work In Progress			2,461	2,570	949	76	4,481	33,496	125,109	78,811	84,302	46,368	64,891	56,536		
Cash + Deposits			17,193	8,666	5,668	3,902	12,855	17,136	22,243	61,606	69,888	101,413	101,244	122,069		
Accounts Receivable - Water	64.17653877	60 days=target	4,855	8,474	7,707	8,088	11,906	17,274	17,935	27,662	29,957	39,006	42,292	53,608		
Reserve of Bad Debts Provision, Water			(447)	(87)	(170)	(435)	(2)	(0)	(102)	(107)	(167)	(184)	(243)	(263)		
Past Connection Fees Put To Balance Sheet			216	156	1,193	843	843	843	843	843	843	843	843	843		
Receivable - Credited New Connections							(0)	-	44	52	54	48	35	27		
Inventories	76.90014466	30.32476223 days=target	1,111	1,454	947	1,283	1,829	2,111	2,009	2,456	2,476	2,313	2,500	2,681		
Other Receivable	Piutang (Usaha) non-Air; Piutang Lain-Lain, DP		1,951	1,712	2,467	2,907	3,113	3,284	3,465	3,656	3,857	4,069	4,292	4,529		
Total Current Assets			24,879	20,375	17,812	16,588	30,544	40,649	46,438	96,168	106,907	147,509	150,965	183,493		
Installation Inventory	116.9071293	70 days=target	3,776	3,952	5,261	5,921	5,446	5,009	4,607	4,237	3,897	3,584	3,584	3,584		
Other Assets			4,594	7,493	6,348	1,406	4,960	4,960	4,960	4,960	4,960	4,960	4,960	4,960		
<b>TOTAL ASSETS</b>			108,958	112,942	133,019	150,424	151,407	169,445	280,228	382,768	444,229	491,559	515,704	556,413		
Accounts Payable	65.05062187	30 days=target	530	1,783	6,801	3,982	2,091	2,891	4,352	6,039	7,653	9,455	10,413	11,422		
Other Payable			1,603	2,269	3,909	3,389	3,629	3,829	4,040	4,262	4,496	4,743	5,004	5,279		
Other Current Liabilities (Cust. Deposit)			1,199	1,199	1,194	1,194	1,280	1,363	1,465	1,534	1,604	1,664	1,708	1,734		
Tax Payable	4.457533683	4.00 Turn Ov =Target	918	1,737	2,021	1,831	2,987	6,687	14,998	26,692	27,785	31,897	30,319	36,922		
Current Matur.Long-Term Debt			1,705	1,825	2,072	2,640	1,964	1,964	1,964	11,122	11,122	10,489	16,098	15,945		

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

Maximum Cash and PFC		6%	23%	5%	21%	5%	20%	6%	18%	5%	17%	5%	16%	5%		
TABLE B6 - BALANCE SHEET		No Asset Revaluation		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>(CURRENT RP MILLION)</b>																
Assets in Operation	reval after	2004	736,898	795,477	855,624	920,307	989,869	1,064,675	1,145,122	1,231,633	1,324,665	1,424,708	1,532,291	1,647,979	1,772,382	
Accumulated Depreciation			425,408	482,589	544,200	610,469	681,748	758,413	840,872	929,561	1,024,950	1,127,544	1,237,885	1,356,557	1,484,188	
Net Fixed Assets			311,490	312,889	311,424	309,838	308,121	306,262	304,250	302,072	299,715	297,165	294,406	291,422	288,194	
Work In Progress			58,579	60,147	64,683	69,561	74,807	80,447	86,511	93,032	100,043	107,582	115,688	124,404	133,775	
Cash + Deposits			135,105	205,015	275,305	410,002	542,331	750,632	957,106	1,249,082	1,538,424	1,922,156	2,300,327	2,778,876	3,245,131	
Accounts Receivable - Water	64.17653877	60 days=target	56,734	69,931	73,778	89,536	94,460	113,115	119,336	141,176	148,941	174,263	183,848	212,957	224,670	
Reserve of Bad Debts Provision, Water			(333)	(353)	(435)	(459)	(557)	(588)	(704)	(742)	(878)	(926)	(1,084)	(1,144)	(1,325)	
Past Connection Fees Put To Balance Sheet			843	843	843	843	843	843	843	843	843	843	843	843	843	
Receivable - Credited New Connections			18	11	7	5	5	4	4	4	5	5	5	6	6	
Inventories	76.90014466	30.32476223 days=target	2,845	3,018	3,191	3,374	3,568	3,772	3,989	4,218	4,460	4,716	4,987	5,274	5,577	
Other Receivable	Piutang (Usaha) non-Air; Piutang Lain-Lain, DP		4,778	5,040	5,318	5,610	5,919	6,244	6,588	6,950	7,332	7,735	8,161	8,610	9,083	
Total Current Assets			199,989	283,506	358,006	508,912	646,569	874,023	1,087,162	1,401,532	1,699,127	2,108,792	2,497,087	3,005,422	3,483,985	
Installation Inventory	116.9071293	70 days=target	3,584	3,584	3,584	3,584	3,584	3,584	3,584	3,584	3,584	3,584	3,584	3,584	3,584	
Other Assets			4,960	4,960	4,960	4,960	4,960	4,960	4,960	4,960	4,960	4,960	4,960	4,960	4,960	
<b>TOTAL ASSETS</b>			578,603	665,086	742,658	896,856	1,038,041	1,269,276	1,486,468	1,805,180	2,107,429	2,522,084	2,915,726	3,429,791	3,914,498	
Accounts Payable	65.05062187	30 days=target	12,345	13,328	14,435	15,566	16,805	18,164	19,656	21,297	23,104	25,098	27,301	29,739	32,440	
Other Payable			5,570	5,876	6,199	6,540	6,900	7,280	7,680	8,102	8,548	9,018	9,514	10,037	10,589	
Other Current Liabilities (Cust. Deposit)			1,751	1,761	1,772	1,783	1,793	1,804	1,815	1,826	1,837	1,848	1,859	1,870	1,881	
Tax Payable	4.457533683	4.00 Turn Ov =Target	37,822	52,597	61,080	85,661	102,086	135,971	159,564	202,048	231,979	282,087	317,054	373,083	410,845	
Current Matur.Long-Term Debt			11,361	6,787	6,787	6,787	6,031	5,904	5,904	5,904	5,904	5,904	5,904	5,904	5,904	

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

<b>Maximum Cash and PFC</b>	<b>TARIFF INCREASE</b>			2%	36%	29%	5%	43%	5%	27%	5%	25%			
<b>TABLE B6 - BALANCE SHEET</b>	<b>No Asset Revaluation</b>			2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>(CURRENT RP MILLION)</b>	Audited	Audited	Audited	Actual											
Total Current Liabilities	5,955	8,813	15,997	13,037	11,952	16,734	26,819	49,650	52,660	58,248	63,543	71,303			
Deferred Income	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Meter Reserve Fund	-	-	-	-	5	5	5	5	5	5	5	5	5	5	5
Other Liabilities	2,936	3,939	4,168	3,496	3,530	3,564	3,658	3,868	4,192	4,356	4,588	4,723			
Long Term-Debt - Net	22,131	20,803	18,280	16,620	13,323	11,359	77,121	103,303	133,780	137,885	134,327	119,356			
<b>Total Liabilities</b>	<b>31,022</b>	<b>33,555</b>	<b>38,445</b>	<b>33,153</b>	<b>28,809</b>	<b>31,663</b>	<b>107,604</b>	<b>156,826</b>	<b>190,637</b>	<b>200,494</b>	<b>202,463</b>	<b>195,387</b>			
Assets Revaluation Surplus	10 average age initial revaluation														
Reserves + "Net" Retained Earnings	2,425	4,137	3,787	3,691	6,988	19,913	47,834	87,258	94,484	121,974	129,944	169,504			
Local Gov't Equity	38,295	37,428	51,881	71,261	73,290	75,393	82,315	95,849	116,273	126,254	140,462	148,687			
Central Gov't Equity (Inc'l Not Yet Handed Over)	37,216	37,823	38,906	42,319	42,319	42,475	42,475	42,835	42,835	42,835	42,835	42,835			
Total Equity	77,936	79,387	94,574	117,271	122,598	137,782	172,624	225,942	253,591	291,064	313,241	361,026			
<b>TOTAL EQUITY AND LIABILITIES</b>	<b>108,958</b>	<b>112,942</b>	<b>133,019</b>	<b>150,424</b>	<b>151,407</b>	<b>169,444</b>	<b>280,227</b>	<b>382,768</b>	<b>444,229</b>	<b>491,558</b>	<b>515,703</b>	<b>556,413</b>			
Current Ratio	4.2	2.3	1.1	1.3	2.6	2.4	1.7	1.9	2.0	2.5	2.4	2.6			
Working Capital, exclud. cash	3,435	4,721	(1,781)	2,289	7,702	8,742	(661)	(3,965)	(4,518)	(1,663)	2,277	6,067			
Debt Equity Ratio (70/30 = 233%)	31%	29%	22%	16%	12%	10%	46%	51%	57%	51%	48%	37%			
Total Assets/Total Debt	4.1	4.3	5.4	6.6	8.0	10.0	3.4	3.2	3.0	3.2	3.3	4.0			
# Days Accounts Receivable	63	82	63	62	64	63	63	62	61	60	60	60			
% Debt/(Net Fixed Assets +WIP)	31%	28%	20%	15%	14%	11%	35%	41%	44%	44%	42%	37%			
Cash = # Month Operating Expenses	8.9	3.3	1.7	1.1	3.3	3.1	2.7	5.7	5.1	6.1	5.4	5.8			

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR**  
**PRELIMINARY FINANCIAL FEASIBILITY ANALYSIS OF INVESTMENT PROPOSAL**

**PDAM KAB. BOGOR**

<b>Maximum Cash and PFC</b>	6%	23%	5%	21%	5%	20%	6%	18%	5%	17%	5%	16%	5%
<b>TABLE B6 - BALANCE SHEET</b>	<b>No Asset Revaluation</b>												
<b>(CURRENT RP MILLION)</b>	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total Current Liabilities	68,848	80,350	90,273	116,337	133,616	169,122	194,618	239,176	271,372	323,955	361,632	420,633	461,660
Deferred Income	-	-	-	-	-	-	-	-	-	-	-	-	-
Meter Reserve Fund	5	5	5	5	5	5	5	5	5	5	5	5	5
Other Liabilities	5,021	5,234	5,743	6,198	7,035	7,830	9,077	10,287	12,017	13,707	15,977	18,193	21,034
Long Term-Debt - Net	108,851	102,065	95,278	88,491	82,460	76,557	70,653	64,749	58,846	52,942	47,038	41,135	35,231
<b>Total Liabilities</b>	<b>182,726</b>	<b>187,653</b>	<b>191,299</b>	<b>211,031</b>	<b>223,116</b>	<b>253,513</b>	<b>274,354</b>	<b>314,218</b>	<b>342,239</b>	<b>390,609</b>	<b>424,652</b>	<b>479,965</b>	<b>517,930</b>
Assets Revaluation Surplus	10 average age initial revaluation												
Reserves + "Net" Retained Earnings	186,137	254,676	297,491	404,179	482,121	634,381	754,478	959,409	1,127,906	1,390,939	1,611,790	1,935,150	2,208,250
Local Gov't Equity	166,904	179,920	211,033	238,810	289,968	338,546	414,800	488,718	594,448	697,700	836,448	971,841	1,145,482
Central Gov't Equity (Inc'l Not Yet Handed Over)	42,835	42,835	42,835	42,835	42,835	42,835	42,835	42,835	42,835	42,835	42,835	42,835	42,835
Total Equity	395,876	477,432	551,359	685,824	814,924	1,015,763	1,212,114	1,490,962	1,765,189	2,131,474	2,491,073	2,949,826	3,396,567
<b>TOTAL EQUITY AND LIABILITIES</b>	<b>578,602</b>	<b>665,085</b>	<b>742,658</b>	<b>896,855</b>	<b>1,038,040</b>	<b>1,269,276</b>	<b>1,486,467</b>	<b>1,805,179</b>	<b>2,107,429</b>	<b>2,522,083</b>	<b>2,915,725</b>	<b>3,429,791</b>	<b>3,914,498</b>
Current Ratio	2.9	3.5	4.0	4.4	4.8	5.2	5.6	5.9	6.3	6.5	6.9	7.1	7.5
Working Capital, exclud. cash	7,396	4,928	(784)	(10,641)	(23,347)	(39,827)	(58,658)	(80,823)	(104,765)	(131,415)	(158,968)	(188,183)	(216,902)
Debt Equity Ratio (70/30 = 233%)	30%	23%	19%	14%	11%	8%	6%	5%	4%	3%	2%	2%	1%
Total Assets/Total Debt	4.6	5.8	6.9	8.8	10.9	14.1	17.4	22.3	27.5	34.8	42.3	52.6	63.0
# Days Accounts Receivable	60	60	60	60	60	60	60	60	60	60	60	60	60
% Debt/(Net Fixed Assets +VIP)	32%	29%	27%	25%	23%	21%	20%	18%	16%	15%	13%	11%	10%
Cash = # Month Operating Expenses	5.8	8.0	9.7	13.1	15.7	19.6	22.6	26.5	29.3	32.9	35.3	38.2	39.9

## **ENVIRONMENTAL SERVICES PROGRAM**

**Ratu Plaza Building, 17<sup>th</sup>. Fl.**

**Jl. Jend. Sudirman No. 9**

**Jakarta 10270**

**Indonesia**

**Tel. +62-21-720-9594**

**Fax. +62-21-720-4546**

**[www.esp.or.id](http://www.esp.or.id)**