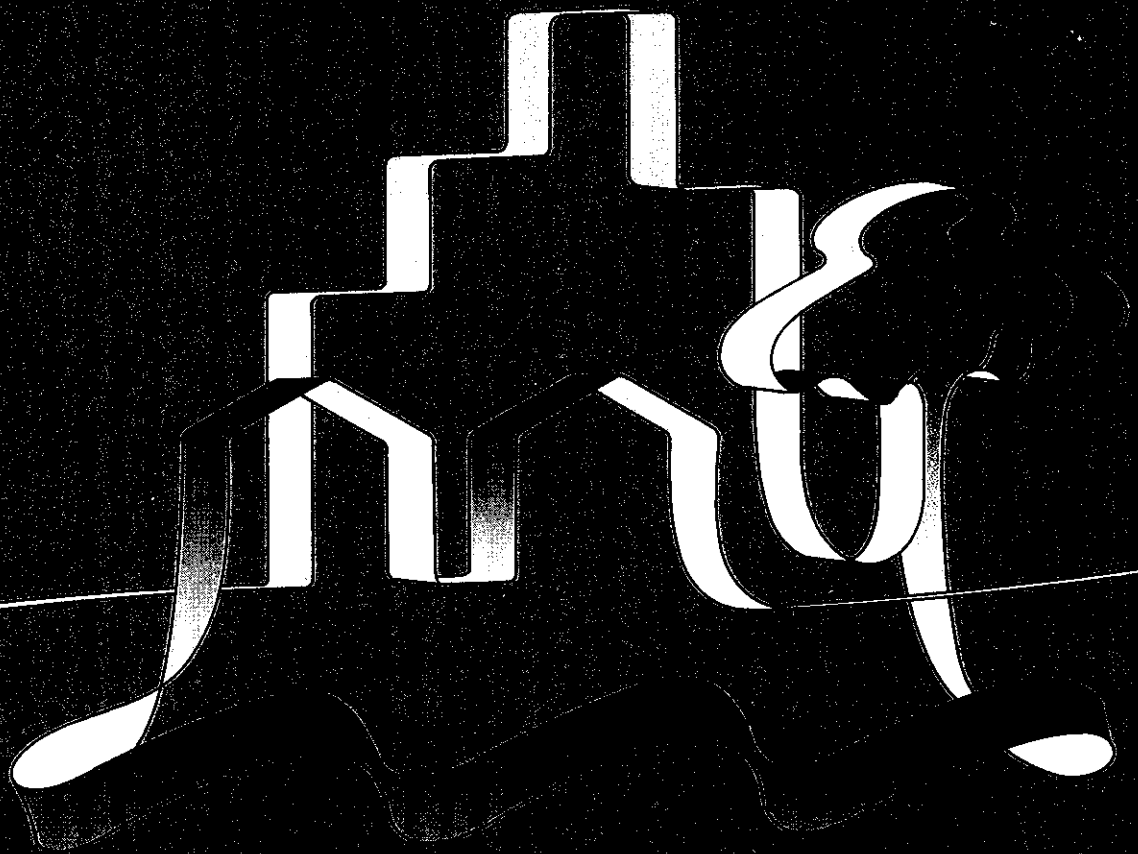




Urban Water Research Association of Australia

Planning the Optimum Use of Funds
for Capital Works:
Financial Planning Model



Research Report No. 143

URBAN WATER RESEARCH ASSOCIATION OF AUSTRALIA (UWRAA)

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**PLANNING THE OPTIMUM USE OF FUNDS FOR CAPITAL WORKS:
FINANCIAL PLANNING MODEL**

**Prepared by
Trevor Grigg**

For

**Urban Water Research Association of Australia
Project UWRAA #92-9**

1, 32,

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The project was sponsored by the Department of Water Supply and Sewerage of the Brisbane City Council. Mr Harry Holland was the sponsoring authority's nominated Project Officer. The interest and support of Mr Holland was essential for the successful completion of this project. Mr Greg Buckley of the Department was responsible for testing earlier versions of the model and then applying the model within the context of the Department of Water Supply and Sewerage of the Brisbane City Council. This testing and application process resulted in a number of valuable enhancements and refinements to the model. In particular, taxation and dividend considerations, which emerged in the later stages of the project, and were not envisaged at the time the project was conceived, owe much to the contribution of Council officers.

This has been a challenging period over which to develop a Financial Planning Model for Urban Water Utilities as the regulatory and financial environment within which such utilities operate has been in a state of constant change. This will inevitably mean ongoing enhancement of the model will be required if it is to retain its currency for urban water utilities.

In summary, the model developed has been a result of a successful collaboration between the principal researcher and officers of the sponsoring authority.

Trevor Grigg

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1. INTRODUCTION

Changes in the economic and political environment, social attitudes and technological developments have shifted the primary focus of the Australian water industry from asset and resource development to asset and resource management. The management of assets must be determined by customer driven levels of service (for example, service reliability, supply pressures, water quality) as well as internal service objectives (for example, cost efficiency and productivity gains) and overall system performance objectives (such as, required debt to equity ratios and real rates of return on assets). In addition, asset management must be closely linked to demand management strategies, such as those of water metering, pricing, customer information and user education.

Capital expenditure on assets can be funded from a number of sources, including rates and charges, funds provided through depreciation provisions, reserves, contributions from developers and other third parties, subsidies and grants from other agencies and levels of government, and by way of borrowings. The appropriate mix of revenue and borrowings does not always seem to receive the level of attention required. There is a view that there is an optimum capital structure for utilities and that this capital structure has important implications for the medium to long term level of costs which need to be funded by users.

X The aim of this UWRAA funded project was to develop a financial planning model to assist urban water agencies to plan the ^{ation} ~~optimise~~ of funds for new capital works and for asset renewal and replacement over a 10-20 year time horizon. The model was to be designed so as to permit agencies to assess the impact of alternative funding strategies on capital structure and prices, consistent with external constraints and policies. Specifically, a capability to address issues such as financial risk exposure, asset replacement, return on assets, and reserves policy was to be structured into the model. Measures of performance of an agency, in terms of its ability to achieve business, financial and economic objectives under alternative funding strategies, was to be an added feature of the model.

It was assessed that critical to the success and practical application of the model would be the ability of the user to clearly define constraints, policy variables, and exogenous factors beyond the direct control of an agency (such as the cost of debt).

In this project, attention was to be concentrated on modelling agency financial structure. It was envisaged that in a later project, more emphasis would be placed on causal modelling of costs and revenues.

The model was to be developed for use on personal computers using commercially available software, in the first instance. A user's manual to accompany the model would be produced. This report is intended to perform both the role of a user manual and the project report. The model's application has been demonstrated by applying it to the financial planning of a hypothetical urban water supply agency as a case study.

In summary, the overall objective of the project is to enhance the financial planning and financial management capabilities of water agencies by developing a financial planning model for use by agency managers. The specific objective is to permit managers to rapidly assess the impact of alternative proposed funding strategies for capital investments over a 10-20 year time horizon on the capital structure of their agency.

The primary benefit is seen as the enhanced financial planning capability afforded water agency managers, which, if taken advantage of, could lead to improved capital structuring of the agencies, with eventual pricing and service level benefits for customers. The application of the model should be readily transferable to other urban water agencies in Australia.

2. MODEL STRUCTURE

The structure of the financial planning model developed is illustrated schematically in Figure 1. The figure is intended to show the relationships between five main types of modelling variables, namely:

- those which describe the existing status of the urban water agency and its system;
- those which describe the policies adopted by the agency and the constraints which apply to the policy decisions that are made;
- those which represent forecasts affecting the system and its finances which are essentially beyond the control of the agency's management;
- those variables which describe the response of the agency to the forecasts consistent with policy and constraints; and, finally
- those variables which are an outcome of the existing status of the agency, its policy determinations and constraints, and the system growth forecasts and responses to same by the agency. This set of variables is generated endogenously within the model.

By way of example, the asset investment (capital works) program derived for an agency over a ten to twenty year period will be directly influenced by the existing asset base of the agency and the forecast of system growth and use. In turn, the capital revenue raised by the agency will be a direct function of this asset investment program and the agency's capital revenue raising policies. The planned revenue requirements of the agency will be determined by the agency's charging policy and by the revenue that would be required to achieve a pre-specified target rate of return. Analysis of alternative asset financing scenarios for the agency will be influenced by commitments to outstanding debt liabilities, by the financial constraints imposed on the agency (such as the necessity to maintain zero or positive reserve balances) and by the levels of borrowing contemplated (the cost of which will be influenced by anticipated future financing rates).

The user of the model is able to assess the acceptability and desirability of any particular asset financing scenario through the study of a selected set of financial performance indicators and through examination of the associated financial forecasts. Such an assessment may well lead to a revision in financing policies and/or charging policies. Depending on the particular agency's circumstances, it may also be necessary to consider revisions to the proposed asset investment program in order to maintain the financial viability and integrity of the agency.

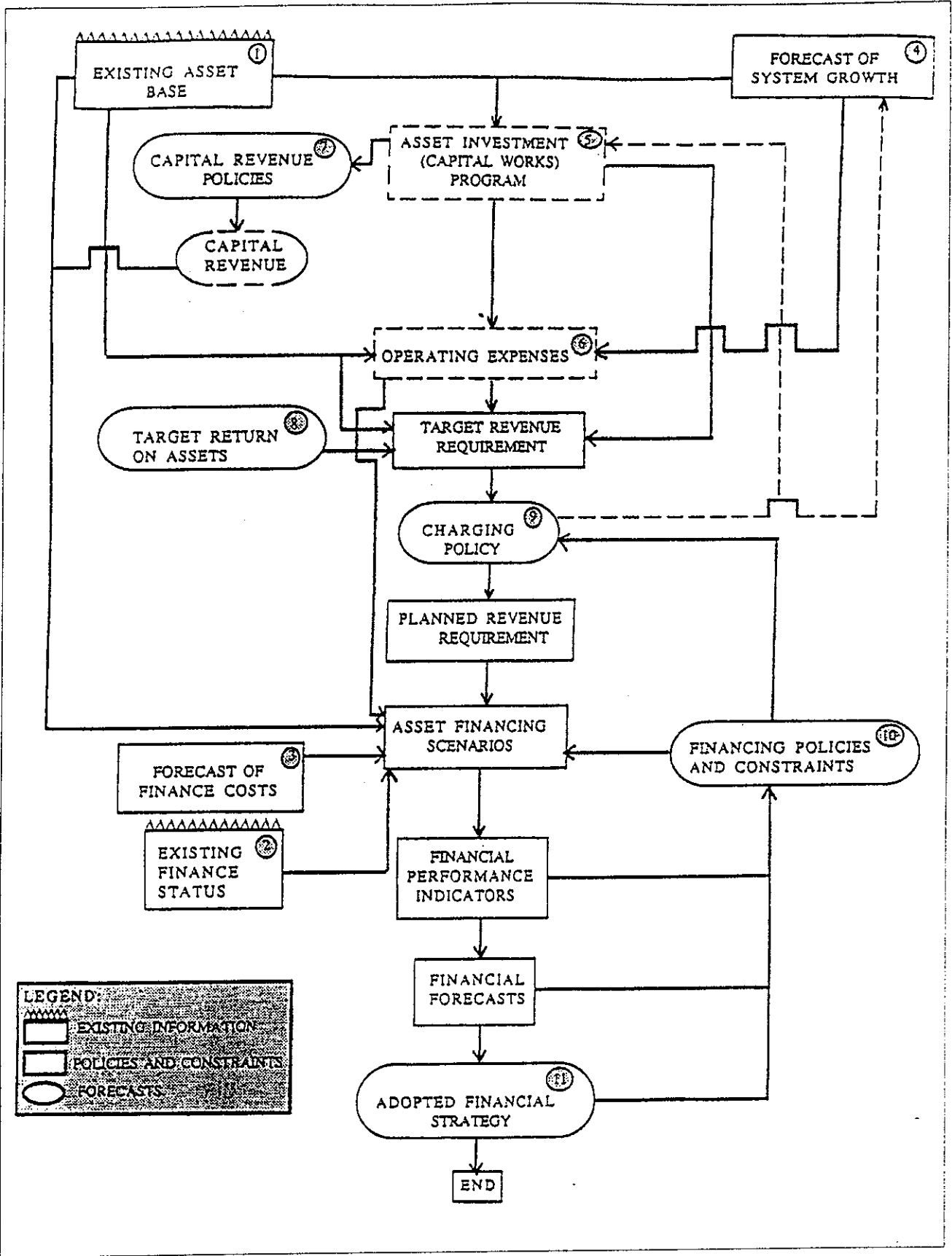


FIGURE 1: MODEL STRUCTURE

The model permits the user to specify a preferred asset financing strategy for which indicators of financial performance and financial forecasts are also provided. It is up to the user to determine on what basis a particular financial strategy is considered to be optimum. Among the criteria that might be used for such an assessment, include the achievement of a pre-specified target rate of return on assets and/or consistency with stated charging policies.

In following sections of this report, the items comprising each of the variables groupings, illustrated in Figure 1, will be described at some length, as will the relationships that exist between many of the "existing", "policy", and "forecast" variables and the endogenously generated variables within the model. The numbers on the model structure in Figure 1 indicate the recommended sequence in which input variables (data) are entered into the model prior to the appraisal and selection of the adopted asset financing strategy.

3. MODEL DESIGN

The financial planning model has been written for IBM PC or IBM PC compatible machines. It makes use of the commercially available spread-sheeting software Lotus 123. It has been assumed in preparing this report that a user of the model will be familiar with the Lotus 123 spread-sheeting package, so no attempt has been made to describe the basic operations of the file retrieval, file saving etc.

When the model is loaded, a window, as shown in Figure 2, is presented to the user. A macro driven menu has been programmed into the model. By use of the keys Alt and M, the menu choices are presented to the user. On choosing one of the particular menu options, the user is able to either input data, view graphical presentations of financial performance indicators, examine tabulated forecasts of the future financial status of the agency, view plots of these financial forecasts or print out selected areas of the model. The model is designed as a single worksheet with a number of distinct areas which perform either input, calculation, or output functions. As constructed, the model is designed to accommodate up to a twenty year planning horizon. The design of the model is such that a proficient user of the spread-sheeting software would be able to readily extend the planning horizon to any desired period.

```
-----  
Version 4  
  
Model prepared for UWRAA by Trevor Grigg  
  
*****  
*           Financial Planning Model           *  
*                   for                       *  
*           Water Utilities                   *  
*****  
  
This model assesses alternative strategies for funding  
planned fixed asset investment.  
  
**** TYPE [ALT]-M FOR MENU ****  
  
C:\123\UWRAA\SNAKE10.WK3  
25-Jan-97  
-----
```

FIGURE 2

As will be discussed in later sections of this report, areas used for the purposes of inputting and calculating planned revenue requirements and for inputting the proposed asset investment (capital works) program, are included in the current spreadsheet. An experienced user, if so desired, could construct more detailed, supporting data bases to these areas as separately linked sheets to the main spreadsheet program. For this project, the aim was to develop a financial planning model which would achieve the desired objective of permitting rapid assessment of alternative asset financing strategies and to demonstrate how such a model could be structured. Given the current state of development of the model, it would be a relatively straight forward matter for users within an agency to further augment and otherwise modify the model to suit their own particular set of circumstances. Some space has been set aside on the spreadsheet to allow the user to include additional supporting analysis within the existing sheet.

It should be noted that some areas within the spreadsheet model have been designed to a format consistent with the forms proposed by the Queensland Department of Housing, Local Government and Planning in their Water Resources Technical Bulletin No. 11/1992, "Total Management Plan Series - No. 2, Financial Planning". Details of these forms are contained in Appendix A to this report. The author of this report was of the view that to structure a spreadsheet model for urban water agencies which was consistent with these forms would maximise the probability that the financial planning model would be useful to a large number of urban water agencies, albeit within the Queensland urban water context in the first instance. From the author's perspective, this does not represent a constraint to the wider application of the model throughout Australia. However, it should be noted that there are some particular features of one of the forms, namely Form 1, which provides a summary income and expenditure statement for an agency, which may require some adaptation from state to state. As presented, it is an amalgam of cash and accrual accounting approaches to the presentation of financial results. While this may make good sense in the current Queensland context, in which agencies are transitioning from cash accounting to full accrual accounting for their urban water activities, in time there may be need for some adjustment to this area of the model to reflect full adoption of an accrual accounting framework.

The user of the model is supplied with two spreadsheets. One called **MODEL** and the other called **SNAKE10**. The spreadsheet titled **SNAKE10** contains illustrative data for a hypothetical small urban water supply scheme to allow the user to appreciate immediately the application of the model to the assessment of alternative financing strategies for asset acquisition and renewal. The spreadsheet named **MODEL**, on the other hand, has no data entered into it and therefore would be ready for use by an urban water agency. It is recommended to the user that a master copy of the spreadsheet named **MODEL** be kept separately from any spreadsheet model into which data has been entered.

4. MODEL INPUTS

The aim of this section of the report is to describe the procedure by which data is entered into the spreadsheet model to permit the analysis of alternative asset funding strategies. Areas in the model requiring the input of data are reached by selecting **MODEL_INPUTS** from the main menu. This menu selection then provides the user with a choice of data input areas. These data input areas will be considered in the order presented to the user in the spreadsheet model menu in the remaining paragraphs of this section of the report. Shaded areas on the figures displaying the model input areas indicate where the user is requested to enter data on the spreadsheet.

> SETUP

Choice of the menu option **SETUP** permits the user to specify the name of the utility and the specific system to be modelled. As well, the user supplies information on the proposed planning period for the model, as well as the initial budget year. The format of this input area is shown in Figure 3.

```
-----  
UTILITY IDENTIFICATION AND MODEL SETUP:  
  
UTILITY NAME:      SNAXEGULLY      <--- enter here  
SYSTEM/SCHEME:     water           <---  
  
BUDGET YEAR 1:  
  Year ending 30/9/XXXX      1994 <---  
  
PLANNING PERIOD (Years):      10 <---  
  
File Name:         C:\123\DWPAAS\SNAXE10.WEB <---  
-----
```

FIGURE 3

> CATEGORIES

The **CATEGORIES** menu option makes it possible for the user to customise the asset categories used in the model, as well as specifying operating expenditure categories. The format of the input area is shown in Figure 4. Note that along with up to the seven asset categories that can be specified, the user is also required to enter the average economic life of assets within each asset category. If all categories are not

used, then a non zero asset life nevertheless should be entered against such categories.

```

-----
CUSTOMISED CATEGORIES to be entered by user

ASSET CATEGORIES                                Asset Life (Years)
1. ALL                                           40 <-- Enter
2.                                               1 <--
3.                                               1 <--
4.                                               1 <--
5.                                               1 <--
6.                                               1 <--
7. OTHER                                         1 <--
                                           (Ensure non zero entry)

OPERATING EXPENDITURE CATEGORIES
1. Operations                                   <--
2. Maintenance                                 <--
3. Administration                             <--
4. Other
-----

```

FIGURE 4

> **ASSETS**

Choice of **ASSETS** allows the user to input information on the existing assets and accounts balances of the agency. Specifically, the user is asked to input the following information:

- the current cost depreciation provision for existing assets in the base year;
- the current cost depreciated value of the existing assets at the end of the base year;
- the accumulated cash reserves (opening balance) at the beginning of the base year; and
- the outstanding loan liabilities at the start of the base year.

The information required is highlighted in Figure 5, reproduced from the **SNAKE10** spreadsheet.

FINANCIAL PARAMETERS

UTILITY NAME:	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
SYSTEM/SCHEME:	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Interest Rate on Reserves (Real)	5.0% P.a.										
Interest Rate on New Borrowings (Real)	5.0% P.a.										
Loan Term on New Borrowings	15 Years										
Interest Rate on Existing Borrowings (Real)	5.0% P.a.										
Remaining Loan Term on Existing Borrowings	5 Years										
Tax Rate	0%	0%	0%	0%	0%	3%	5%	8%	10%	10%	10%
Required (Target) Rate of Return & P.a. (Real)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Accumulated Reserves - Opening Balance \$'000	537										
Outstanding Loan Liability - Base Year Start \$'000	237										
Existing Assets - Base Year Depreciation \$'000	70										
- Depreciated Value end of yr \$'000	233										

FIGURE 5

➤ **LOAN_TERMS**

Choice of this input data area of the model also takes the user to the window shown in Figure 5. In this area, the user is required to input the following information:

- the anticipated **real** interest rate to be earned on reserve balances;
- the **real** interest rate predicted to be levied on new borrowings;
- the loan term of new borrowings;
- the **real** interest rate pertaining to existing borrowings; and
- the remaining loan term on existing borrowings.

➤ **SYSTEM**

Physical

The user is able to input data describing the forecast number of rateable units in the agency's system, the population served, the average per capita consumption and the average number of rating units per assessment by using the menu option **SYSTEM**. The window into which this information is input is illustrated in Figure 6.

Financial

This input area also makes provision for the inputting of data on the planned unit user charges, rate rebates and funding of agreed community service obligations. These charges are used to generate the planned income which would be derived should these charges be enacted. As can be readily recognised, this input area provides the user with the option of exploring a variety of tariff structures at the system wide level. An appropriate modelling strategy would be to input a first best estimate of what the charging policy might be and then to evaluate this policy through subsequent scenario analysis. This may result in revisions being necessary in this charging policy, enacted by returning to this input area window. The revenue forecast generated using these planned tariff structures should be compared with that which would be derived by using a pre-specified target rate of return on assets, which will be discussed below. Provision for data input on forecast "other" operating as well as current income is also indicated in this area.

SYSTEM PARAMETERS AND OPERATING REVENUE

UTILITY NAME:	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
SYSTEM/SCHEME:	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Assessments per Rating Unit (Av.)											
No. of rating units	73475	75444	77533	79582	81651	83720	85789	87858	89927	91996	94065
Unit rate (\$/unit) - Planned	4.95	4.34	4.24	4.35	4.45	4.56	4.67	4.78	4.81	5.03	5.16
Rate income (\$'000) - Planned	297	313	329	346	364	382	401	421	441	463	485
Rate Rebates (Pensioners, etc) (\$'000)	0	0	0	0	0	0	0	0	0	0	0
Other Operating Revenue (\$'000)	0	0	0	0	0	0	0	0	0	0	0
Funds to Cover Explicit CSO's (\$'000)	0	0	0	0	0	0	0	0	0	0	0
Total Operating Revenue (\$'000) - Planned	297	313	329	346	364	382	401	421	441	463	485
Other Current Revenue net	0	0	0	0	0	0	0	0	0	0	0
Population ('000)	2683	2774	2837	2894	2971	3048	3124	3202	3279	3356	3433
Average Per Capita Consumption (L/d)	630	637	634	631	638	645	652	659	666	673	680
Annual Consumption (ML)	632	637	642	645	648	651	652	653	653	653	652
Approx. Target Rate Income Required (\$'000)	351	364	381	389	391	391	389	429	431	430	434
Approx. Target Unit Charge Required (\$/unit)	5	5	5	5	5	5	5	5	5	5	5
Approx. Index of Real Av. Charge/Assessment	5	5	5	5	5	5	5	5	5	5	5
Planned Index of Real Av. Charge/Assessment	4	4	4	4	4	4	4	4	4	4	4

FIGURE 6

➤ **CAPITAL_WORKS**

Selection of the input area **CAPITAL_WORKS** takes the user to a window into which information on future planned asset investment by asset category is sought. Details on the capital works are required in the format shown in Figure 7. Information is sought for both new works as well as replacement works. All asset categories can be reached by paging down from the location on the spreadsheet to which the user will be taken on selection of the date input area **CAPITAL_WORKS**. Future budget year entries are accessed by paging right. Details concerning developer and land owner contributions, government grants and subsidies that support this planned investment will be discussed under **CAPITAL_REVENUE** below.

➤ **EXPENSES**

As mentioned in earlier sections of this report, the model as developed does not allow for the model generation of the components of operating expenses as a function of system connections and system use. It is problematic as to whether such a direct link would ever be viable in any case. Selection of the input area **EXPENSES** takes the user to the window shown in Figure 8. In this window, the user is required to enter for the base year and each of the budget years, the total anticipated outlays on operating expenditure under the categories specified in the input area **CATEGORIES** (refer to earlier discussion). A typical categorisation is operations, maintenance, administration and other operating expenses (not elsewhere included). Some possible expenditure drivers, based on earlier data input, are listed in the window to assist the user.

➤ **CAPITAL_REVENUE**

The area for inputting forecasts of future capital revenue shown in Figure 7 is located by choosing the **MODEL_INPUTS** menu selection, followed by the **NEXT_MENU** selection which will then display the **CAPITAL_REVENUE** menu option. Data on capital revenue forecasts are not causally linked in the model to the planned asset investment program. However, the forecasts should be related to that asset investment program in their derivation. Information is required on the capital revenue generated from the sale of assets, land owner and developer contributions, and the forecast of other capital revenue, such as from grants and subsidies from other levels of government. Data entry is arranged by asset category, except for asset sales where only a total estimate of sales revenue for all asset categories is required.

CAPITAL WORKS INVESTMENT PROGRAM

Asset Category	Item	FORWARD PROJECTIONS (BASE YEAR DOLLARS)										UTILITY NAME:		SHAREGILLY			
		SYSTEM/SCHEME:										Water		Water			
		Base Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	2001	2002	2001	2002	
\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	
All	Replacement Works	0	32	47	55	0	0	0	0	0	0	0	0	20	27	0	0
	New Works	137	119	285	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Works	137	151	317	47	55	0	0	0	0	0	0	0	20	27	0	0
	Contributions	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Subsidies, Grants etc	29	24	57	0	0	0	0	0	0	0	0	0	0	0	0	0
	Replacement Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	New Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Contributions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Subsidies, Grants etc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
...	Replacement Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	New Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Contributions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Subsidies, Grants etc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Replacement Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	New Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Contributions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Subsidies, Grants etc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
...	Replacement Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	New Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Contributions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Subsidies, Grants etc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Replacement Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	New Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Contributions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Subsidies, Grants etc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	Replacement Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	New Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Contributions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Subsidies, Grants etc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Replacement Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	New Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Contributions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Subsidies, Grants etc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	Replacement Works	0	32	47	55	0	0	0	0	0	0	0	0	20	27	0	0
	New Works	137	119	285	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Works	137	151	317	47	55	0	0	0	0	0	0	0	20	27	0	0
	Contributions	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Subsidies, Grants etc	29	24	57	0	0	0	0	0	0	0	0	0	0	0	0	0
	Replacement Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	New Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Contributions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Subsidies, Grants etc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FIGURE 7

Base Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
104	106	107	109	110	117	111	118	116	119	118
63	63	64	65	66	67	68	69	70	71	71
37	38	39	40	41	42	43	44	45	46	47
0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	3	3	3	3	3
632	637	642	645	648	651	652	653	653	653	652
73375	75444	77513	79582	81651	83720	85789	87858	89927	91996	94065
2699	2752	2964	2905	2853	2745	2638	2400	2289	2185	2184
90	97	105	106	108	108	108	130	130	131	134

OPERATING EXPENDITURE for

- Operations
- Maintenance
- Administration
- Other (not incl Loan Interest)

OPERATING EXPENDITURE DRIVERS

- Population ('000)
- Annual Consumption (ML)
- No. of Assessments
- Total Asset Valuation end-of-yr \$'000
- Total Asset Depreciation \$'000

FIGURE 8

➤ **ROA_TAX**

Changes in the urban water industry have made it necessary for agencies to be more aware of the financial performance of their agency. One key measure of financial performance is the real rate of return obtained on the asset base. Selection from the data input menu of the menu option **ROA_TAX** permits the user to input the target rate of return required for the agency, in both the base year and in all budget years. While it may subsequently be shown by analysis, using the model capability, that the target rate of return cannot be achieved, it nevertheless will serve as a useful benchmark or target for the longer run performance of the organisation and will provide a benchmark for comparison of actual against target performance. The data entry on the required rate of return is in the same input window as that which applies to **LOAN_TERMS**, previously illustrated in Figure 5, so that users can either allow for, or test the significance of, company tax on the utility. This input area also permits entry of the anticipated tax rate in future years.

➤ **OP_REVENUE**

Selection of the data menu option **OP_REVENUE** takes the model user to a cell location at which an indication of the revenue to be adopted in subsequent scenario and asset financing strategy development is sought. The user has a choice of either using the revenue forecast generated by the inputted charging policy and associated growth parameters, or by using the revenue requirement determined as necessary to achieve the target rate of return on assets. This option provides the user with the capability of exploring the implications of adhering rigidly to a pre-specified time profile of target rates of return on assets for the agency. The input area for this revenue profile choice is shown in Figure 9.

```
-----  
  
Selection of Adopted Revenue Requirement for Scenario Analysis  
  
For use of Target Revenue Requirement to meet specified Rate of  
Return on Assets enter "1"  
  
For use Revenue Requirement based on Planned Charging Policy  
enter "2"  
  
Enter Choice Here >>> 2  
  
-----
```

FIGURE 9

➤ **DIVIDEND**

Even for those utilities which are not corporatised or privatised, there is often an expectation by the owning agency that the utility will make an annual contribution to that agency from its activities. In cases where the utility is now set up as a company, the "dividend" typically takes the form of a payment to the general accounts of the agency. Depending on the particular legal form of the utility and the agreed policy with respect to dividends, the dividends paid will be related, typically, to the operating surplus or asset valuation of the utility. In other cases, a simple agreed lump sum payment is specified. The window **DIVIDEND** provides the user with the option of specifying which option will be used as the basis for modelling dividend payments, namely: an annual fixed payment, a percentage of operating surplus, a percentage of asset valuation, or a percentage of cash reserve transfers. The user is expected to choose one of these options for any particular model run. With the possibility of tax payments, a real consideration in the near future, if not already a reality for a number of utilities, the dividend payments referred to in this model should be taken as including both the tax obligation, as well as the dividend net of tax, paid to the owner or other equity holders. Refer to Figure 10.

```
-----  
Annual Payment $'000          0 <--- Enter  
or  
% Operating Surplus          50.0% <---  
or  
% Asset Valuation            0.0% <---  
or  
% Cash Reserves Transfer     0.0% <---  
  
                                (Maximum of one non zero entry)  
-----
```

FIGURE 10

➤ **SCENARIOS**

Built into the model are three "automatically" generated asset financing scenarios. These three scenarios cover the possibilities of no debt financing of future asset investment, all future asset investment being debt financed, and a scenario which allows the user to specify what percentage of future asset investments (net of capital

revenue raised in a particular year) will be financed by new debt borrowings. For simplicity in generating this last "automatic" scenario, the user is only required to specify a constant percentage which will apply in all budget years. The window in which this option is provided to the user is shown in Figure 11.

➤ **LOANS**

In the next section of this report, the strategy for using the model to develop a preferred asset financing strategy will be described at some length. Indeed, it will only be after examining the results of some of the "automatically" generated scenarios and perhaps adjusting, for example, the proposed charging policy, that the user will be in a position to begin to test the preferred asset financing strategy. Choice of the data input option **LOANS** takes the user to an area where the actual level of borrowings proposed in each of the budget years can be inputted. Refer to Figure 12. The borrowings proposed must range between 0 and the displayed estimate of the "capital expenditure yet to be funded". Some utilities may have a policy of not using debt to finance replacement capital works. If this is the case, then the user should take this into account when inputting the proposed borrowings in any year.

➤ **TAXATION**

The choice of the **TAXATION** input area by the user allows the user to input the information required to conduct a complete financial analysis of the utility as if it were subject to normal company taxation and other dividend provisions. Refer to Figure 13. In particular, the user is required to specify the anticipated tax depreciation allowance calculated on a historical cost basis for both the base year and future budget years. (Recall that the current taxation laws require the use of an historical cost basis for the determination of depreciation allowances.) The user is also required to enter any anticipated unfranked dividend distributions that are planned so that the net dividend before and after any tax obligation (refer to earlier discussion) can be reflected in the financial analysis. Given the transitional state that many utilities are currently in with respect to their taxation liability, the model is structured so the entry of these items, together with the tax rate, is optional and will not effect the overall model performance or analysis.

	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
SCENARIO 3: 0 to 100% BORROWINGS											
Borrowings Required	52	61	128	21	25	0	0	355	8	11	54
Interest on New Borrowings	2	6	14	19	20	20	19	32	45	44	44
Redemption on New Borrowings	1	3	7	10	11	13	14	21	29	32	36
Interest Revenue	26	27	25	25	28	32	37	32	28	34	40
Accrued Revenue Surplus after New Loan Costs	-13	-10	-12	-4	13	34	58	37	40	68	89
Cash Revenue Surplus after New Loan Costs	58	64	65	70	84	101	122	113	105	167	187
Cash Revenue Surplus Required for Capital Works	52	61	65	21	25	0	0	113	8	11	64
Reserve Transfer Required for Capital Works	0	0	63	0	0	0	0	241	0	0	0
Opening Balance - Reserves	517	524	527	465	513	566	650	743	483	560	683
Transfer to Reserves	7	3	0	49	59	101	122	0	97	156	123
Dividend Payment	0	0	0	0	7	17	29	19	20	34	44
Transfer from Reserves	0	0	63	0	0	0	0	241	0	0	0
Closing Balance - Reserves	524	527	465	513	566	650	743	483	560	683	761
Total end-of-year Debt	266	304	404	392	380	340	296	597	539	518	546
Real Rate of Return on Assets Achieved % p.a.	0.32%	0.49%	0.50%	0.98%	1.46%	2.04%	2.64%	1.88%	2.18%	2.74%	3.20%
Debt as % of Total Assets	8.4%	9.6%	12.6%	12.3%	11.9%	10.6%	9.1%	14.8%	13.4%	12.7%	13.2%
Debt Service Costs as % Revenue	12.9%	14.3%	16.7%	18.3%	18.0%	17.4%	16.4%	20.4%	24.2%	15.2%	15.2%
Revenue Surplus as % Revenue	3.2%	4.6%	5.4%	8.4%	12.0%	15.9%	19.7%	16.7%	18.7%	22.5%	25.3%
Revenue Adopted in this Scenario	323	339	354	371	391	414	438	453	469	497	525

FIGURE 11

	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
ACTUAL FUNDING STRATEGY \$'000											
Capital Expenditure yet to be Funded	103	122	255	42	50	0	0	709	15	22	178
Borrowings Proposed \$'000	0	0	0	0	0	0	0	588	0	0	0
Interest on New Borrowings	0	0	0	0	0	0	0	24	46	44	43
Redemption on New Borrowings	0	0	0	0	0	0	0	10	22	24	25
Interest Revenue	25	23	18	15	18	22	28	29	31	37	41
Accrued Revenue Surplus after New Loan Costs	-12	-7	-6	5	23	44	68	43	41	70	92
Cash Revenue Surplus after New Loan Costs	60	71	78	88	105	124	146	130	114	178	201
Cash Revenue Surplus Required for Capital Works	60	70	78	42	50	0	0	121	15	22	178
Reserve Transfer Required for Capital Works	43	52	177	0	0	0	0	0	0	0	0
Opening Balance - Reserves	517	474	423	245	289	333	435	547	534	613	733
Transfer to Reserves	0	0	0	46	55	124	146	9	99	156	73
Dividend Payment	0	0	0	3	12	22	34	22	21	35	46
Transfer from Reserves	43	52	177	0	0	0	0	0	0	0	0
Closing Balance - Reserves	474	423	245	289	333	435	547	534	613	733	760
Total end-of-year Debt	215	196	174	151	126	98	68	613	556	532	507
Real Rate of Return on Assets Achieved % p.a.	0.29%	0.38%	0.37%	0.66%	1.14%	1.73%	2.36%	1.80%	2.25%	2.81%	3.24%
Debt as % of Total Assets	6.8%	6.2%	5.4%	4.7%	3.9%	3.1%	2.1%	15.2%	13.8%	13.1%	12.2%
Debt Service Costs as % Revenue	12.1%	11.6%	11.2%	10.2%	9.6%	9.6%	9.1%	16.2%	22.6%	13.6%	12.9%
Revenue Surplus as % Revenue	2.8%	3.6%	3.4%	5.9%	9.6%	13.8%	18.0%	16.2%	19.2%	22.9%	25.5%
Revenue Adopted in this Scenario	322	336	347	361	381	404	429	450	472	500	527

FIGURE 12

	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
INPUT AREA:											
Depreciation	90	97	105	106	108	108	108	130	130	131	134
Tax Depreciation Allowance (Historical Cost Basis)	53	58	67	74	79	79	79	98	98	100	103
Dividend (Gross)	0	0	0	3	12	22	34	22	21	35	46
Distributed Dividend (Unfranked)	0	0	0	0	0	0	0	0	0	0	0

FIGURE 13

The above series of data input options specify the complete range of information required for the operation of the model. It will be appreciated that much of this information will have to be derived from other sources, such as from the asset register; the loans register; planning reports of the agency; the results of engineering planning forecasts and their implications for asset investment, decisions concerning desired levels of service in the future and the significance of these for operation, maintenance and administrative expenses; policy decisions concerning future movements in tariffs and charges and the up-front contributions required from developers; as well as the opinions and views of agency senior management and boards with respect to the overall borrowing strategies that are deemed appropriate for the agency.

Finally, the target rate of return on assets may well be imposed on an agency by other levels of government, or alternatively, may be able to be set by the agency in order to achieve certain levels of financial performance judged to be appropriate to the constituencies to which the agency is answerable.

5. MODEL ANALYSIS

In Section 2 of the report, the overall structure of the model was presented schematically and briefly discussed. In that section, an indication of the strategy for using the model for the purposes of analysis and deriving an optimum asset financing strategy was outlined. The aim of this section is to provide further guidance to the user in the application of the model. Once the user has inputted all of the data requirements outlined in Section 4, the model is ready to analyse the various scenarios presented to it and to permit the user to assess their performance in accordance with a number of financial indicators embedded in the model. The user is also able to inspect the associated forecasts of key financial statement parameters.

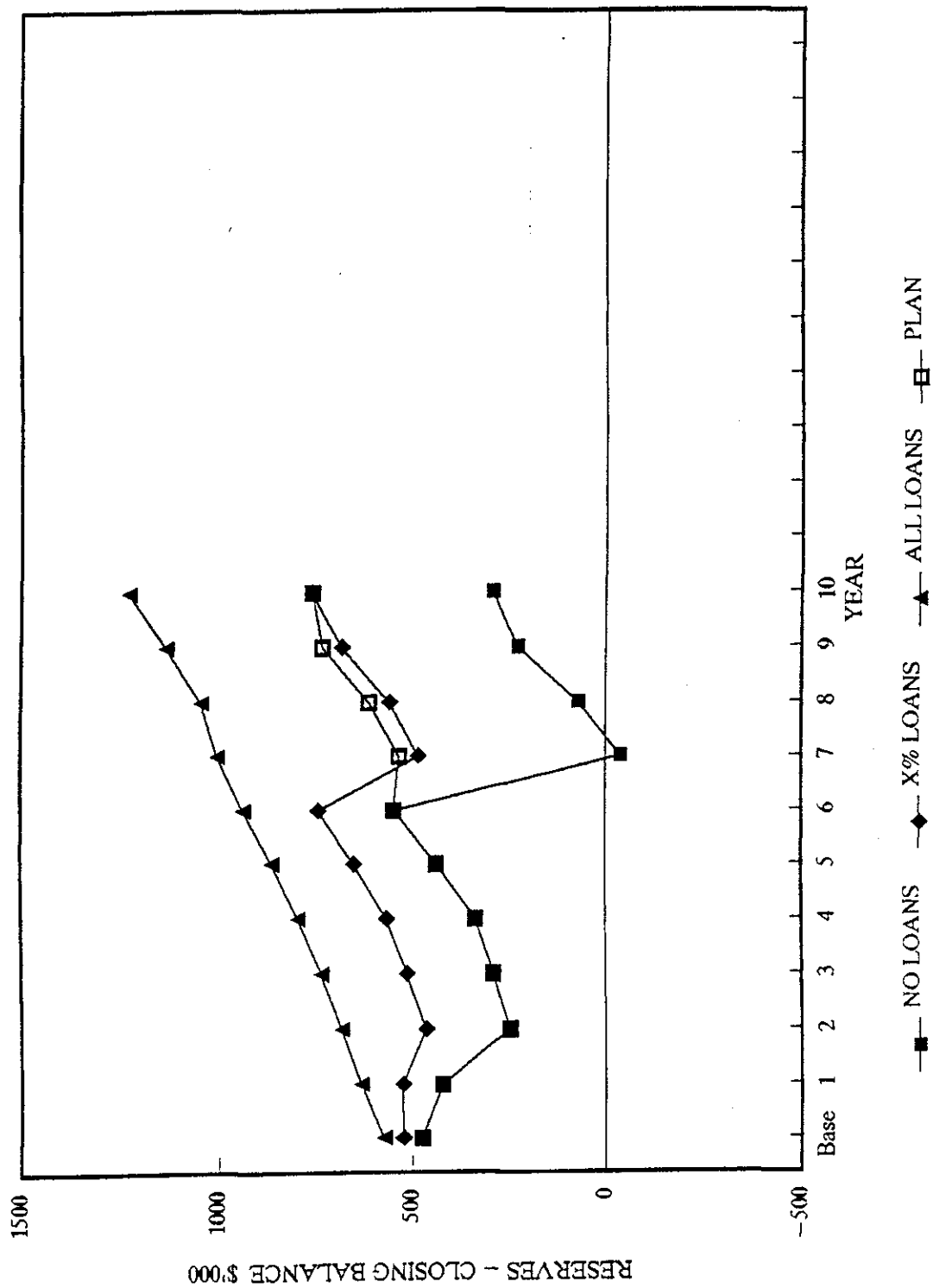
5.1 INDICATORS

The financial performance indicators embedded within the model can be chosen by selection of the main menu option **INDICATORS**. Each of the indicator options available to the user are presented in a graphical form and are described in turn below. The plots shown make use of the data contained within the **SNAKE10** spreadsheet provided with this report.

➤ RESERVES

Choice of indicator menu option **RESERVES** displays the plot shown in Graph 1. This plot shows the closing balance in the reserve account under each of the three scenarios of no loan borrowings for future asset investment, all future asset investment funded through loan borrowings, and a constant percentage of future asset investments in any year funded through loan borrowings. These three scenarios are generated automatically by the model. Also shown is the planned closing reserve balance for the user entered asset financing strategy. The user is able to use this plot to assess the circumstances under which the reserve balance would go negative in the absence of a response by the agency in terms of, for example, alterations to its proposed charging policy, capital revenue raising policies, proposed asset investment program, and/or proposed borrowing strategies. The plot also shows the extent to which the reserve balance may reach levels which could be considered to be either within, or perhaps beyond, what is considered appropriate by that particular agency. The scenarios, other than the planned scenario, are a useful guide to the direction of needed policy change. It should be recalled that the reserve closing balance, along with other indicators of performance, are dependent on the particular revenue requirement option chosen.

RESERVES - CLOSING BALANCE



GRAPH 1

Note that the chosen financing strategy should not incorporate the possibility of overdrawn (negative) reserves balances. The graphical display is removed from the screen by pressing the "Enter" key.

➤ **ROA**

Choice of the **ROA** indicator menu option presents to the user a plot of the achieved rate of return on assets for each of the model "automatically" generated asset financing scenarios as well as the user's planned asset financing strategy. Also shown on the plot is the target rate of return. The planned and target rates of return will be identical if the user has chosen as the revenue requirement, that revenue which will achieve the target rate of return. The plot shows the impact of alternative borrowing strategies on the rate of return achieved. Rates of return below the target rate of return in any one year, would indicate that the agency is either under providing for depreciation and/or not in a position to meet its full set of debt financing costs and/or opportunity costs of capital employed. Refer to Graph 2.

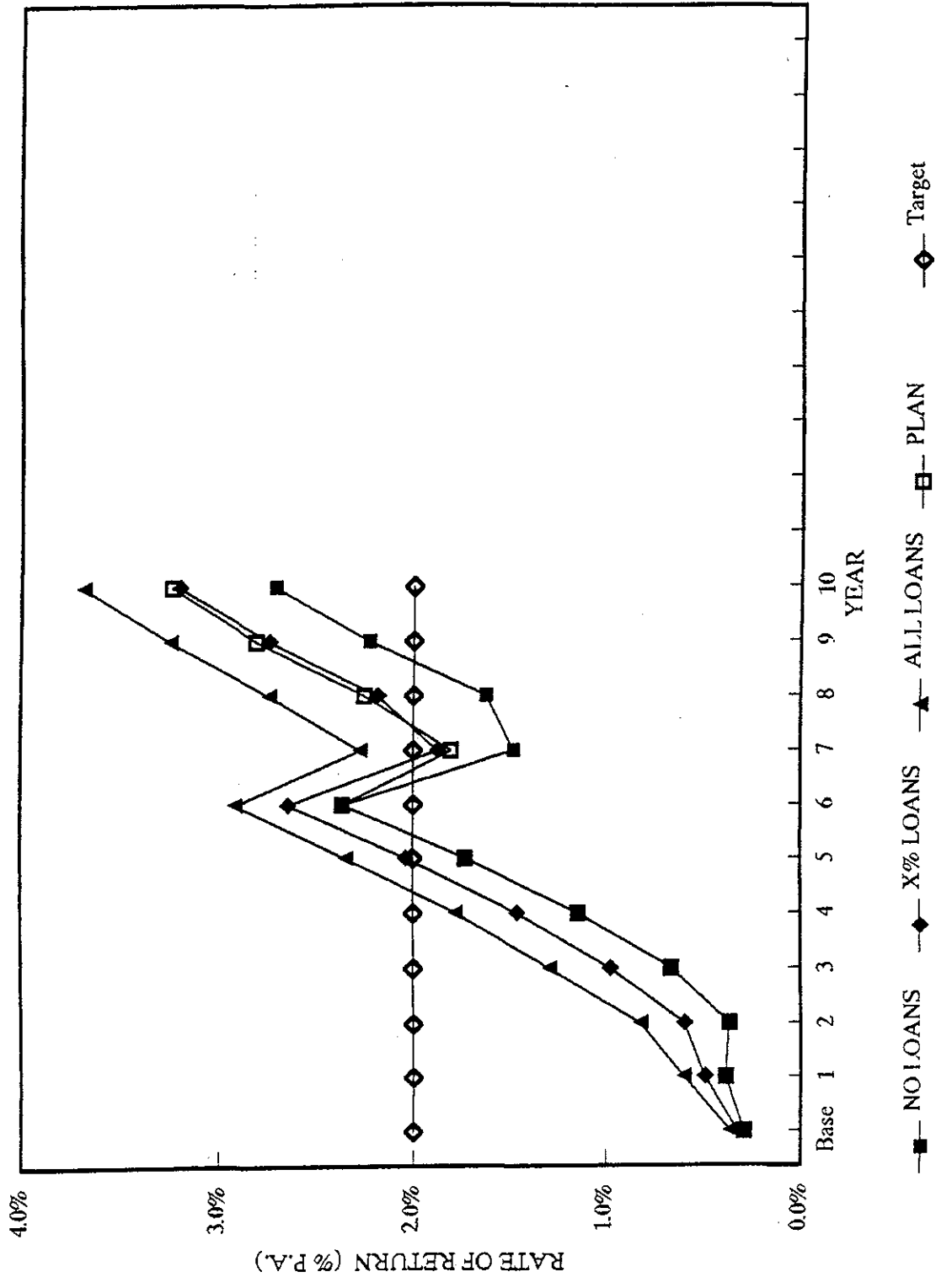
➤ **DEBT_SERVICE**

Debt-service costs as a percentage of revenue required (planned or target, depending on user selected option) is displayed on the spreadsheet screen by selection of the indicator menu option **DEBT_SERVICE**. Again, plots for all "automatically" generated scenarios, as well as the user generated scenario, are provided. The user is able to assess the level of revenue committed to debt servicing on an annual basis and therefore, to identify trends and/or levels of such debt servicing which may be unacceptable to the agency in question. The plots of debt-service are shown in Graph 3.

➤ **DEBT_LEVEL**

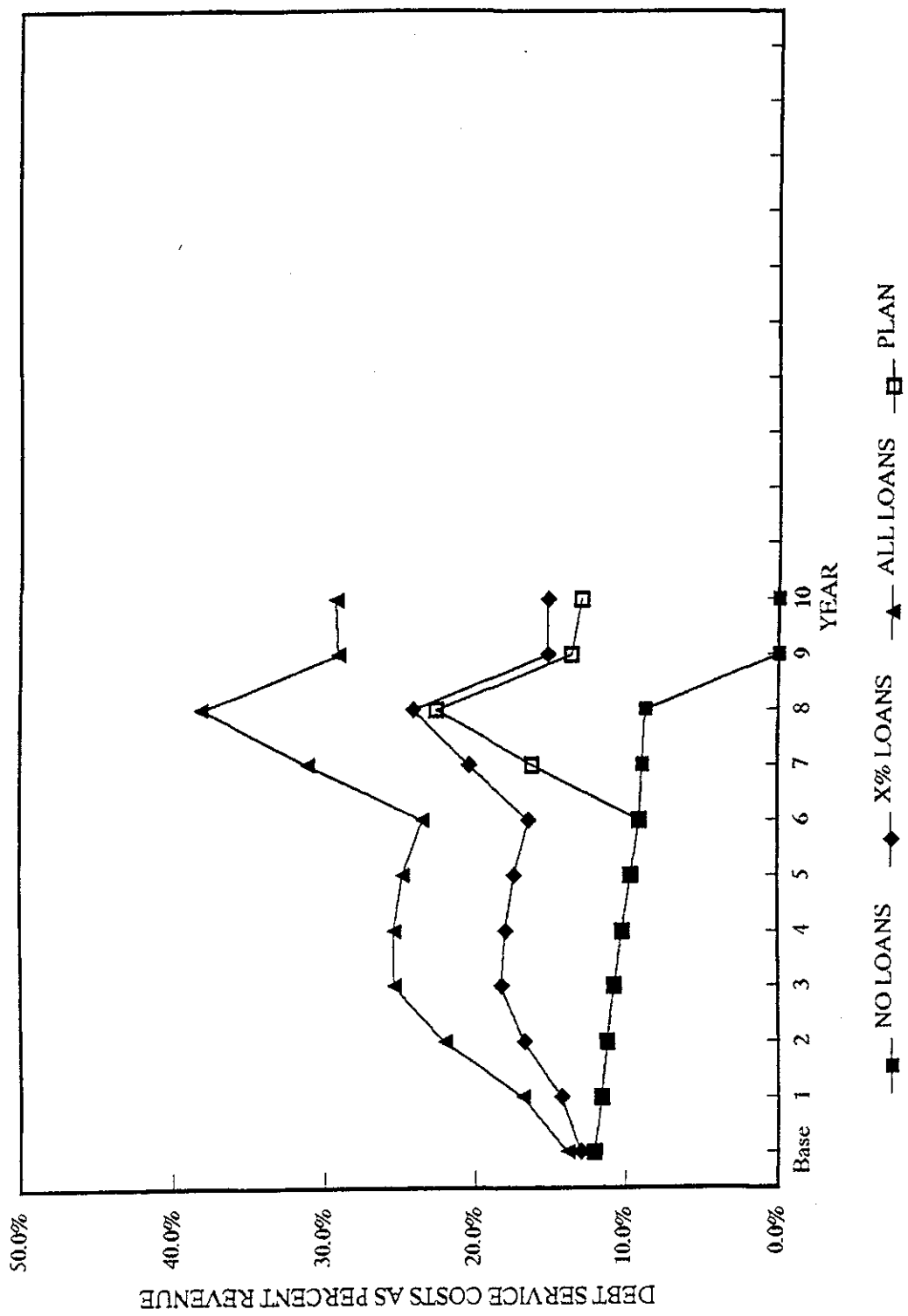
Choice of the indicator menu option **DEBT_LEVEL** presents a graph of outstanding debt at the end of each financial year as a percentage of the total asset base of the agency. This provides a measure of the debt exposure of the agency. Again, the user is able to assess whether or not the debt exposure is within or outside the policy guidelines of the agency concerned. Refer to Graph 4.

REAL RATE OF RETURN ON ASSETS % P.A.



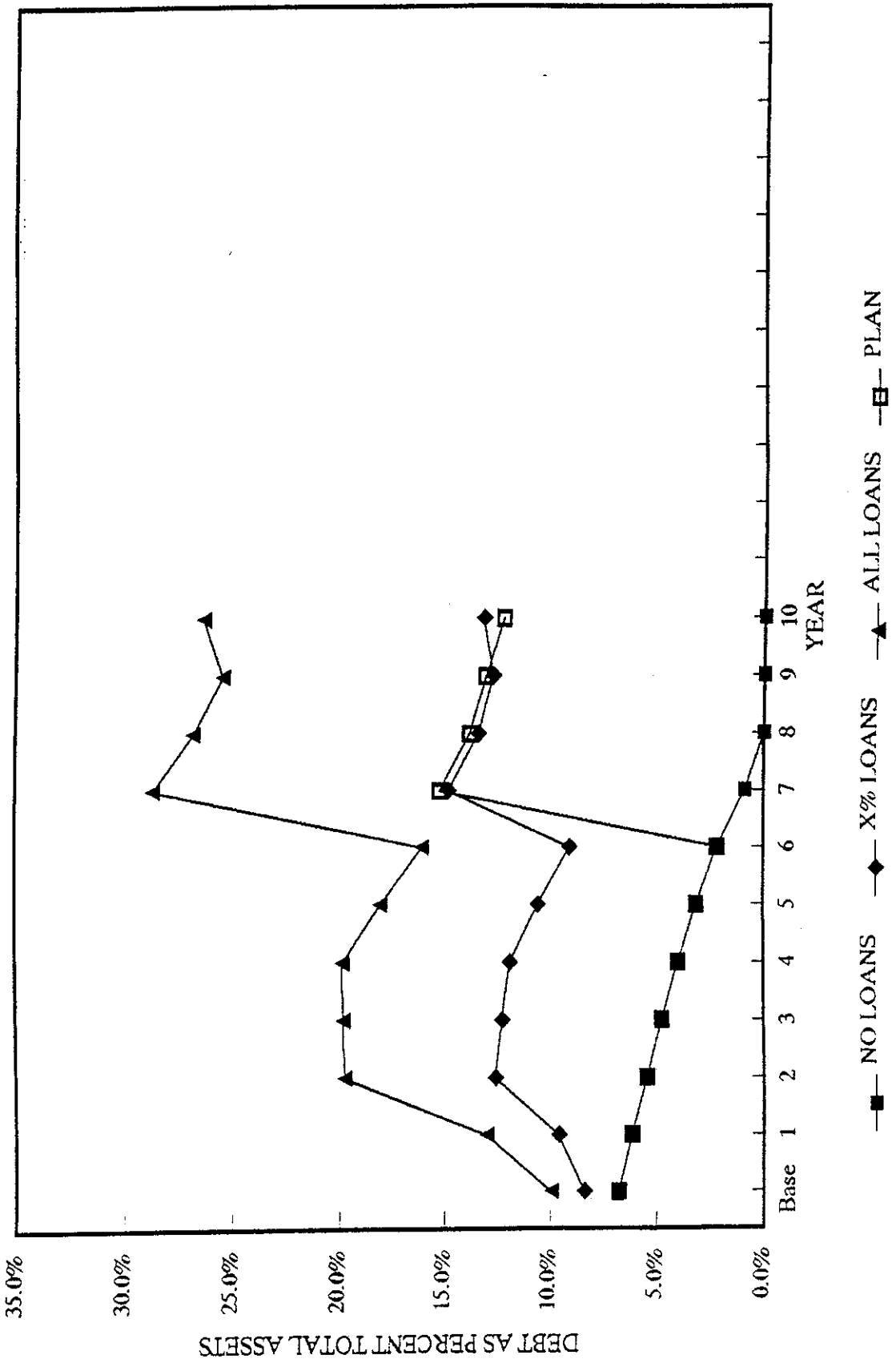
GRAPH 2

DEBT SERVICE COSTS AS PERCENT REVENUE



GRAPH 3

DEBT AS PERCENT TOTAL ASSETS



GRAPH 4

➤ **REV_SURPLUS**

An agency is in a position to fund its assets investment program from a diverse range of sources. These sources include revenue generated from sales and charges, developer contributions and other capital revenue, borrowings, grants and subsidies, etc. The purpose of providing a plot of revenue surplus as a percent of total revenue is to indicate to the user of the model the "access" that the agency has in any one year to revenue to fund asset acquisition. Shortfalls in revenue surplus would indicate under provision for depreciation had occurred and/or that the required rate of return on assets had not been achieved. Refer to Graph 5.

➤ **REVENUE**

The **REVENUE** graph option for financial performance indicators plots the revenue requirement under the variety of scenarios, as well as that which would be required if the target rate of return were to be achieved. This plot provides an indication of the extent to which revenue requirements are either conforming or not conforming with the target revenue required to achieve the desired rates of return. As such, it gives a clue to the user of the changes in charging policy, for example, which could be pursued in order to more directly align target with planned revenue raisings, assuming that is an objective of the agency. Refer to Graph 6.

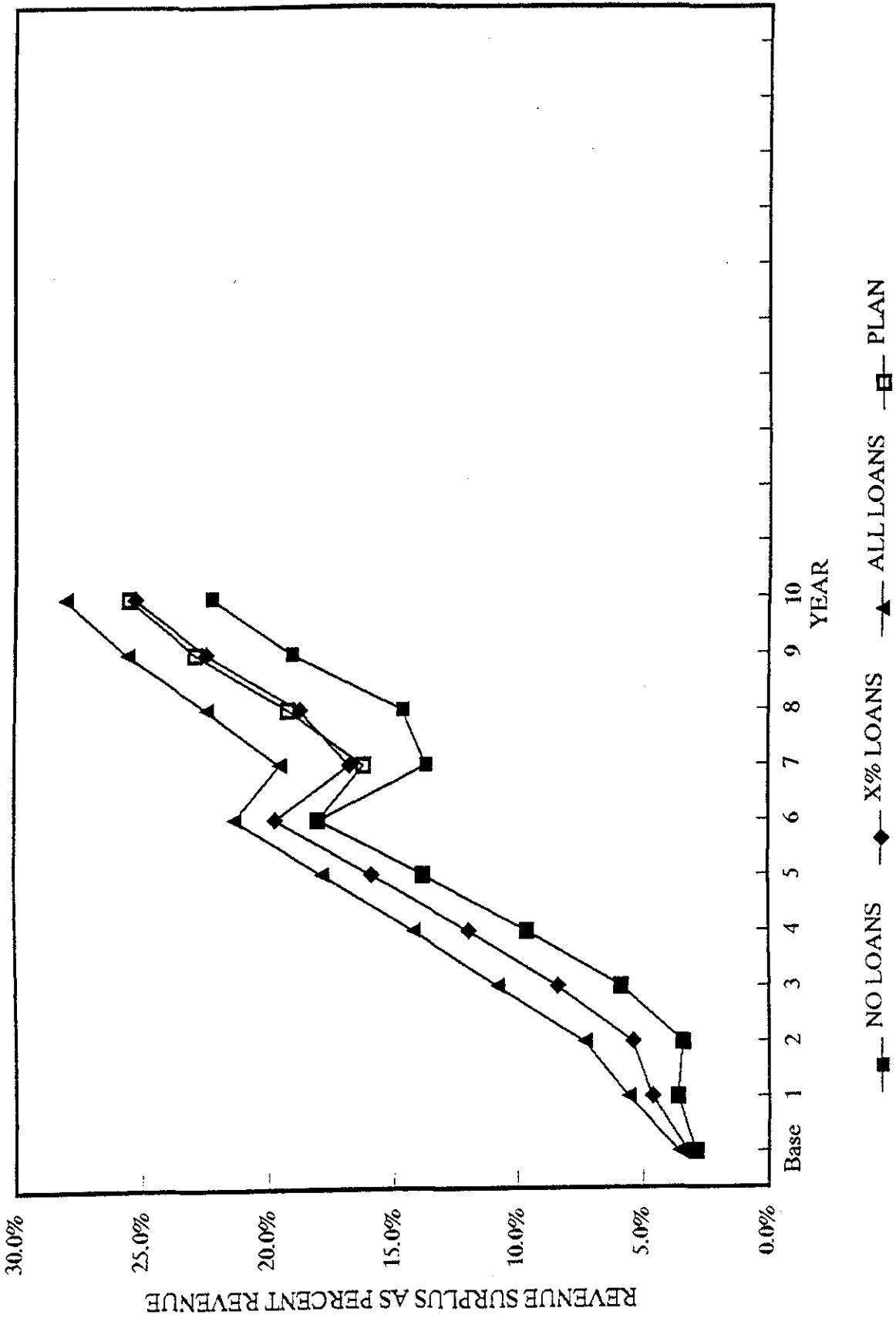
➤ **CHARGES**

Choice of the **CHARGES** menu option provides the plot shown in Graph 7, namely an index of the movement of the real average charge levelled on an agency's consumers for both the planned revenue raisings, as well as from the revenue raisings that would occur if the target rate of return were to be achieved. The plot serves to highlight the differences between what the tariff is currently achieving and what it "should" be achieving in financial management terms. The difference in the two charges represents under-(over-) provision for the opportunity cost of capital and adequate (inadequate) provision for depreciation depending on the "direction" of the difference.

➤ **DIVIDEND**

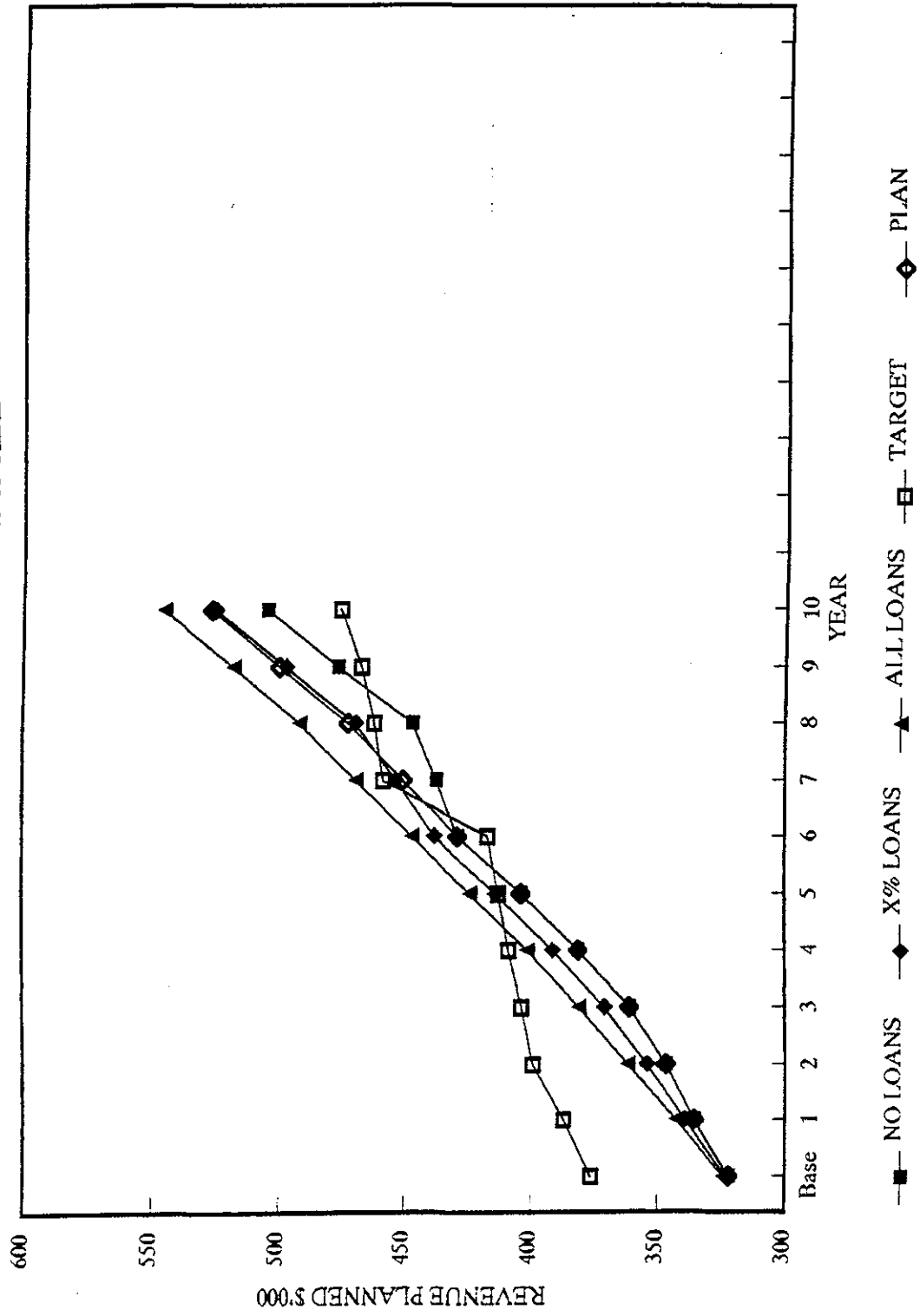
As mentioned in earlier discussion, dividend payments are used here in the context of either cash payments to the holding agency or that payment required to meet the tax obligations of the utility (where applicable) with the balance of the "dividend" being available for distribution either to equity

REVENUE SURPLUS AS PERCENT REVENUE



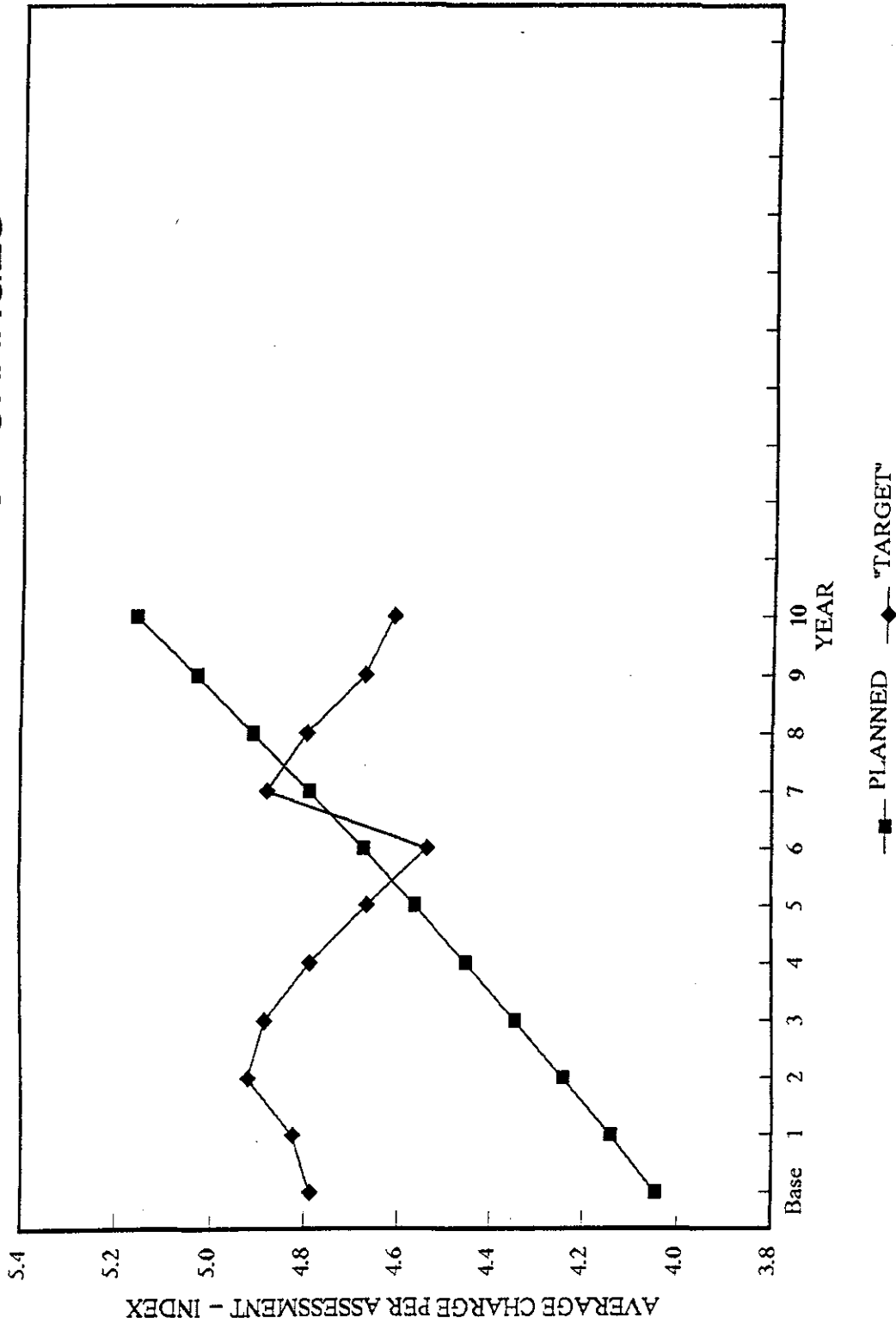
GRAPH 5

REVENUE PLANNED



GRAPH 6

INDEX OF REAL AVERAGE CHARGES



GRAPH 7

holders and / or the utility owner. The plot shows the dividend payments proposed to be made under each of the financing strategies. The plot highlights the significance of the different strategies for the payment levels consistent with the stated dividend payment policy entered earlier into the model by the user. Note that the user must ensure that the dividend payments made always remain greater than or equal to 0. If this is not the case, then the user must either model the utility under a different set of dividend payment expectations or seek changes in the forecasts of revenue available and / or the costs of operating the utility. Refer to Graph 8.

FIN_RATIOS

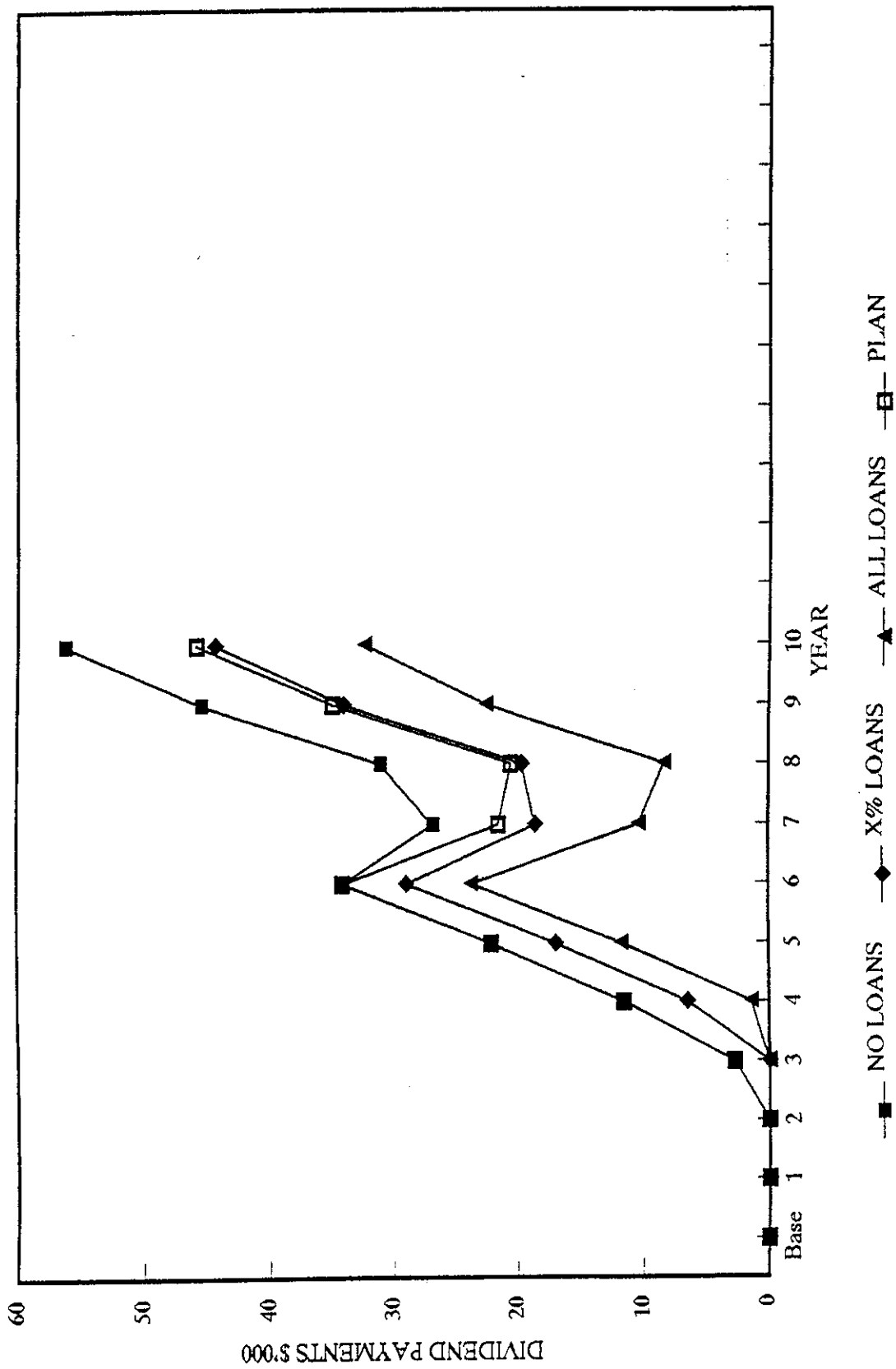
The **FIN_RATIOS** graph option for financial indicators provides four measures of financial performance for the user's interpretation for the proposed financing strategy. The ratios, dividend (net) as a percent of total assets, debt outstanding as a percent of total assets and imputed tax equivalent as a percent of operating surplus are read off the left hand scale while the ratio, times cover, is read off the right hand scale. The user should ensure that the proposed financing strategy results in all indicators being greater than or equal to 0. The acceptable values of the indicators will depend on the policies of the utility and / or its equity holders or owners. In cases where a non tax regime is being considered, then the ratio, net dividend (net) over total assets, will effectively be the payments made by the utility to the holding or owning agency. The indicators shown mirror some of the financial ratios used by private sector organisations and hence their potential value as utilities become increasingly commercialised, corporatised and / or privatised. The graph option is presented in Graph 9.

> DIV_TAX

Selection of the **DIV_TAX** option provides the user with further financial performance information on the dividend and taxation situation which would face the utility under the planned financing strategy. The graph option shown in Graph 10 provides four indicators for use by the user, namely:

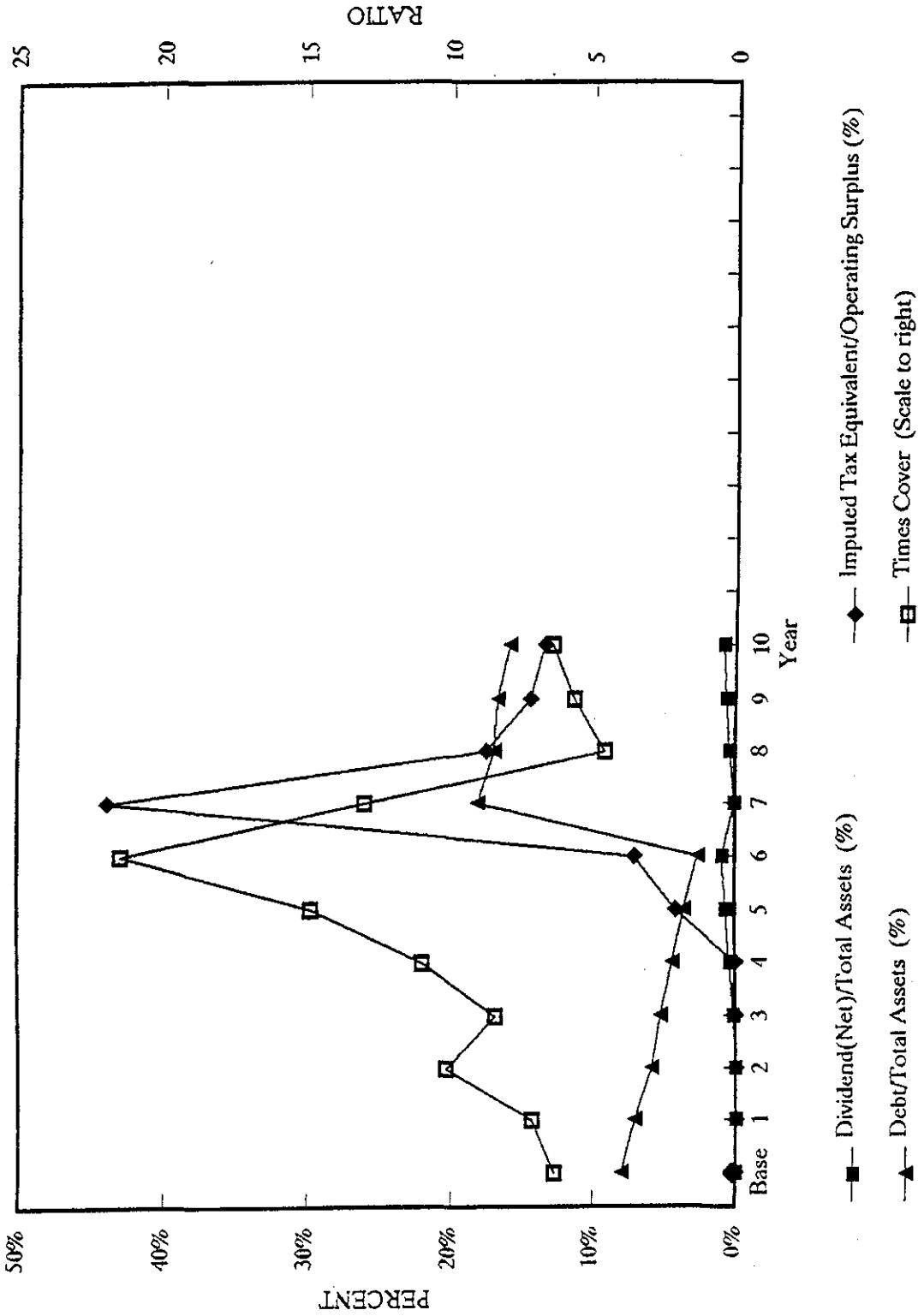
- the imputed tax equivalent;
- net dividend after tax;
- net dividend as a percent of total assets, including reserves balances; and
- gross dividend as a percent of total assets, including reserves balances.

DIVIDEND PAYMENTS



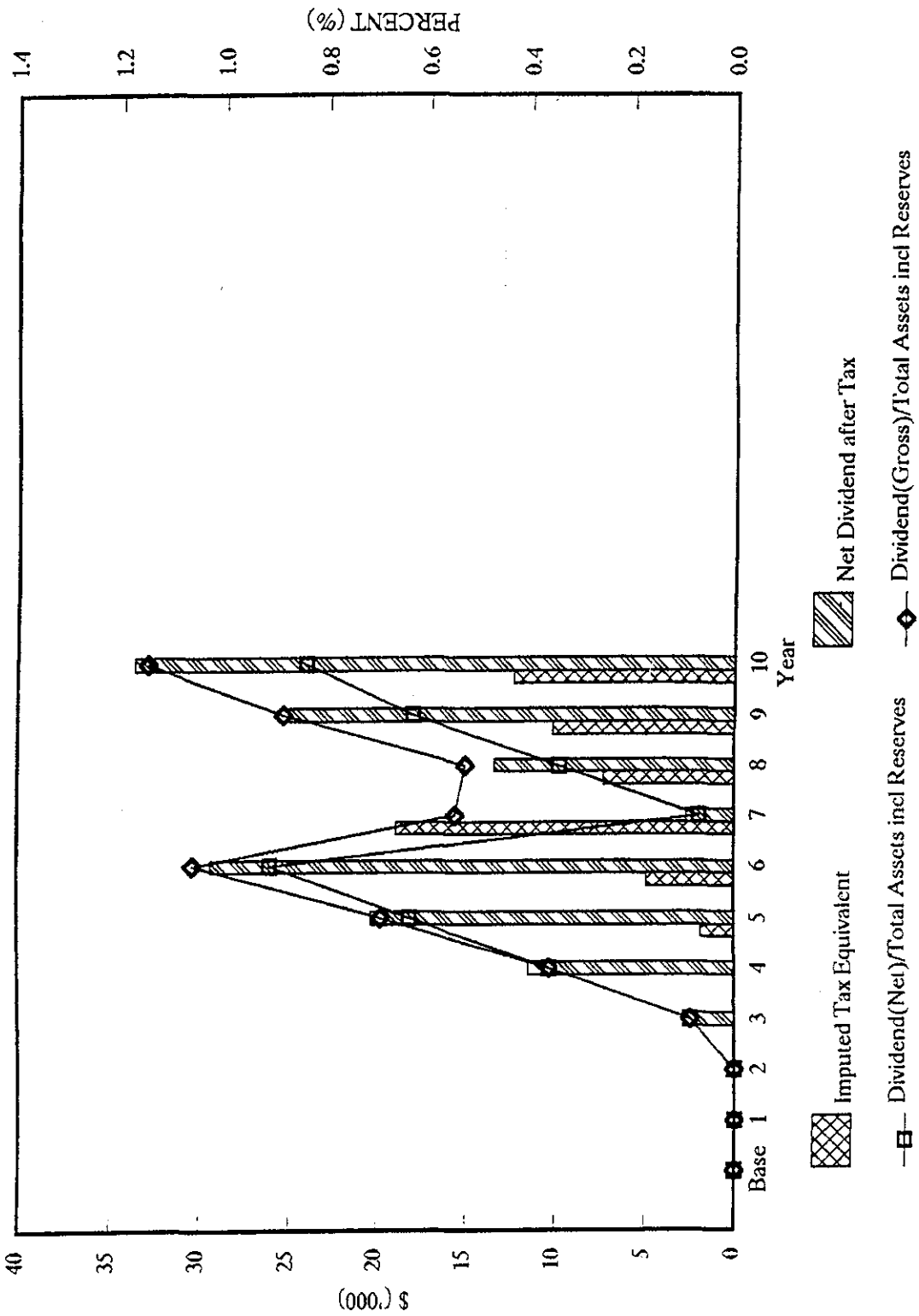
GRAPH 8

FINANCIAL INDICATORS



GRAPH 9

DIVIDENDS AND TAXATION



GRAPH 10

The user must ensure that all ratios are greater than or equal to 0. The appropriate values of the dividend to asset ratios will be determined by agency policy. Note that for agencies not subject to taxation, that the net dividend after tax will be effectively the dividend "payments" made to the holding or owning agency. For those utilities subject to taxation and / or its equivalent, or where a utility might like to examine the implications of a taxation regime on the utility, the imputed tax equivalent is shown. Where tax is payable, the net dividend after tax reflects the funds available for distribution as dividends to equity holders and / or as a dividend / payment to the owning or holding agency.

5.2 FORECASTS

Supplementing these graphical plots of what are considered to be key financial performance indicators of water agencies for guiding users in developing asset financing strategies, are a series of tables of associated revenue and expenditure forecasts. These tables can be viewed through selection of the main menu option **FORECASTS** and then choosing one or more in turn of the following menu choices.

➤ **OP_REV**

Choice of this forecast menu option provides the user with a plot of the annual operating revenue forecast for the agency, broken into its components of sales revenue, charges and community service obligation income; interest revenue earned; and other operating revenue not elsewhere included. Refer to Plot 1. This plot can be useful in alerting the user to the extent to which the agency is relying on, for example, interest earned on reserve balances to fund its operations and, therefore, can be used to guide the reserves policy of the agency.

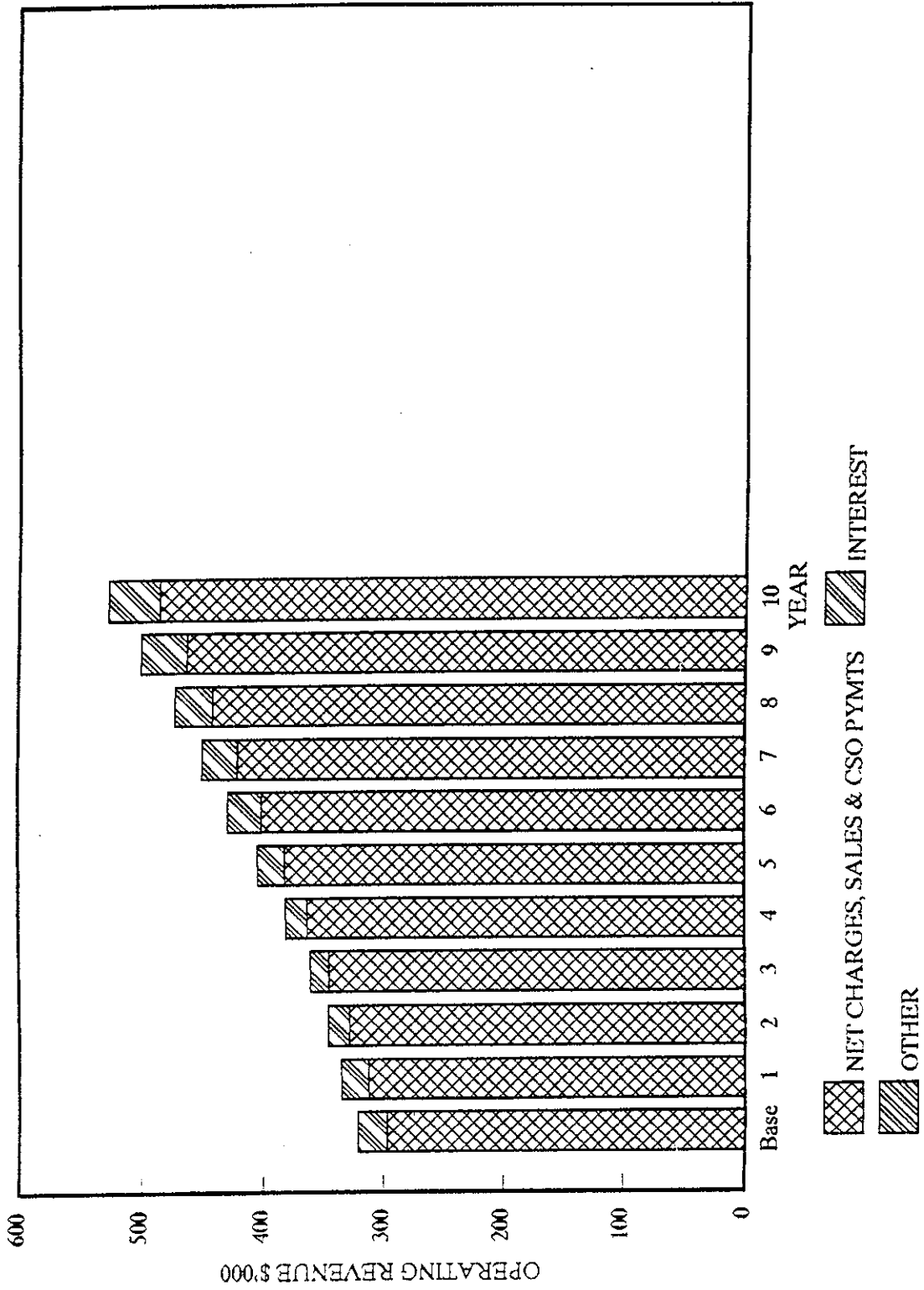
➤ **OP_EXPENSES**

The menu option **OP_EXPENSES** presents to the user a plot of the components of the accrued operating expenses of an agency on an annual basis. The components presented are type 1, type 2 and type 3 operating expenses (for example, operation, maintenance, and administration), other operating expenses not elsewhere included, as well as the current cost depreciation provision. As discussed earlier, the user is able to specify the "types" or categories of operating expenses by use of the sub-menu caption **CATEGORIES** under the **MODEL_INPUTS** main menu option. The plot is useful in highlighting changes over time in the components of the operating expenses forecast and, in particular, the relative importance of depreciation provision in the overall operating expenses of an agency. Refer to Plot 2.

➤ **CASH_EXP**

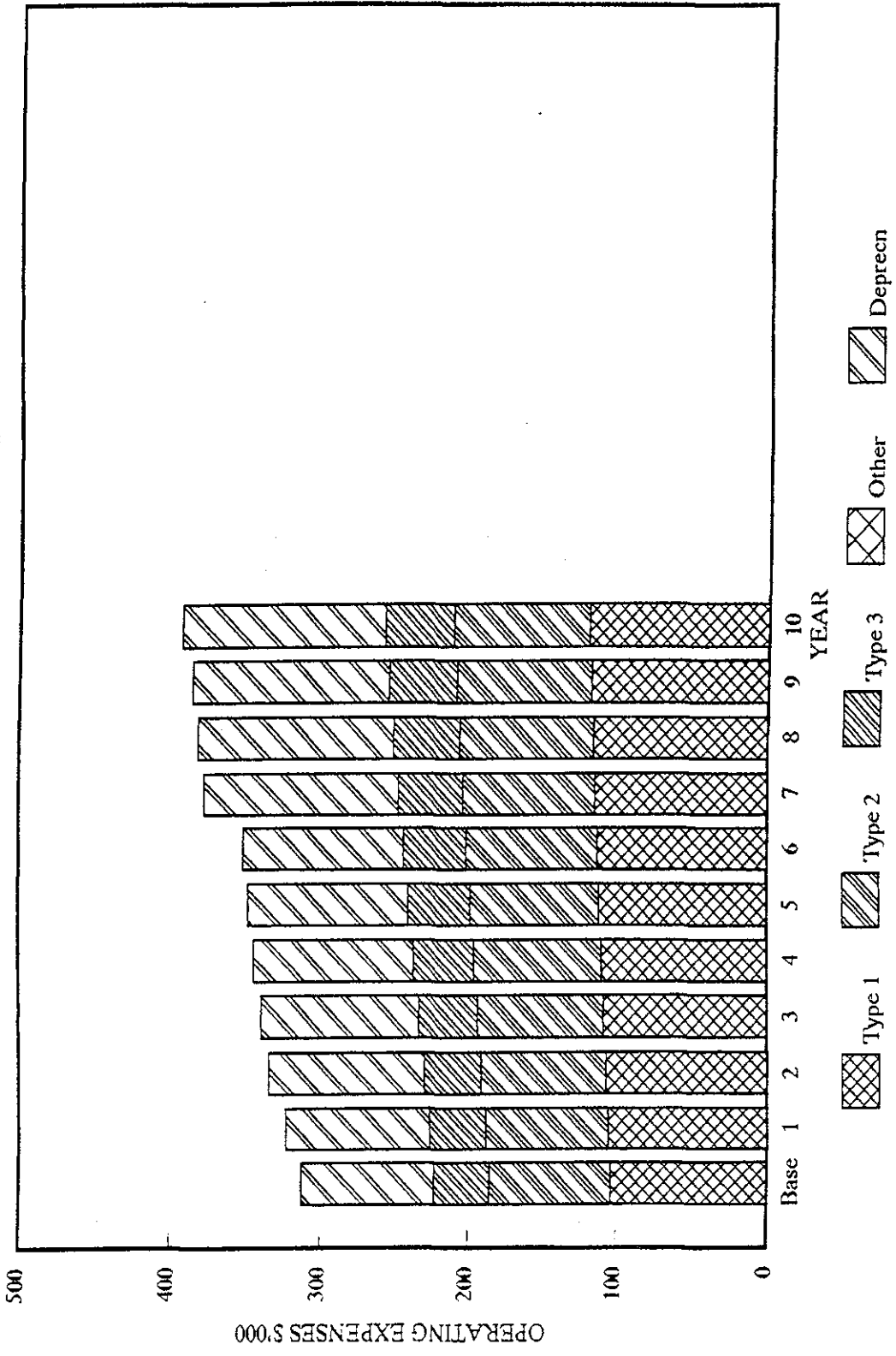
It can be of assistance, from time to time, when planning the financial strategies for an urban water agency, to be able to examine the cash components of the agency's operating expenses. Choice of the forecast menu option **CASH_EXP** (refer to Plot 3) provides such an opportunity to the user of the model. The components of cash operating and debt expenses displayed are type 1, type 2 and type 3 operating expenses (for example, operation, maintenance and administration expenses) and other operating expenses, and the debt costs of

OPERATING REVENUE



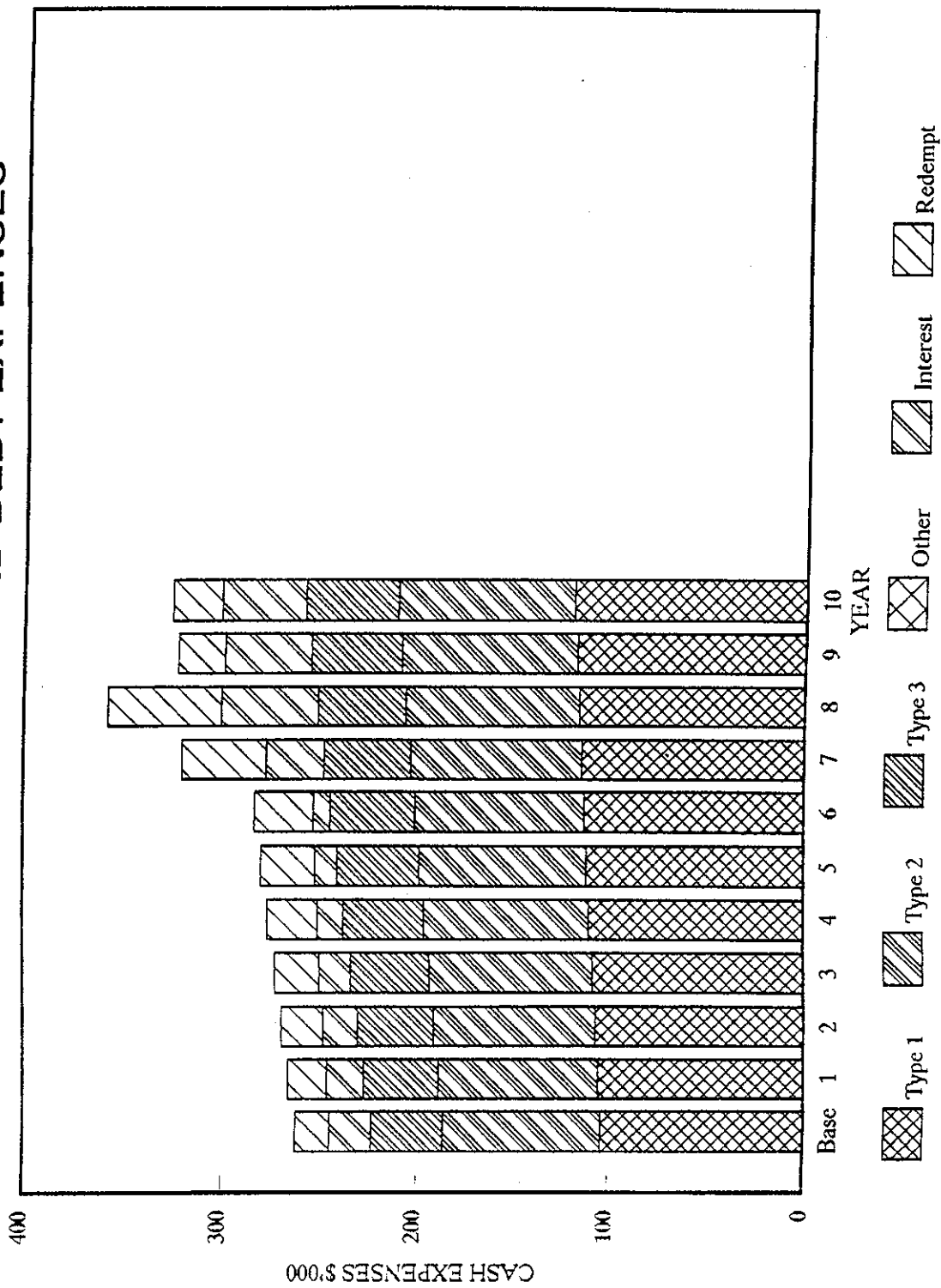
PLOT 1

OPERATING EXPENSES



PLOT 2

CASH OPERATING AND DEBT EXPENSES



interest and loan redemption on borrowed funds. This plot complements the earlier indicator plot of **DEBT_SERVICE** by highlighting the debt repayment components of the overall cash expenses facing the agency. It can also serve to highlight the sometimes "irregular" nature of the cash expense profile over time, following significant changes in borrowing levels. Refer to Plot 3.

➤ **CAPITAL_REV**

Capital revenue raisings of an agency are likely to be highly variable over time. The raisings comprise a number of components including asset sales, transfers from reserves, developer capital contributions, loan raisings, and revenue from other sources external to the agency, such as subsidies and grants from other levels of government. Plot 4 provides a summary to the user of the planned sources of capital revenue to fund asset investment over the planning horizon.

➤ **CAP_BUDGET**

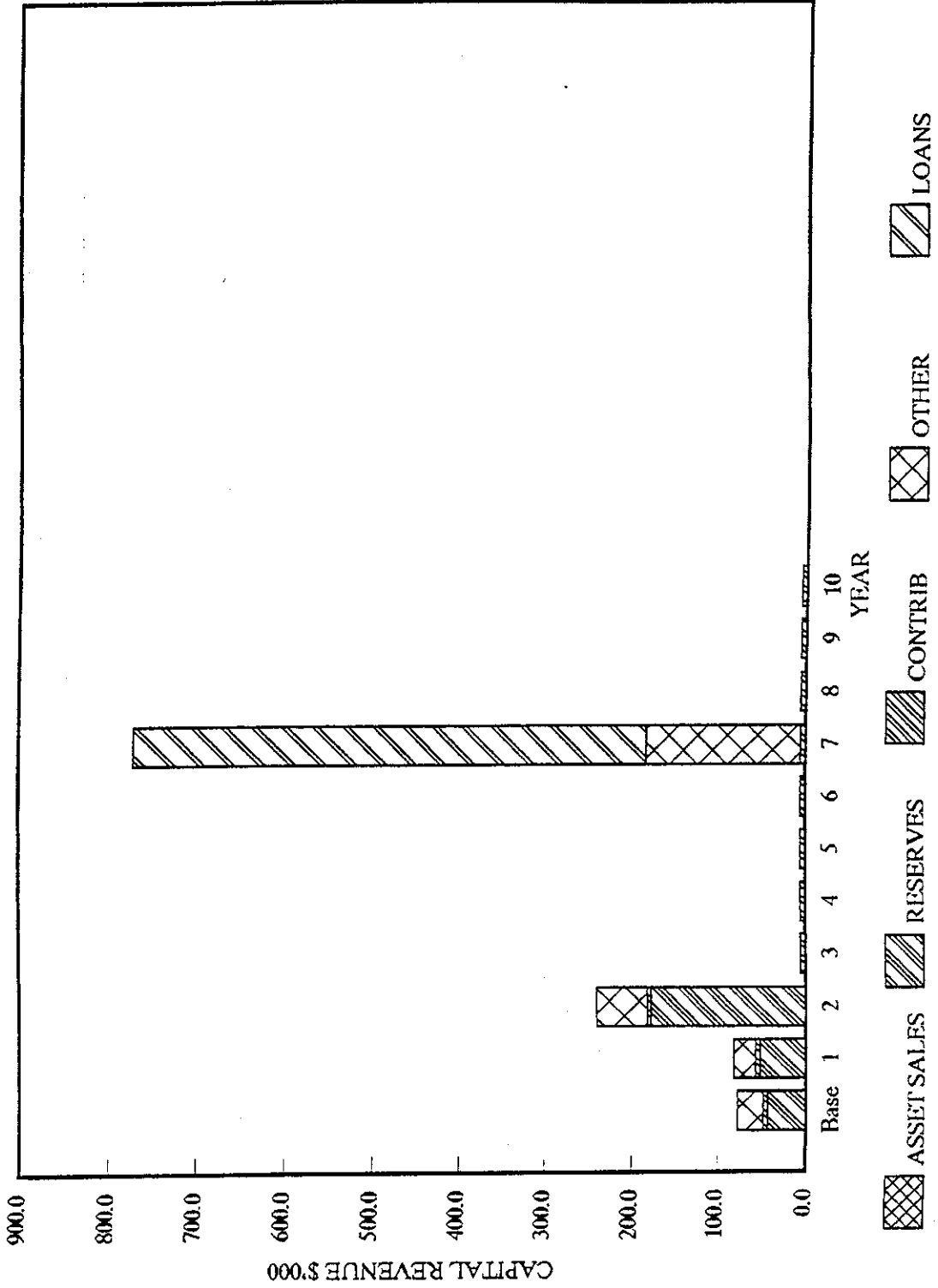
The **CAP_BUDGET** menu option allows the user to view the asset investment requirements over each budget year for both new as well as replacement assets. In addition to highlighting the relative importance of the commitment to fund asset replacement, the plot can be used to guide the user in the development of a borrowing strategy should an agency have a particular policy with respect to funding asset replacement. Refer to Plot 5. Some utilities may have a specific financing policy with respect to replacement assets, such that these asset investments are not to be funded from new debt finance. For this reason, the level of planned new debt financing of assets is shown in Plot 6 (see below) alongside planned total expenditure on replacement capital assets.

CAP_PRO

Choice of the **CAP_PRO** menu option by the user provides further perspectives on the relative magnitude and components of the proposed capital works program and compares this to the current cost based depreciation provisions. Refer to Plot 6. The time trajectory of the depreciation provisions gives an indication of the extent to which the valuations of the utility's depreciated assets are increasing or decreasing over time.

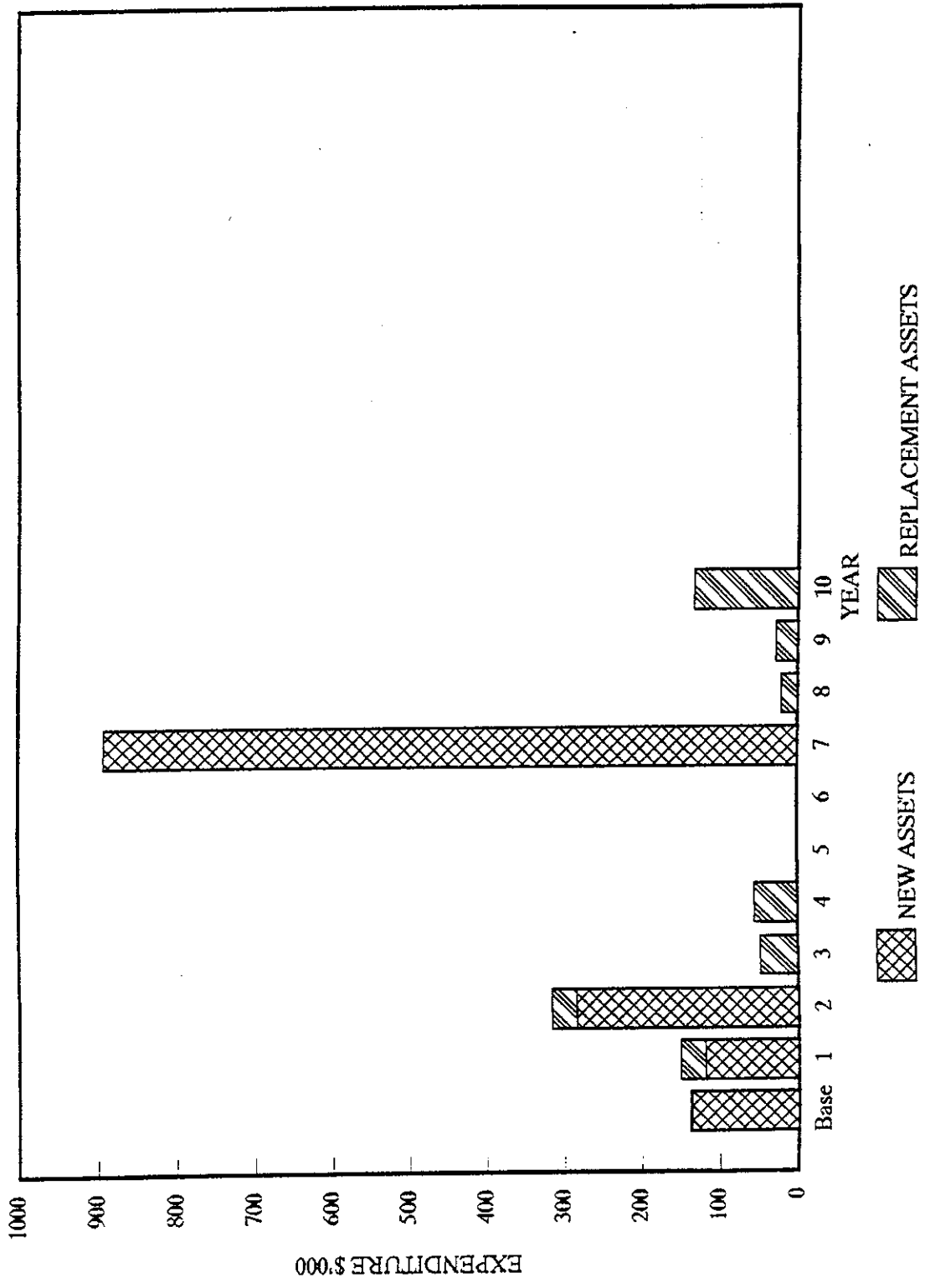
Various tables summarising the outputs of the model can also be used by the user during analysis to guide the testing of alternative policies and asset investment strategies. These outputs are discussed below.

CAPITAL REVENUE

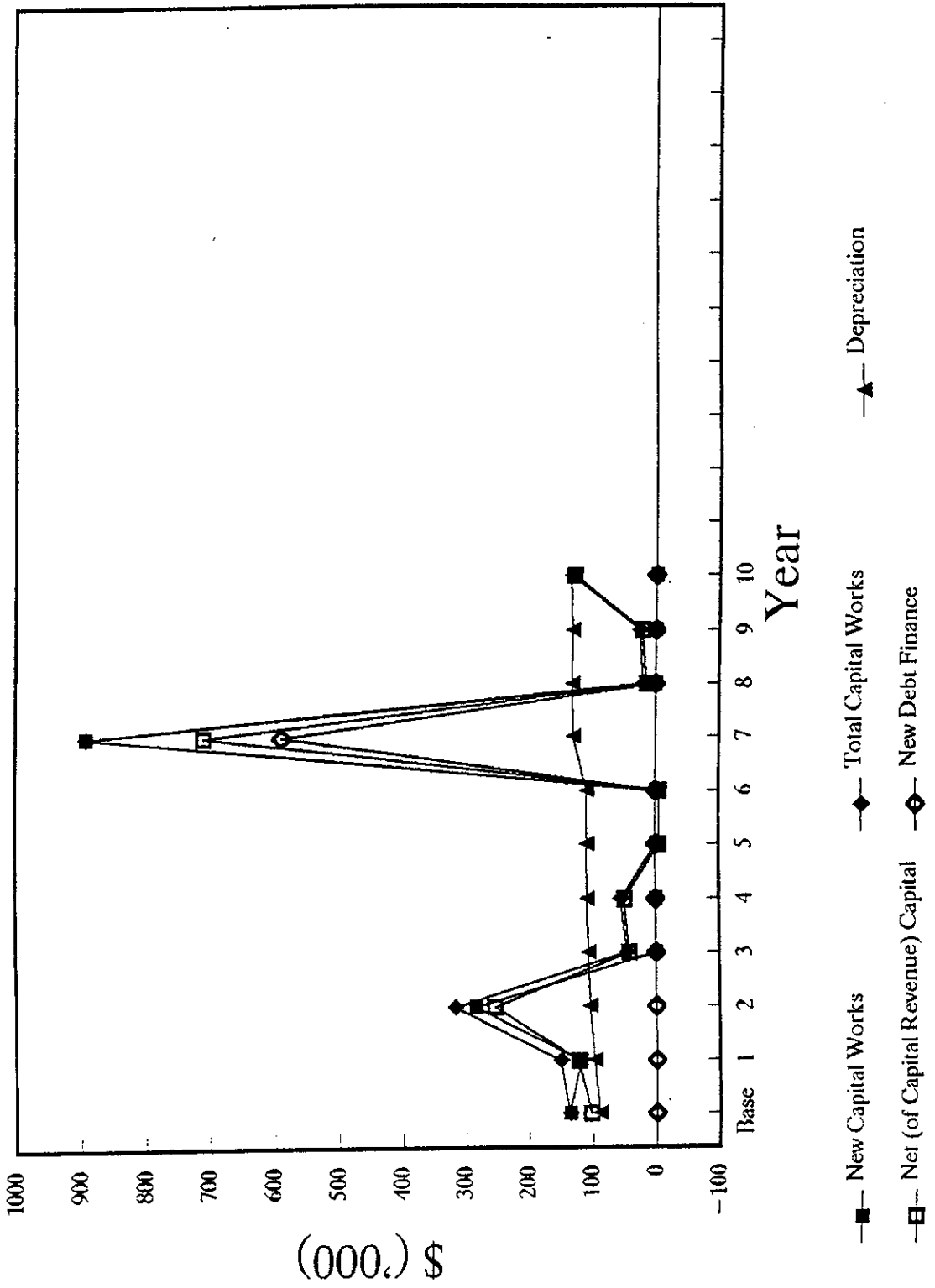


PLOT 4

PLANNED ASSET INVESTMENT PROGRAM



CAPITAL WORKS PROGRAM



PLOT 6

6. MODEL_OUTPUTS

Once the user of the model is satisfied that an "optimum" asset financing strategy has been identified, then it is possible, by selecting the **MODEL_OUTPUTS** menu option, to move to specified areas within the spreadsheet to examine in closer detail the financial forecasts associated with that optimum strategy. Alternatively, in the development of that strategy, the user of the model may wish to "look beyond" the graphs and plots of the financial indicators and the forecasts and examine the tables associated with those graphs and plots. In this case, the user should also select the **MODEL_OUTPUTS** option contained in the main menu of the spreadsheet model. Specific areas which the user may wish to examine are as follows:

➤ **FORM1**

Selection of the model output sub-menu **FORM1** will take the user to the revenue and expenditure summary for the model. This table is in the format of Form 1 of the Queensland Department of Housing, Local Government and Planning's Guidelines to Local Government Bodies. (Refer to attachment and to Table 1.) Form 1 is a mixture of cash and accrual financial reporting of income and expenditure for a water agency. With careful interpretation, in association with the details provided in the Appendix A, this table can provide a very informative summary of the income and expenditure statement of an agency over the budget planning period.

➤ **REV_PLAN**

REV_PLAN provides a summary of the planned sales revenue, and other components of operating and current income, various system user, use and growth parameters, as well as the charges adopted in the analysis. (Refer Table 2).

➤ **CAPEXP**

Choice of **CAPEXP** will provide to the user a summary of the planned capital expenditure over the planning period for replacement and new works, together with the sources of capital revenue summary and, as a consequence, the capital expenditure which needs to be funded from sources other than capital revenue. Also in this table, the cash revenue surplus available before new loan costs is identified. (Refer to Table 3).

FORM 1 - SUMMARY FINANCIAL STATEMENT												
SYSTEM/SCHEME:	UTILITY NAME:	Year	FORWARD PROJECTIONS (BASE YEAR DOLLARS)									
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
		\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
EXPENDITURE												
OPERATING EXPENDITURE												
1. Operations		104	106	107	109	110	112	113	115	116	118	119
2. Maintenance		82	83	84	85	86	87	88	89	90	91	92
3. Administration		37	38	39	40	41	42	43	44	45	46	47
4. Loan Interest:		0	0	0	0	0	0	0	0	0	0	0
New Borrowings		21	19	18	16	14	11	9	6	3	0	0
Existing Debt		0	0	0	0	0	0	0	0	0	0	0
Overdraft		0	0	0	0	0	0	0	0	0	0	0
5. Other Operating Expenses		0	0	0	0	0	0	0	0	0	0	0
CAPITAL EXPENDITURE												
6. CAPITAL WORKS		0	32	32	47	55	0	0	0	20	27	133
Replacement Works (RU)		137	119	285	0	0	0	0	0	892	0	0
New Works (NW)		0	0	0	0	0	0	0	0	0	0	0
7. REDEMPTION		0	0	0	0	0	0	0	0	22	24	25
New Borrowings		18	20	21	23	25	28	30	33	36	0	0
Existing Debt		0	0	0	0	0	0	0	0	0	0	0
8. TOTAL EXPENDITURE		399	416	586	319	331	279	283	1212	477	505	459
APPROPRIATIONS TO RESERVES:												
9. FUNDED DEPRECIATION FOR YEAR		0	0	0	46	55	108	108	9	99	131	73
10. REVENUE FOR FUTURE CAPITAL WORKS		0	0	0	0	0	0	43	0	0	24	0
11. OTHER		0	0	0	0	0	0	0	0	0	0	0
12. CASH SURPLUS REQUIREMENTS (9 + 10 + 11)		0	0	0	46	55	129	151	9	99	156	73
13. TOTAL FUNDING REQUIREMENTS (8 + 12)		399	416	586	366	386	609	434	1221	477	505	532
INCOME												
OPERATING REVENUE												
14. Operating Revenue		297	313	329	346	364	382	401	421	441	463	485
15. Interest Revenue		25	23	18	15	18	22	28	29	31	37	41
16. Other Current Revenue		0	0	0	0	0	0	0	0	0	0	0
CAPITAL REVENUE												
17. Sale of Assets		0	0	0	0	0	0	0	0	0	0	0
18. Appropriations from Reserves		43	52	177	0	0	0	0	0	0	0	0
19. Landowner, Developer Contributions		5	5	5	5	5	5	5	5	5	5	5
20. Other Capital Revenue (Govt Subsidies, Grants)		29	24	57	0	0	0	0	170	0	0	0
21. New Loans		0	0	0	0	0	0	0	588	0	0	0
22. TOTAL INCOME		399	416	586	366	386	609	434	1221	477	505	532
23. OPERATING SURPLUS/DEFICIT FOR YEAR		-12	-7	-6	5	23	44	88	43	41	70	92
$(14 + 15 + 16) - (1 + 2 + 3 + 4 + 5 + 27)$												
24. CASH SURPLUS/DEFICIT FOR YEAR (22 - 8)												
25. ACCUMULATED CASH RESERVES (Brought forward)		0	0	0	46	55	129	151	9	99	156	73
26. ACCUMULATED CASH RESERVES (Carried forward)		517	474	423	245	292	347	477	627	636	735	891
27. ANNUAL DEPRECIATION		474	423	245	292	347	477	627	636	735	891	964
$(25 + 12 - 18)$												
28. CURRENT COST DEPRECIATION NOT FUNDED IN YEAR		90	97	105	106	108	108	108	130	130	131	131
29. SURPLUS/DEFICIT IF FULL CURRENT COST DEPRECIATION RECOVERED (24 - 28 - 18)		-90	-97	-105	-60	-52	22	43	-121	-31	24	-62

TABLE I

SYSTEM PARAMETERS AND OPERATING REVENUE											
UTILITY NAME: SYSTEM/SCHEME:	Base Year 1993	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Assessments per Rating Unit (Av.)	1.00										
No. of rating units	73375	75444	77513	79582	81651	83720	85789	87858	89927	91996	94065
Unit rate (\$/unit) - Planned	4.05	4.14	4.24	4.35	4.45	4.56	4.67	4.79	4.91	5.03	5.16
Rate income (\$'000) - Planned	297	313	329	346	364	382	401	421	441	463	485
Rate Rebates (Pensioners, etc) (\$'000)	0	0	0	0	0	0	0	0	0	0	0
Other Operating Revenue (\$'000)	0	0	0	0	0	0	0	0	0	0	0
Funds to Cover Explicit CSO's (\$'000)	0	0	0	0	0	0	0	0	0	0	0
Total Operating revenue (\$'000) - Planned	297	313	329	346	364	382	401	421	441	463	485
Other Current Revenue net	0	0	0	0	0	0	0	0	0	0	0
Population ('000)	2,663	2,74	2,817	2,894	2,971	3,048	3,125	3,202	3,279	3,356	3,433
Average Per Capita Consumption (l/d)	650	637	624	613	598	585	572	559	546	533	520
Annual Consumption (ML)	632	637	642	645	648	651	652	653	653	653	652
Approx. Target Rate Income Required (\$'000)	351	364	381	389	391	391	389	429	411	430	434
Approx. Target Unit Charge Required (\$/unit)	5	5	5	5	5	5	5	5	5	5	5
Approx. Index of Real Av. Charge/Assessment	5	5	5	5	5	5	5	5	5	5	5
Planned Index of Real Av. Charge/Assessment	4	4	4	4	4	5	5	5	5	5	5

TABLE 2

	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Planned Capital Expenditure											
Replacement Works	0	32	32	47	55	0	0	0	20	27	133
New Works	137	119	285	0	0	0	0	892	0	0	0
Total	137	151	317	47	55	0	0	892	20	27	133
-Capital - Revenue											
Asset Sales	0	0	0	0	0	0	0	0	0	0	0
Developer Contributions	5	5	5	5	5	5	5	5	5	5	5
Grants & Subsidies	29	24	57	0	0	0	0	178	0	0	0
Total	34	29	62	5	5	5	5	183	5	5	5
Capital Expenditure yet to be Funded	103	122	255	42	50	0	0	709	15	22	128
Sources of Available Funds											
Cash Revenue Surplus before New Loan Costs	35	47	60	74	88	103	118	134	152	208	237
Reserves b-of-yr Balance	517										
Interest Revenue and New Borrowings to be determined											

TABLE 3

➤ **SCENO%, SCENX%, and SCEN100%**

Choice of any one of these three menu options will provide to the user a summary of the borrowing requirements, cash revenue surplus available after new loan costs, movements in the reserve balances and various financial performance indicators associated with three asset funding strategies embedded within the model. Choice of **SCENO%** selects the case where no new and replacement assets (net of capital revenue) are funded from new borrowings. **SCEN100%** selects the case where only borrowings are used to fund asset investment, while **SCENX%** selects the scenario in which the user has selected the constant percentage of asset investment (net of capital revenue) to be funded from new borrowings. The information provided for these three scenarios is presented in Tables 4a, 4b and 4c.

➤ **FINSTRAT**

In contrast to the choice of the scenario output areas described in the previous paragraph, the choice of **FINSTRAT** takes the user to that area of the model in which the borrowing proposed in the user inputted asset financing strategy is summarised. Table 5 indicates that this area of the model is of the same reporting structure as the output areas for the scenarios embedded within the model. It provides a very quick summary of movements in reserves balances, financial performance indicators and the cash revenue surplus over time associated with this particular asset financing strategy.

➤ **PERFIND**

Table 6 shows the form of **PERFIND** which summarises the selected financial performance measures chosen by the Queensland Department of Housing, Local Government and Planning as relevant to the assessment of the financial status of local government water utilities. As produced, this table is in a format consistent with the reporting requirements of that Department.

➤ **CAPWORKS**

CAPWORKS provides a detailed summary, by asset class / category and in total, of the proposed asset investment program of the urban water agency. For each asset category the user has specified at the data input phase, the planned investments for new and replacement assets as well as external capital revenue associated with the proposed assets sources from developers, land owners, and government and other agencies by way of grants and subsidies are listed. Refer to Table 7.

SCENARIO 2: 0% BORROWINGS	Base Year									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Interest Revenue	25	18	15	18	22	28	16	4	14	28
Accrued Revenue Surplus	-12	-6	5	23	44	68	54	62	91	112
Cash Revenue Surplus Available	60	78	88	105	124	146	151	157	222	247
Cash Revenue Surplus Required for Capital Works	60	78	42	50	0	0	151	15	22	128
Reserve Transfer Required for Capital Works	43	177	0	0	0	0	558	0	0	0
Opening Balance - Reserves	517	474	245	289	333	435	73	-38	73	227
Transfer to Reserves	0	0	46	55	124	146	0	142	200	119
Dividend Payment	0	0	3	12	22	34	27	31	45	56
Transfer from Reserves	43	177	0	0	0	0	558	0	0	0
Closing Balance - Reserves	474	423	289	333	435	547	-38	73	227	290
Total end-of-year Debt	215	174	151	126	98	68	36	0	0	0
Real Rate of Return on Assets Achieved & p.a.	0.29%	0.37%	0.65%	1.14%	1.73%	2.36%	1.48%	1.63%	2.23%	2.71%
Debt as % of Total Assets	6.8%	5.4%	4.7%	3.9%	3.1%	2.1%	0.9%	0.0%	0.0%	0.0%
Debt Service Costs as % Revenue	12.1%	11.2%	10.8%	10.2%	9.6%	9.1%	8.9%	8.7%	8.0%	0.0%
Revenue Surplus as % Revenue	2.8%	3.4%	5.9%	9.6%	13.8%	18.0%	13.7%	14.6%	19.1%	22.3%
Revenue Adopted in this Scenario	322	347	361	381	404	429	437	447	476	505

TABLE 4a

SCENARIO 3: 0 to 100% BORROWINGS	Base Year									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Borrowings Required	52	61	21	25	0	0	355	8	11	64
Interest on New Borrowings	2	14	19	20	20	19	32	45	44	44
Redemption on New Borrowings	1	7	10	11	13	14	21	29	32	36
Interest Revenue	26	27	25	28	32	37	32	28	34	40
Accrued Revenue Surplus after New Loan Costs	-13	-12	-4	13	34	58	37	40	68	89
Cash Revenue Surplus after New Loan Costs	58	65	70	84	101	122	113	105	167	187
Cash Revenue Surplus Required for Capital Works	52	65	21	25	0	0	113	8	11	64
Reserve Transfer Required for Capital Works	0	0	0	0	0	0	241	0	0	0
Opening Balance - Reserves	517	524	465	513	566	650	743	483	560	683
Transfer to Reserves	7	3	49	59	101	122	0	97	156	123
Dividend Payment	0	0	0	7	17	29	19	20	34	44
Transfer from Reserves	0	0	0	0	0	0	241	0	0	0
Closing Balance - Reserves	524	527	465	513	650	743	483	560	683	761
Total end-of-year Debt	266	304	392	380	340	296	597	539	518	546
Real Rate of Return on Assets Achieved & p.a.	0.32%	0.49%	0.98%	1.46%	2.04%	2.64%	1.88%	2.18%	2.74%	3.20%
Debt as % of Total Assets	8.4%	9.6%	12.3%	11.9%	10.6%	9.1%	14.8%	13.4%	12.7%	13.2%
Debt Service Costs as % Revenue	12.9%	14.3%	18.3%	18.0%	17.4%	16.4%	20.4%	24.2%	15.2%	15.2%
Revenue Surplus as % Revenue	3.2%	4.6%	5.4%	12.0%	15.9%	19.7%	16.7%	18.7%	22.5%	25.3%
Revenue Adopted in this Scenario	323	339	371	391	414	438	453	469	497	525

TABLE 4b

CAPITAL EXPENDITURE FUNDING STRATEGIES

SCENARIO 1: 100% BORROWINGS

	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Borrowings Required	103	122	255	42	50	0	0	709	15	22	128
Interest on New Borrowings	4	13	28	38	41	41	39	65	90	87	88
Redemption on New Borrowings	2	6	13	20	23	25	28	42	59	64	72
Interest Revenue	27	30	31	35	38	42	46	48	50	55	60
Accrued Revenue Surplus after New Loan Costs	-14	-13	-19	-13	3	23	48	21	17	45	65
Cash Revenue Surplus after New Loan Costs	56	58	52	51	62	78	98	75	53	112	128
Opening Balance - Reserves	517	573	632	684	734	795	862	936	1001	1045	1135
Transfer to Reserves	56	58	52	51	62	78	98	75	53	112	128
Dividend Payment	0	0	0	0	1	12	24	10	8	23	32
Transfer from Reserves	0	0	0	0	0	0	0	0	0	0	0
Closing Balance - Reserves	573	632	684	734	795	862	936	1001	1045	1135	1230
Total end-of-year Debt	316	413	633	633	635	582	524	1158	1079	1037	1093
Real Rate of Return on Assets Achieved & p.a.	0.36%	0.60%	0.83%	1.29%	1.78%	2.34%	2.91%	2.27%	2.74%	3.25%	3.69%
Debt as % of Total Assets	10.0%	13.0%	19.7%	19.8%	19.8%	18.1%	16.1%	28.7%	26.8%	25.4%	26.4%
Debt Service Costs as % Revenue	13.8%	16.9%	22.0%	25.4%	25.4%	24.8%	23.5%	31.1%	38.2%	29.2%	29.3%
Revenue Surplus as % Revenue	3.5%	5.6%	7.3%	10.8%	14.2%	17.8%	21.3%	19.5%	22.4%	25.6%	28.1%
Revenue Adopted in this Scenario	324	343	362	381	402	424	447	469	492	518	545

FABLE 4c

	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
ACTUAL FUNDING STRATEGY \$'000											
Capital Expenditure yet to be Funded	103	122	255	42	50	0	0	709	15	22	128
Borrowings Proposed \$'000	0	0	0	0	0	0	0	588	0	0	0
Interest on New Borrowings	0	0	0	0	0	0	0	24	46	44	43
Redemption on New Borrowings	0	0	0	0	0	0	0	10	22	24	25
Interest Revenue	25	23	18	15	18	22	28	29	31	37	41
Accrued Revenue Surplus after New Loan Costs	-12	-7	-6	5	23	44	68	43	41	70	92
Cash Revenue Surplus after New Loan Costs	60	71	78	88	105	124	146	130	114	178	201
Cash Revenue Surplus Required for Capital Works	60	70	78	42	50	0	0	121	15	22	128
Reserve Transfer Required for Capital Works	43	52	177	0	0	0	0	0	0	0	0
Opening Balance - Reserves	517	474	423	245	289	333	435	547	534	613	733
Transfer to Reserves	0	0	0	46	55	124	146	9	146	156	73
Dividend Payment	0	0	0	3	12	22	34	22	21	35	46
Transfer from Reserves	43	52	177	0	0	0	0	0	0	0	0
Closing Balance - Reserves	474	423	245	289	333	435	547	534	613	733	760
Total end-of-year Debt	215	196	174	151	126	98	68	613	556	532	507
Real Rate of Return on Assets Achieved % p.a.	0.29%	0.38%	0.37%	0.66%	1.14%	1.73%	2.36%	1.80%	2.25%	2.81%	3.24%
Debt as % of Total Assets	6.8%	6.2%	5.4%	4.7%	3.9%	3.1%	2.1%	15.2%	13.6%	13.1%	12.7%
Debt Service Costs as % Revenue	12.1%	11.6%	11.2%	10.8%	10.2%	9.6%	9.1%	16.2%	22.6%	13.6%	12.9%
Revenue Surplus as % Revenue	2.8%	3.6%	3.4%	5.9%	9.6%	13.8%	18.0%	16.2%	19.2%	22.9%	25.5%
Revenue Adopted in this Scenario	322	336	347	361	381	404	429	450	472	500	527

TABLE 5

UTILITY NAME:	Snakechully	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
SYSTEM/SCHEME:	Water	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Base Year	1993										
Volume of Supply (ML)	\$'000	637	642	645	648	651	652	653	653	653	652
Unit Cost of Water (\$/ML)											
before Loan Interest (excluding RoA)	495	508	522	526	531	535	539	578	584	591	602
after Loan Interest (excluding RoA)	528	538	550	551	552	552	552	623	659	659	668
Rating Units/Assessment	1.00										
No. of Assessments	73375	75444	77513	79582	81651	83720	85789	87858	89927	91996	94065
Index of Real Average Charges	4	4	4	4	4	5	5	5	5	5	5
Administration	1	1	1	1	1	1	1	1	1	1	0
per Assessment (\$)											
Operating Surplus \$'000	-12	-7	-6	5	23	44	68	43	41	70	92
Value of Fixed Assets \$'000	2699	2752	2964	2905	2853	2745	2638	3400	3289	3185	3184
Real Rate of Return on Assets	-0.4%	-0.3%	-0.2%	0.2%	0.8%	1.6%	2.6%	1.3%	1.3%	2.2%	2.9%
Cash Surplus(Deficit) after Depreciation	-30.3%	-31.0%	-31.9%	-17.3%	-14.4%	5.7%	10.8%	-28.8%	-7.1%	5.3%	-12.7%
as a Percent of Total Operating Revenue											
Internal Funding Ratio	0.82	0.62	1.00	1.00	1.00	N/A	N/A	0.34	1.00	1.00	1.00
Outstanding Debt											
Start of Year \$'000	233	215	196	174	151	126	98	68	613	556	532
End of Year \$'000	215	196	174	151	126	98	68	613	556	532	507
Total Assets including Reserves \$'000	3173	3175	3210	3197	3200	3222	3265	4036	4025	4076	4147
Debt as Percent of Total Assets	6.8%	6.2%	5.4%	4.7%	3.9%	3.1%	2.1%	15.2%	13.8%	13.1%	12.2%

TABLE 6

➤ **FINPERF**

The **FINPERF** model output option summarises in tabular form a range of financial performance indicators for each of the budget years. The financial ratios presented are in a form common to private sector organisations and are intended to reflect the increasing commercialisation of urban water utilities throughout the nation and their consequent increased levels of concern with their overall financial standing and health. No specific directions are given with respect to the appropriate range of values within which any particular financial ratio should lie as this is partially dependent on a utility's own views on sound financial management. However, an increasingly commercialised urban water utility industry is likely to see the emergence of agreement, particularly within the financial sector, of the appropriate levels of many of these ratios. It should be stressed that none of these ratios should be less than 0 and if negative ratios are found in the model output, then this will highlight to the user that adjustments need to be made to revenue, expenditure or financing strategies and plans. Interpretation of dividend and taxation related ratios should bear in mind the earlier comments made concerning the significance of taxation to utilities and the special meaning given to "dividends" in this particular model. Refer to Table 8.

➤ **OLD_DEBT**

For those users requiring detailed information on existing debt servicing schedules, menu option choice **OLD_DEBT** should be selected. Note that the debt repayment schedule has been based on a consolidated view of the outstanding loan liability and determined as if a credit foncier loan. If required, the user could alter the debt repayment schedule for the interest and redemption components in the light of other knowledge held by the utility with regard to its further existing loan repayment obligations. Refer to Table 9.

➤ **ASSET_DEP**

Details of the asset depreciation schedule for existing and planned asset acquisitions can be viewed in output area **ASSET_DEP**. Refer to Table 10.

FINANCIAL PERFORMANCE INDICATORS	Base Year										
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Rate of Return on Assets	0.29%	0.38%	0.37%	0.66%	1.14%	1.73%	2.36%	1.80%	2.25%	2.81%	3.24%
Rate of Change in Operating Revenue p.a.	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%
Net Debt/Total Revenue	-0.80	-0.68	-0.20	-0.39	-0.57	-0.89	-1.20	0.13	-0.16	-0.47	-0.57
Debt/Total Assets	7.97%	7.11%	5.88%	5.20%	4.41%	3.58%	2.59%	18.06%	16.89%	16.71%	15.92%
Debt Servicing/Total Revenue	0.12	0.12	0.11	0.11	0.10	0.10	0.09	0.16	0.23	0.14	0.13
Interest Coverage(Operating)	4.72	5.64	6.63	8.12	10.60	14.40	20.86	6.83	4.47	5.52	6.31
Times Cover	6.34	7.14	10.15	8.44	10.97	14.85	21.42	13.00	4.57	5.64	6.43
Interest/Total Assets incl Reserves	0.66%	0.61%	0.55%	0.49%	0.43%	0.35%	0.28%	0.75%	1.26%	1.12%	1.07%
Redemption/Total Assets incl Reserves	0.56%	0.61%	0.66%	0.72%	0.79%	0.86%	0.93%	1.09%	1.46%	0.60%	0.64%
Dividend (Gross)/Total Assets incl Reserves	0.00%	0.00%	0.00%	0.09%	0.36%	0.69%	1.08%	0.55%	0.53%	0.89%	1.15%
Dividend (Net)/Total Assets incl Reserves	0.00%	0.00%	0.00%	0.09%	0.36%	0.64%	0.91%	0.07%	0.34%	0.63%	0.84%
Dividend (Net)/Operating Surplus	0.00%	0.00%	0.00%	50.00%	50.00%	45.88%	42.90%	6.19%	32.48%	35.56%	36.58%
Imputed Tax Equivalent (Tax)/Operating Surplus	0.00%	0.00%	0.00%	0.00%	0.00%	4.12%	7.10%	43.81%	17.52%	14.44%	13.42%

TABLE 8

UTILITY NAME: SYSTEM/SCHER:	Base Year 1993	Year 1 1994	Year 2 1995	Year 3 1996	Year 4 1997	Year 5 1998	Year 6 1999	Year 7 2000	Year 8 2001	Year 9 2002	Year 10 2003
SNAREGULLY											
Water											
Debt Repayment - Debt Existing Start of Base Year											
Outstanding Debt b-of-Year(\$'000)	233	215	196	174	151	126	98	68	34	0	0
Remaining Term (years)	8										
Borrowing Rate	9.0%										
Repayment \$'000 p.a.	39										
Interest Component \$'000	21	19	18	16	14	11	9	6	3	0	0
Redemption Component \$'000	18	20	21	23	25	28	30	33	36	0	0

TABLE 9

Asset Depreciation Schedule	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Existing Assets											
Average Life (years)	31										
Value at start-of-yr \$'000	2651	2699	2609	2414	2424	2339	2249	2159	2069	1979	1889
Assets Acquired \$'000	137										
Depreciation \$'000	90	90	90	90	90	90	90	90	90	90	90
Value at end-of-yr \$'000	2699	2609	2519	2429	2339	2249	2159	2069	1979	1889	1800
New/Replacement Assets											
Value at start-of-yr \$'000	0	144	144	446	476	514	496	478	1330	1310	1296
Assets Acquired \$'000	151	317	317	47	55	0	0	892	20	27	133
Depreciation \$'000	7	15	15	16	18	18	18	40	40	41	44
Value at end-of-yr \$'000	144	466	466	476	514	496	478	1330	1310	1296	1384
Total Asset Depreciation \$'000	90	97	105	106	108	108	108	130	130	131	134
Total Asset Valuation end-of-yr \$'000	2699	2752	2964	2905	2853	2745	2638	3400	3289	3185	3184
Accumulated Reserves - Opening Balance \$'000	517										
Outstanding Loan Liability - Year Start \$'000	233										

TABLE 10

FINANCIAL ANALYSIS

UTILITY NAME: SHAWEGULLY
SYSTEM/SCHEME: Water

	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
ANALYSIS SUMMARY											
Interest (Existing Loans)	21	19	18	16	14	11	9	6	3	0	0
Interest (New Loans)	0	0	0	0	0	0	0	24	46	44	43
Redemption (Existing Loans)	18	20	21	23	25	28	30	33	36	0	0
Redemption (New Loans)	0	0	0	0	0	0	0	10	22	24	23
Total Debt	215	196	174	151	126	98	68	613	556	532	507
Capital Works - Replacement	0	32	32	47	55	0	0	0	20	27	133
Capital Works - New	137	119	285	0	0	0	0	892	0	0	0
Capital Works - Total	137	151	317	47	55	0	0	892	20	27	133
Net (of Capital Revenue) Capital Works	103	122	255	42	50	-5	-5	709	15	22	128
Total Assets	2699	2757	2964	2905	2853	2745	2638	3400	3289	3165	3184
Total Reserves (excl Dividends)	474	423	245	292	344	457	581	536	633	768	868
Total Assets Incl Reserves (pre Dividend)	3173	3173	3210	3197	3197	3202	3219	3935	3923	3933	3990
Equity (Assets-Debt)	2958	2979	3035	3046	3071	3104	3150	3342	3367	3421	3483
Depreciation	90	97	105	106	108	108	108	130	130	131	134
Tax Depreciation Allowance (Historical Cost Basis)	63	69	77	78	79	79	79	99	99	100	103
Operating Expenses(excl. Interest)	223	227	230	234	237	241	244	248	251	251	258
Operating revenue	297	313	329	346	364	382	401	421	441	461	485
Interest revenue	25	23	18	15	10	22	28	29	31	37	41
Total Operating Revenue	322	336	347	361	381	404	429	450	472	500	527
Sale of Assets	0	0	0	0	0	0	0	0	0	0	0
Landowner, Developer Contributions	5	5	5	5	5	5	5	5	5	5	5
Other Capital Revenue (Subsidies, Grants etc)	29	24	57	0	0	0	0	178	0	0	0
Operating Surplus	-12	-7	-6	5	21	44	68	43	41	70	92
Taxable Income	44	44	80	34	52	73	97	252	72	101	121
Tax Rate	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tax	0	0	0	0	0	0	0	0	0	0	0
Dividend (Gross)	0	0	0	3	12	22	34	22	21	35	46
Distributed Dividend (Unfranked)	0	0	0	0	0	0	0	0	0	0	0
Owner's Dividend (Gross)	0	0	0	3	12	22	34	22	21	35	46
"Net" Dividend (after Tax)	0	0	0	3	12	22	34	22	21	35	46
Closing Reserves (after Dividends)	474	423	245	289	333	435	547	613	613	733	760

TABLE 11

➤ **FINANCIAL**

Summary details of the financial status of the utility are located in output area **FINANCIAL**. The table shows the impact of taxation on the finances of the utility as well as dividend payments. Statistics in the table provide the basis for the determination of key financial performance ratios. Refer to Table 11.

If the user so chooses, each of these model output areas can be printed by choosing the **PRINT** option on the main menu and selecting the name of the location for which the uses wishes to obtain a hard copy. Refer Table 12.

PRINT AREAS:	Area Name
Asset Depreciation Summary	Assetdep
Summary of Capital Expenditure and Capital Revenue	Capexp
Asset Investment (Capital Works) Program	Capworks
Asset Depreciation by Asset Category	Deprec
Financial Analysis including Tax considerations	Finanal
Debt Finance Costs and Target Return on Assets	Finparam
Adopted Asset Financing Strategy	Finstrat
Summary Financial Statement (DLGHP)	Forml
Performance Measures (DLGHP)	Perfind
Debt Repayment on Existing Debt	Olddebt
Performance Indicators	Finperf
System Parameters, Charges and Planned Sales Revenue	Revplan
Asset Financing Strategy - No Borrowings Scenario	Scen0
Asset Financing Strategy - X% Borrowings Scenario	Scenx
Asset Financing Strategy - 100% Borrowings Scenario	Scen100

TABLE 12

7. CONCLUSIONS

The financial planning model developed for urban water agencies aims to permit quick assessment of alternative asset financing strategies designed to achieve desired policy outcomes and for the user to choose the criteria by which outcomes are judged to be "optimum". Previous sections of the report have identified the model structure and philosophy, the model input requirements, the process by which the user is able to develop the "optimum" asset financing strategy (given the assumptions, constraints and policies adopted) and to obtain a hard copy of these results for further use, including some results in the format required by the Queensland Department of Housing, Local Government and Planning.

This report has been designed to assist the user to derive the maximum benefit from applying the model to their particular agency. This report has not concentrated on the financial relationships embedded within the model. These can be examined by the user within the model itself. Because some of the terms used in the model, such as revenue surplus, cash revenue surplus, etc., may not have a uniform definition in practice, important financial identities in the model have been summarised in Appendix B.

The potential user of the model is encouraged to become familiar with the capabilities of the model by first experimenting with the spreadsheet **SNAKE10** which has data already set up within it to reflect circumstances similar to that likely to be experienced in many agencies. An agency, wishing to apply the model to their own particular circumstance, is advised to take a copy of the spreadsheet **MODEL** and to use that copy for inputting data relevant to their agency.

It is to be noted that the model has been designed in such a way as to require the user to input financial information into the model in **real** dollar terms rather than inflated dollar values. It is considered that this is the most appropriate approach for identifying and assessing the most appropriate asset financing strategies for a particular agency.

APPENDIX A

**DESCRIPTION OF FINANCIAL
SUMMARY FORMS**

FORM 1 – SUMMARY FINANCIAL STATEMENT

Operating Expenditure Items 1 – 5

The allocation to items is described for each Scheme in the body of the report.

Capital Expenditure Item 6 & 7

The amounts shown for item 6 are the totals in each year from Form 2.

Total Expenditure Item 8

This is the sum of items 1 to 7

Appropriations to Reserve Items 9 to 11

Item 9 is set equal to the cash surplus (item 24). If this amount exceeds the annual depreciation (item 27), then item 9 is set equal to the annual depreciation and the balance of the cash surplus is included in item 10.

Cash Surplus Requirements Item 12

This is the sum of items 9 to 11 and will always equal the cash surplus (item 24).

Total Funding Requirements Item 13

This is the sum of items 8 and 12.

Operating Revenue Items 14 to 16

Item 14 is revenue received from rates, connection fees, excess water charges and trade waste fees, as applicable.

Item 15 is the interest earned by reserve and operating fund investments. The investment amount is the opening cash reserve for the year (item 25). Item 16 is any extraordinary items of revenue.

Capital Revenue Items 17 to 21

Item 17 is revenue received from sale of assets. Items 18, 20 and 21 are taken directly from Form 2. Item 19 is the estimated headworks income each year.

Total Income Item 22

This is the sum of items 14 to 21 and is to equal item 13.

Operating Surplus/Deficit for Year Item 23

This item is calculated as the total operating revenue less operating expenditure less annual depreciation. (Sum of items 14 to 16) – (Sum of items 1 to 5) – (item 27). It represents the operating surplus/deficit for each year after having considered the full cost of asset depreciation.

Cash Surplus/Deficit for Year Item 24

This is equal to total income (item 22) less total expenditure (item 8) and should equal the cash surplus requirements (item 12).

Accumulated Cash Reserves (Brought Forward) Item 25

This is the balance in the reserve account at the beginning of each financial year and equals the balance in the reserve account at the end of the previous financial year (item 26).

Accumulated Cash Reserves (Carried Forward) Item 26

This item is equal to the balance of the cash reserve at the beginning of a financial year (item 25), plus the cash surplus for the year (item 24), less any appropriations from the reserve (item 18).

Annual Depreciation Item 27

This item is calculated assuming the depreciation for the base year continues uniformly throughout the planning period. Additional depreciation amounts are progressively added by depreciating new capital works.

Current Cost Depreciation Not Funded in Year Item 28

This item equals the annual depreciation (item 27) less the funded depreciation for the year (item 9).

Surplus/Deficit if Full Current Cost Depreciation Recovered Item 29

This item is equal to the cash surplus (item 24) less the current cost depreciation (item 27).

SYSTEM/SCHEME: Water

FORM 1 - SUMMARY FINANCIAL STATEMENT

UTILITY NAME: SYSTEM/SCHEME:	Base Year 1993 \$'000	Year 1 1994 \$'000	Year 2 1995 \$'000	Year 3 1996 \$'000	Year 4 1997 \$'000	Year 5 1998 \$'000	Year 6 1999 \$'000	Year 7 2000 \$'000	Year 8 2001 \$'000	Year 9 2002 \$'000	Year 10 2003 \$'000
EXPENDITURE											
OPERATING EXPENDITURE											
1. Operations	106	106	107	109	110	112	113	115	116	118	119
2. Maintenance	82	83	84	86	87	88	88	89	90	91	92
3. Administration	37	38	39	40	41	42	43	44	45	46	47
4. Loan Interest:											
New Borrowings	0	0	0	0	0	0	0	24	46	46	43
Existing Debt	21	19	18	16	14	11	9	6	3	0	0
Overdraft	0	0	0	0	0	0	0	0	0	0	0
5. Other Operating Expenses	0	32	32	47	55	0	0	0	20	27	133
CAPITAL EXPENDITURE											
6. CAPITAL WORKS											
Replacement Works (RW)	0	137	119	285	0	0	0	892	0	0	0
REDEMPTION	0	0	0	0	0	0	0	0	0	0	0
New Borrowings	18	20	21	23	25	28	30	33	36	0	0
Existing Debt	0	0	0	0	0	0	0	0	0	0	0
8. TOTAL EXPENDITURE	399	416	586	519	331	279	283	1212	378	350	459
APPROPRIATIONS TO RESERVES:											
9. FUNDED DEPRECIATION FOR YEAR	0	0	0	46	55	108	108	9	99	131	73
10. REVENUE FOR FUTURE CAPITAL WORKS	0	0	0	0	0	22	43	0	0	0	0
11. OTHER	0	0	0	0	0	0	0	0	0	0	0
12. CASH SURPLUS REQUIREMENTS (9 + 10 + 11)	0	0	0	46	55	129	151	9	99	131	73
13. TOTAL FUNDING REQUIREMENTS (8 + 12)	399	416	586	366	386	409	434	1221	477	505	532
INCOME											
14. OPERATING REVENUE	297	313	329	346	364	382	401	421	441	463	485
15. Interest Revenue	25	23	18	15	18	22	28	29	31	37	41
16. Other Current Revenue	0	0	0	0	0	0	0	0	0	0	0
CAPITAL REVENUE											
17. Sale of Assets	0	0	0	0	0	0	0	0	0	0	0
18. Appropriations from Reserves	43	52	177	0	0	0	0	0	0	0	0
19. Lender, Developer Contributions	5	5	5	5	5	5	5	5	5	5	5
20. Other Capital Revenue (Govt Subsidies, Grants)	29	24	57	0	0	0	0	378	0	0	0
21. New Loans	0	0	0	0	0	0	0	0	0	0	0
22. TOTAL INCOME	399	416	586	366	386	409	434	1221	477	505	532
23. OPERATING SURPLUS/DEFICIT FOR YEAR (14 + 15 + 16) - (17 + 18 + 19 + 20 + 21)	-12	-7	-6	5	23	44	68	43	41	70	92
24. CASH SURPLUS/DEFICIT FOR YEAR (22 - 8)	0	0	0	46	55	129	151	9	99	131	73
25. ACCUMULATED CASH RESERVES (Brought forward)	517	474	423	245	292	347	477	627	636	715	891
26. ACCUMULATED CASH RESERVES (Carried forward) (25 + 12 - 18)	474	423	245	292	347	477	627	636	735	891	964
27. ANNUAL DEPRECIATION	90	97	105	106	108	108	100	130	130	131	131
28. CURRENT COST DEPRECIATION NOT FUNDED IN YEAR	90	97	105	60	52	0	0	121	31	0	62
29. SURPLUS/DEFICIT IF FULL CURRENT COST DEPRECIATION RECOVERED (24 - 28 - 18)	-90	-97	-105	-60	-52	22	43	-121	-31	24	-62

FORM 4 PERFORMANCE MEASURES

1. Cost of Water/ML

The cost of water is the sum of the total operating expenditure (items 1 to 5 on Form 1) and the annual depreciation. This cost is then divided by the annual water consumption (or sewage flow).

2. Index of Real Average Charges

Divide the operating revenue (item 14 on Form 1) by the number of equivalent standard house assessments for the scheme.

3. Administration Cost per Assessment

Divide the administration cost (item 3 on Form 1) by the number of equivalent standard house assessments for the scheme.

4. Real Rate of Return on Assets

The rate of return on assets is the operating surplus income expressed as a percentage of the value of the assets producing that income. The operating surplus income is the operating revenue plus all developer contributions less all operating expenditure including depreciation, ie. item 23 and item 19 from Form 1. The asset value is the written down current replacement cost of the scheme assets.

5. Cash Surplus/Deficit After Current Cost Depreciation as a Proportion of Total Operating Revenue

The Cash surplus/deficit less annual depreciation is expressed as a proportion of the total operating revenue, ie. (item 24 - item 27)/ item 14 from Form 2.

6. Internal Funding Ratio

This ratio expresses the proportion of capital works costs which are funded internally. It is taken directly from Form 3.

7. Debt as a Proportion of Total Assets

This ratio expresses the total debt as a proportion of total asset value. Asset value includes written down replacement cost of assets, current assets, reserve funds and long term debtors.

UTILITY NAME:	SHAKGULLY	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
SYSTEM/SCHEME:	Water	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
		\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Volume of Supply (ML)		632	637	642	645	648	651	652	653	653	653	652
Unit Cost of Water (\$/ML)												
before Loan Interest (excluding ROA)		495	508	522	526	531	535	539	578	584	591	602
after Loan Interest (excluding ROA)		528	538	550	551	552	552	552	623	659	659	668
Rating Units/Assessment	1.00											
No. of Assessments		73375	75444	77533	79582	81651	83720	85789	87858	89927	91996	94065
Index of Real Average Charges		4	4	4	4	4	5	5	5	5	5	5
Administration		1	1	1	1	1	1	1	1	1	1	0
Operating Surplus \$'000		-12	-7	-6	5	23	44	68	43	41	70	92
Value of Fixed Assets \$'000		2699	2752	2964	2905	2853	2745	2638	1400	3289	3185	3184
Real Rate of Return on Assets		-0.4%	-0.3%	-0.2%	0.2%	0.8%	1.6%	2.6%	1.3%	1.3%	2.2%	2.9%
Cash Surplus(Deficit) after Depreciation		-30.3%	-31.0%	-31.9%	-17.3%	-14.4%	5.7%	10.8%	-28.8%	-7.1%	5.3%	-12.7%
as a Percent of Total Operating Revenue												
Internal Funding Ratio		0.82	0.62	1.00	1.00	1.00	N/A	N/A	0.34	1.00	1.00	1.00
Outstanding Debt												
Start of Year \$'000		233	215	196	174	151	126	98	68	613	556	532
End of Year \$'000		215	196	174	151	126	98	68	613	556	532	507
Total Assets including Reserves \$'000		3173	3175	3230	3197	3200	3222	3265	4036	4025	4076	4147
Debt as Percent of Total Assets		6.8%	6.2%	5.4%	4.7%	3.9%	3.1%	2.1%	15.2%	13.8%	13.1%	12.2%

APPENDIX B

MODEL RELATIONSHIPS

APPENDIX B
MODEL RELATIONSHIPS

Operating Expenses before Loan Interest

$$= \text{Operating Expenses} + \text{Maintenance Expenses} + \text{Administration Expenses} + \text{Overdraft Expenses} + \text{Depreciation}$$

Cash Expenses before New Loan Costs

$$= \text{Operating Expenses before Loan Interest} - \text{Depreciation} + \text{Loan Interest on Existing Debt} + \text{Redemption on Existing Debt}$$

Required (Target) Revenue

$$= \text{Operating Expenses before Loan Interest} + \text{Required (Target) Rate of Return on Assets} * \text{Total Assets (including Reserves)}$$

Required Planned Net of Interest Revenue

$$= \text{Operating Revenue} + \text{Other Current Revenue}$$

where Operating Revenue = Rate Income (Planned) + Connection Charges (Planned) + Excess Water charges (Planned)

Cash Revenue Surplus before New Loan Costs

$$= \text{Adopted Revenue (Target Revenue or Revenue Planned net of Interest Revenue)} - \text{Cash Expenses before New Loan Costs}$$

Capital Expenditure yet to be funded

$$= \text{Maximum } \{0, (\text{Planned Capital Expenditure on Replacement and New Works} - \text{"Capital" Revenue})\}$$

where "Capital" Revenue = Asset Sales + Developer Contributions + Grants + Subsidies

Interest Revenue

$$= \text{Interest Rate on Reserves} * \{ \text{Reserve Account Opening Balance} + \text{Cash Revenue Surplus before New Loan Costs} - \text{Interest on New Borrowings} - \text{Redemption on New Borrowings} - (\text{Capital Expenditure yet to be funded} - \text{New Borrowings}) / 2 \}$$

Cash Revenue Surplus Available after New Loan Costs

$$= \text{Cash Revenue Surplus before New Loan Costs} - \text{Interest on New Borrowings} - \text{Redemption on New Borrowings} + \text{Interest Revenue}$$

Cash Revenue Surplus Required for Capital Works =

If Cash Revenue Surplus available after New Loan Costs > (Capital Expenditure yet to be funded - Borrowings Proposed)
then Capital Expenditure yet to be funded - Borrowings Proposed
else Maximum {0,
(Cash Revenue Surplus available after New Loan Costs)}

Revenue Transfer Required for Capital Works =

Capital Expenditure yet to be funded - Cash Revenue Surplus Required for Capital Works
- Borrowings Proposed

Transfer to Reserves =

If Cash Revenue Surplus available after New Loan Costs \geq 0
then Cash Revenue Surplus available after New Loan Costs - Cash Revenue Surplus Required for Capital Works
else 0

Real Rate of Return on Assets Achieved =

If Adopted Revenue = Target Revenue
then Target Rate of Return
else (Revenue Planned net of Interest Revenue + Interest Revenue - Operating Expenses before Loan Interest) / Total Assets end-of-year

Debt as a Percentage of Total Assets

= (Interest and Redemption on New Borrowings + Interest and Redemption on existing Debt) / Total Assets end-of-year.

Revenue Surplus as a Percent of Revenue =

If Adopted Revenue = Target Revenue
then (Target Revenue - Operating Expenses before Loan Interest) / Target Revenue
else (Revenue planned net of Interest Revenue + Interest Revenue - Operating Expenses before Loan Interest) / (Revenue Planned net of Interest Revenue + Interest Revenue)

