

Ministry of Housing & Plantation Infrastructure

NBRO
ANNUAL REPORT
2002

**NATIONAL BUILDING RESEARCH
ORGANISATION**

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INTRODUCTION

The Construction Industry requires a regular input on Building research for its healthy growth. Building Research aims at physical development of the built environment in all its facets. The outcome of building research is more specifically felt in optimisation of cost and the improvement in the quality of living that it helps to achieve. Appropriate use of scarce resources of the country and protection of the environment are other important objectives of Building Research.

With the expansion of housing and construction activities particularly in the rural sector, the need of research and development into locally available materials and technology was felt. In order to provide this service centrally the National Building Research Organisation (NBRO) was formed in March 1984 by the merger of former Building Research Institute (BRI) of the State Engineering Corporation and the Soil Testing Laboratory of the Department of Buildings.

In 1986 UNDP assistance was received to upgrade its implementary capacity, and the activities of the NBRO expanded to cover the areas of Human Settlement Development, Environmental Management, Structural Engineering & Project Management. Thereafter from 1988 onwards Research & development on disaster mitigation related to landslides was carried out. Thus NBRO was able to undertake research & development for the total shelter sector.

In September 1993 the NBRO was designated as a separate organisation under the Institute for Construction Training and Development which has been assigned under the then Ministry of Housing and Construction now called the Ministry of Housing and Plantation Infrastructure.

OUR MISSION

To foster promote and sustain research and development work and provide technical services to the housing, building and construction sectors, with a view to improving the quality of life in Sri Lanka.

CORPORATE OBJECTIVES

- Carry out research and development work in the diverse areas of the total shelter sector
- Introduce cost effective appropriate building processes, systems and technologies
- Develop alternative building materials, products and technologies for improved productivity
- Carry out research and development work for the utilization of technologically problematic areas such as low-lying, landslide-prone & derelict land for human settlements
- Carry out research and development work for procedures and technologies in the construction industry to mitigate impacts on environment.
- Provide consultancy and testing services to the shelter sector
- Assist in the development of standards, specifications, guidelines and codes of practice
- Provide Information-technology-based solutions to enhance efficiency of the shelter sector
- Disseminate outputs of building research and assist in training for the construction industry
- Collaborate with national and international construction industry related organisations in research and development and technology transfer.

FIELDS OF ACTIVITIES

- ❖ Geotechnical Engineering
- ❖ Project Management
- ❖ Landslide Studies & Services
- ❖ Building Materials
- ❖ Human Settlements
- ❖ Environment

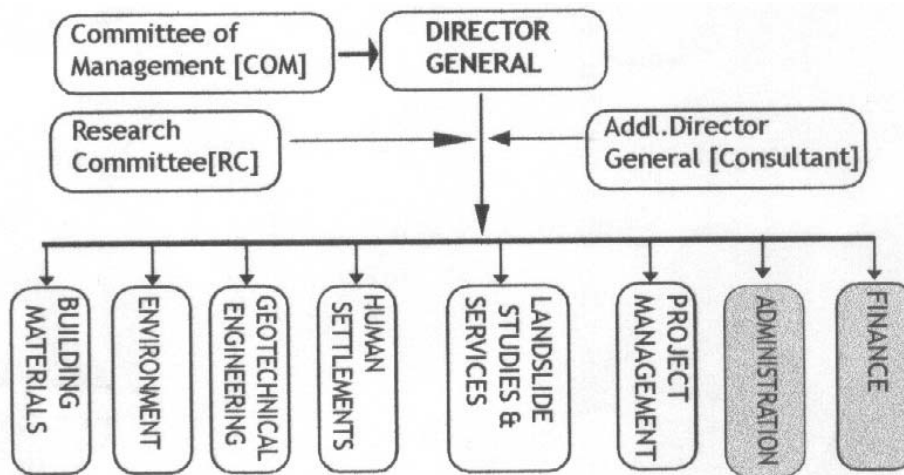
The NBRO is an institute integrated with an in-house multidisciplinary team of around 50 professionals consisting of Engineers, Architects, Town Planners, Quantity Surveyors, Geologists, Environmentalists and Scientists.

It has grown and diversified its activities in a wide range of scientific and technical fields to cover R & D and technical services for the construction sector.

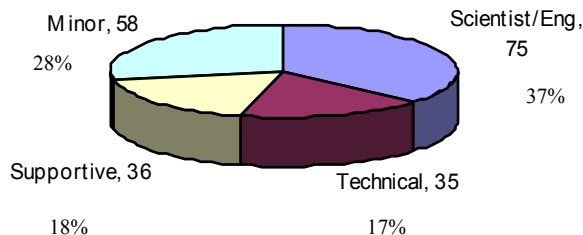
The institutional capabilities include:

- Geotechnical and foundation engineering, soil investigation and testing
- Testing, quality control of building materials and related R&D work
- Total consultancy service package for building projects
- Human settlements planning, design of cost effective housing
- Landslide disaster mitigation and slope stability measures
- Environmental monitoring & assessment of EIA, IEE, environmental audits, etc, for development projects

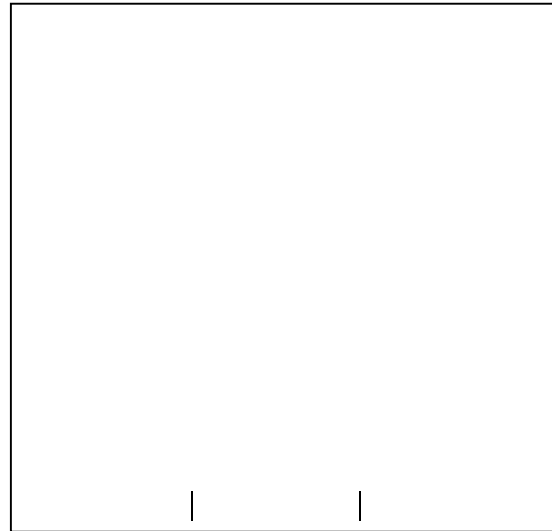
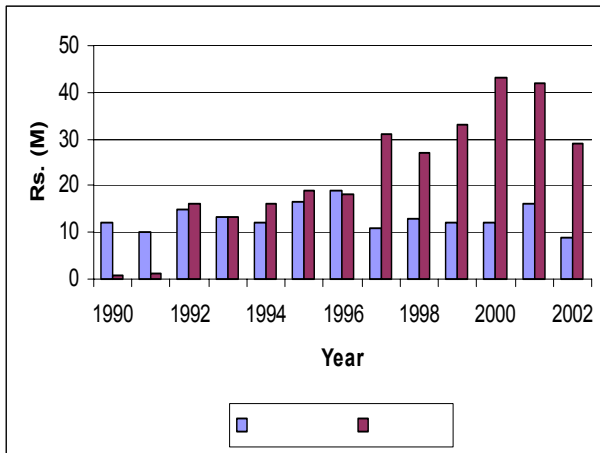
ORGANISATION CHART



STAFF STRENGTH



FINANCIAL & PERSONAL DATA



The NBRO receives a government grant from the Capital Budget to meet its expenditure on Research Projects.

The recurrent expenditure is met from the revenue generated by carrying out consultancies to both the public sector and the private sector institutions.

In 2002, the Treasury released only Rs. 8.3 mn. against an allocation of Rs. 9.0 mn. which happens to be the lowest allocation received since 1990. The allocation received for 2001 was Rs. 16.0 mn.

For NBRO to sustain its activities, it has to procure consultancies from the state and other agencies by carrying out investigations and testing services.

In the year 2002, NBRO found it extremely difficult to procure consultancies from agencies concerned, as there was a remarkable drop in construction activities in the year 2002 due to a reduction of capital grant by the government to state agencies on which NBRO has been relying for consultancies. Thereby, NBRO was not able to achieve the income targets of 2002.

Based on a decision taken by the Government, restructuring of NBRO is being considered. Together with implementation of the voluntary retirement scheme in the year 2003, it is expected that NBRO would be able to sustain itself.

RESEARCH/RESEARCH & DEVELOPMENT PROGRAMME

BUILDING MATERIALS

The BMD, the industrial research wing of the NBRO has realised its statutory obligation to contribute positively to the national development programmes. As a means of achieving this objective, the division undertakes and fosters development activities in the field of building materials. The BMD assists the industry in the implementation of testing and quality control functions, disseminates information and research findings and provides know-how, guidance and training to the construction industry and building materials manufacturing industry.

Project 1 - Alternatives to River Sand (Cont'd)

The scarcity of river sand and adverse effects arising from excessive mining of rivers resulted in the need to find alternatives to river sand. The objectives of the research were to examine the suitability of alternative materials such as dune sand, off-shore sand and crushed rock sand.

Dune sand

Studies have shown that dune sand is more suitable for plaster work but may be used in concrete provided the mixes are properly designed.

Off-shore sand

Off-shore sand (as taken) may not be suitable for use in pre-stressed concrete because of the chloride content (specified limit is 0.01%). However, chlorides can be easily removed by washing, artificially or by being exposed to several showers. Sand samples in the North-west were found to have a low chloride content, even below the limit specified for reinforced concrete (0.05 %). Sand in the Southern region had high chloride content and high shell content. Although a limit is not specified for shell content in many concrete applications (other than for water retaining structures), it was observed that high content of shells give rise to workability problems, perhaps due to greater water demand.

Crushed rock

In general, this material has angular /irregular particle shape which gives rise to workability problems and has a high fines content. Workability problem can be overcome by mixing with dune sand and strength can be improved by removing the high fines (below 0.075 mm) and by adjusting the fineness modulus. The material is even suitable for plaster work.

Project 2 - Alternative to Coral based Building Lime (Cont'd)

To facilitate the production of good quality dolomitic lime and thereby prevent extraction of coral for manufacture of building lime. Following inferences may be made from the laboratory and field tests carried out.

Under burning or over burning of dolomite give rise to difficulties in hydration

Steam hydration is more efficient than traditional hydration methods

Hydration by water spraying is inadequate because dolomite requires much longer hydration time than other types

Gasifier can be used for lime burning and more economical than the use of fire wood

LANDSLIDE STUDIES SERVICES

Project 3 - Landslide Hazard Zonation Mapping Programme (LHMP) (Cont'd)

The main objective of the LHMP is to identify areas vulnerable to landslide hazard and establish good engineering practices in planning and construction through consultancy services, creation of public awareness, introduction of guidelines to ensure proper construction procedures with the ultimate aim of landslide hazard mitigation covering the following phases.

Phase I	-	Badulla and Nuwara Eliya Districts	1990 – 1995
Phase II	-	Kegalle and Ratnapura Districts	1996 – 1999
Phase III	-	Kandy and Matale Districts	2000 – 2005
Phase IV	-	Kalutara and Matara Districts	2006 – 2007

As the project is focused on landslide hazard reduction, in the hill country of Sri Lanka, primary or direct beneficiaries will be the people and the communities affected by landslides.

The Government will benefit, from shifting post disaster relief and rehabilitation to preventive action and stitch in time. The learning from the scientific approach to management of disasters, as against crisis management which after turns out to be expensive and ineffective. This project will also capture the imagination of virtually every Ministry and Department of the Central Government and Provincial Government who are currently experiencing problems due to wide spread landslide in carrying out developmental activities, not only because of inadequate tools and expertise but also due to lack of public awareness and community participation. NGO's will also get trained in the process, to be more effective when faced with similar problems in future.

1:10000 & 1:50000 Landslide Hazard Zonation Maps have been prepared districts covering Phase I and II. The mapping work in Kandy district is being carried out.

Project 4 - Sri Lanka Urban Multi Hazard Disaster Mitigation Project (SLUMDMP)

Phase II: Replicating Stage

SLUMDMP has been established on the initiation of the Asian Disaster Preparedness Centre (ADPC) as one of the projects under the Asian Urban Disaster Mitigation Programme (AUDMP) funded by the USAID – Partner Agencies are NBRO, UDA, CHPB and ADPC. (Technical outputs from NBRO and UDA).

Phase I of the project titled "Establishment of Sustainable Public and Private Sector Mechanisms for Disaster Mitigation in Sri Lanka" was completed on February 2000.

The long-term objective of the SLUMDMP is to reduce natural disaster vulnerability of urban population, infrastructure, lifeline facilities and shelter in Sri Lanka. The short-term objective of the project is to establish sustainable public and private sector mechanisms for urban disaster mitigation.

Project 5 - Investigation on instability of the area around Kotmale Reservoir and Application of Stabilization Techniques to a Selected Soil Mass.

This project is carried out under National Science Foundation Grant for three-year period starting from December 2001 in order to:

- Prepare a detailed engineered geological map of the area around Kotmale.
- Monitor the rate and direction of soil creeping into reservoir with respect to the climatic changes ground water level fluctuations and pattern of the annual precipitation.
- Detect the earth tremors induced by the minor and major mass movements taken place in an around the Kotmale reservoir.
- Stabilize a selected unstable portion of the reservoir abutment with the use of advanced engineering and non-engineering methods.
- Implement remedial measures to avoid damages to human lives and their property due to a sudden overflow.

GEOTECHNICAL ENGINEERING

Project 6 - Compilation of Geotechnical Database in Greater Colombo Area (Cont'd)

This research project will establish, through geotechnical evaluation of subsoil of Greater Colombo Area, reliable limits of variations of physical and mechanical properties, which could be utilized for project planning, feasibility studies, preliminary design works and for underground construction as well as for heavy foundation constructions.

The database is being compiled using available borehole investigations in the Colombo area mainly conducted by the NBRO and also similar organizations. Further, all results of field investigations, which would be carried out in the future, within the Greater Colombo area would be incorporated in it.

Main Objectives are compilation of Three-dimensional Geotechnical Zoning of Greater Colombo area on the basis of geological and engineering geological aspects with preparation of detail thematic maps of ground water, SPT refusal depths, bedrock depths, SPT hardness at 1m depth intervals has been done in 250m grid basis and also in contours. These maps are prepared in Arc View format and consisting of base data such as roads, towns, streams, land-use etc. and analyzing these by a geotechnical point of view in a manner relevant to infrastructure development i.e. particularly for underground construction and heavy foundation construction.

These maps could be utilized for project planning, feasibility studies, design work for underground construction as well as for heavy foundation construction. This will be expected a cost reduction in detailed geotechnical investigations for all construction projects within the Greater Colombo area.

Project 7 - Rehabilitation of Rural Roads using soil stabilization (Cont'd)

The most common road failures are erosion, formation of pot holes and corrugations, erosion and edge failures. Also formation of dust is severe in gravel roads and which could cause other types of road failures. The road failures in gravel roads are due to existence of substandard quality road material (loose/soft) soil pockets, inadequate bonding/cohesion in the road material as well as lack of drainage facilities.

The traditional method of stabilization is the use of suitable borrow material which comply with the specifications. This method requires large quantity of granular material. With its limited availability within economically acceptable distance limits, this method is no longer can be adopted due to high transport costs. Therefore, it is required to find out alternative methods to improve the quality of existing road material.

It is aimed to determine the possibility of improving the road sub base and base using economically viable stabilization methods.

Project 11 -Use of vertical sub surface drainage in soft soil for ground improvement (Cont'd)

The metropolitan area of Colombo confined to the sea, Kelani River and vast extent of swamp and low lying marshes, expanded over many years. Rapid development programme and master plans have been generally prepared to develop these low lying area in and around Colombo which is considered as unsuitable for support/foundation of structure and economically not viable for the development.

Such engineering problem associate with the new development activities due to poor sub soil condition is a challenge to Geotechnical Engineers. In order to use these grounds, it is necessary to either replace the ground with good quality soil or improve the existing ground. Otherwise, pile foundation has to be used. Pile foundation can be adopted for multi storied buildings and this method is not economical for lightly loaded structures. If the peat or clay layer thickness is very large, replacing is not economical. Therefore, improvements to these poor sub soil condition is a vital importance to reclaim these land for development programme in the country.

From the past researchers, it is evident that the "Preloading" technique is the ideal low cost improving method for soft compressible soils. The long time duration is the problem involving with this method to achieve the required

improvement. Therefore, in order to reduce this time period for ground improvement, vertical drains can be used using locally available material.

The main objective is to suggest the most suitable type of vertical drain and economical installation method for soil experimentally.

ENVIRONMENTAL

The Environmental Division (ED) has today grown to become one of the premier environmental research and consultancy centres in the country. The Division has a fully equipped modern laboratory providing facilities for analysing water, wastewater and soil, and for monitoring quality of air and noise supported by professionals from different scientific disciplines. Thus the ED offers a truly multi-disciplinary consultancy service to meet the highest national standards. The ED operates under three sections, namely; Environmental Quality Monitoring. (Water, waste-water, soil etc.) Air & Noise Pollution Monitoring and Special Environmental Studies such as IEE, EIA and Env. Audits.

Major Activities

- Preparation of Environmental Criteria for Management of Solid Waste in Shelter Development Projects - Draft being prepared.
- Evaluation of Environmental Impacts of Metal Crushing Industry and Formulation of Environmental Criteria to Develop Guidelines to Mitigate Associated Ill Effects - Final draft being circulated for reviewing.
- Environmental Aspects of Use of Dolomite Lime as an Alternative to Coral Based Lime - Report was prepared.
- Environmental Status on the Use of Dune Sand as an Alternative to River Sand - Environmental Status Report was completed. A assistance in analytical work was provided to the Building Materials Division
- Develop a Comprehensive, Cost Effective Ambient Air Quality Monitoring Network for the Colombo Urban Area - NRC funded - Development of low cost analytical and monitoring techniques are in progress: some locations for the network were identified; monitoring is in progress.
- Develop a Comprehensive Acid Rain Monitoring Programme for Colombo - Some methodologies were developed; monitoring is in progress.

PROJECT MANAGEMENT

The NBRO has the experienced professional & technical staff to provide a wide range of consultancy services related to building projects such as architectural work, structural engineering work, quantity surveying work electro-mechanical engineering work, contract administration, project management, etc..

Consultancy assignments in hand:

- Condition Report for the Construction of Auditorium and Shopping Complex Building at Moratuwa for Moratuwa Municipal Council.
- Investigation of Floor Concrete to Elsteel Factory at Pallekele - Kandy Industrial Park.
- Condition Report for the New Four Storeyed School Building at Sujatha Vidyalaya, Nugegoda.
- Installation of a VSAT Antennae at the roof top of the Tower Building - Bambalapitiya.
- Condition Report on the Bank of Ceylon Building, York Street.
- Construction of Houses for Relocation of Estate Worker Families at Horana Export Processing Zone, Horana.
- Condition Report on National Savings Bank Branch Building at Kurunegala
- Building Complex for the Faculty of Management Studies and Commerce for the University of Sri Jayawardenapura.
- Unauthorized Land Filling at No.170, Sedawatta Road- Wellampitiya ("Greyline" Container Yard)

HUMAN SETTLEMENTS

Project 1 – Alternative Building Construction Methods

Demonstration (Model construction) of alternative building materials including dissemination of them to the public along with the housing packages - type plans.

Project 2 - Establish two community projects on Landslide Preparedness in Nawalapitiya Urban Council Area.

This project is in collaboration with ITDG, Nawalapitiya Urban Council and NBRO.

REVENUE DETAILS**Building Materials**

List of Projects	Name of the Client
1. Concrete Testing	Over 1300 jobs have been done by BMD for year 2002.
2. Steel Testing	
3. Miscellaneous and Others*	
Total Income generated	Rs. 5,233,920.00

Geotechnical Engineering

Geotechnical Investigation for	Name of the Client
Construction of earth retaining wall at the HP/UVA QTS, Bandarawella	Sri Lanka Telecom
Construction supervision of sanitary land fill –Katunayake	BOI
Coastal Resources Management Project (CRMP) Hikkaduwa	NARA
Proposed harbour site at Chillaw	Halcrow Group Ltd
Housing scheme for Government servant at Gotami Rd, Borella	Building Department
Yatagala Raja Maha Viharaya, Wahalkada	NPPD
proposed bridge crossing in Kalutara North area	NWS & DB
Commercial Centre at Bandarawella	Surath Wickramasinghe Associates
Plate Bearing test Welisara Ragama	Beijing Municipal Engineering Corporation
Married Quarters - Welisara, Ragama	SL Navy
Proposed 3 storied house	Mr. Ruwan Welikala
CECB – Sub station project Rathnapura	ALSTOM
Kotahena Ground Reservoir and Pump House site	Water Board
Proposed sludge drying beds chemical house, high lift pump house, Kalutara	NWS & DB
National blood transfusion center	Blood Bank
Borehole investigation for proposed 4 storied building at Kurunegala Telecom Premises	Sri Lanka Telecom
S I for package sewerage treatment plant site Horana Export Processing	BOI
Total Income Generated	Rs. 13,299,023.00

Human Settlements

Project	Name of the Client
Introduction of Standards, Guidelines and Code of Practices for Human Settlements Planning in Hilly Area	LHMP
Innovative Construction Methods and Search for Alternative Indigenous Construction Methods	
Alternative Sources for River Sand	
Livelihood Options for Disaster Risk Reduction in Landslide Prone Areas (Jan. 2000 - March 2001)	
Total revenue generated	Rs. 433,242.00

Landslide Studies & Services

Project Name	Name of the Client
Investigation on instability of the area around Kotmale Reservoir and application of stabilization techniques to a selected soil mass	National Science Foundation
Awareness Program for the members of Central Provincial Council	Provincial Land Commissioner Kandy
Research on Groundwater Recharge Potential of DPMC	General Manager (Operations), David Peiris Motor Company Ltd.
Geological & Geotechnical Reconnaissance Survey – Mini-hydro Power Project	Mr. Hiran Gunasekara, Managing Director, Hiran Lanka Pvt.
Geological & Geotechnical Reconnaissance Survey at Sheen Mini-hydro Power Project, Pundaluoya	Mr. P S P S de Seram, Director, Zyrex Power, Vauxhall Street, Col. 02.
Workshop on Landslide & Mitigation of Landslide Hazards for Government Officers & Field Officers	Provincial Land Commissioner, Kandy
Workshop on Landslide & Mitigation of Landslide Hazards for Engineers & Technical Officers	Provincial Land Commissioner, Kandy
Workshop on Landslide & Mitigation of Landslide Hazards for School Teachers & Students	Provincial Land Commissioner, Kandy
Total Income Generated	Rs. 1,644,528.00

Environmental

Project	Name of the Client
Quality Surveillance on Greater Colombo Pipe-Borne Water (continued to next year)	National Water Supply & Drainage Board
Automated Air Quality Monitoring Programme (terminated in March 2001)	Central Environmental Authority
Testing and monitoring of water, effluent, sediments, building materials etc.	*varied
Air and noise monitoring consultancy	*varied
Special projects	*varied
Total revenue generated	Rs. 5,652,745.00

Project Management

Project Title	Name of the Client
Proposed "Sahasapura" Housing at Borella	Real Estate Exchange (Pvt) Ltd.
Proposed Supermarket at Mabola	Wattala - Mabola Urban Council
Refurbishment & Repair Works at Superior Courts Complex	Superior Courts Complex
Proposed Resource Centre and Warden's Quarters for Department Warden's Quarters for Department	Department of Probation & Child care Services
Proposed Commercial Complex at Talbot Road, Galle	Municipal Council, Galle
Total revenue generated	Rs. 3,838,619.00

Other Activities

Papers Presented & Training Programmes, Awareness Programmes

Authors	Venue	Period	Title of the paper
Miss. Sriyani Munasinghe	ICTAD Auditorium	March 2002	"Modelling the consolidation Behavior of Peat and Improvements"
	Trans Asia Hotel	June 2002	"Modelling the consolidation Behavior of Peat and Improvements"
Mr. Asiri Karunawardena	Trans Asia Hotel	May 2002	Improvement of Engineering properties of peat by preconsolidation
	Trans Asia Hotel	May 2002	A comparison of field and laboratory test results.

Landslide – Awareness Programmes – 2002

Workshop	Venue
Landuse Planners	NBRO
Craftsmen, Carpenters and relevant officers	Nawalapitiya Urban Council
Ministers, Members of Provincial Council, Central Province	Earl's Regency Hotel, Kandy
School teachers and students	Nuwara Eliya
School teachers and students	Nuwara Eliya & Kandy, Gurudeniya Training Center
Council Members	Polgolla training Centre
School teachers and students	Badulla Provincial Council Matale Vijaya Vidhalaya

FINANCIAL STATEMENTS

NATIONAL BUILDING RESEARCH ORGANISATION

BALANCE SHEET AS AT 31ST DECEMBER 2002

		2002	2002	2001	2001
		Rs.	Rs.	Rs.	Rs.
ASSETS					
Non-current assets (net)					
Property, plant, equipment	Annex 1		34,070,751.58		21,284,967.25
Current assets					
Inventories	Annex 2	142,730.30		258,048.76	
Work in progress	Annex 3	500,000.00		1,558,000.00	
Trade & other receivables	Annex 4	12,437,004.79		18,178,356.39	
Deposits	Annex 5	3,830,107.04		8,274,890.96	
Advances	Annex 6	7,014,231.71		8,458,023.13	
Prepayments	Annex 7	29,025.00		73,187.96	
Cash & cash equivalent		4,135,024.66	28,088,123.50	6,708,708.35	43,509,215.55
Total assets			<u>62,158,875.08</u>		<u>64,794,182.80</u>
EQUITY AND LIABILITIES					
Capital & reserves					
Assets acquired		2,264,497.95		2,264,497.95	
Government grant	Annex 8	65,132,913.58		67,981,731.72	
Other grants	Annex 9	44,408,234.31		28,596,037.37	
Long-term loans	Annex 10	10,879,186.20		10,879,186.20	
Welfare fund		374,261.10		374,261.10	
Accumulated profit/(loss)		<u>(73,958,231.00)</u>	49,100,862.14	<u>(62,139,907.47)</u>	47,955,806.87
Current liabilities					
Accruals	Annex 11	1,709,148.89		3,783,705.09	
Creditors	Annex 12	1,867,369.67		4,472,188.00	
Unclaimed expenditure	Annex 13	25,108.17		25,108.17	
Other payables	Annex 14	926,284.21		913,727.79	
Provision for gratuity		8,165,195.00		7,326,409.88	
Provision for bad debts		364,907.00	13,058,012.94	317,237.00	16,838,375.93
Total equity and liabilities			<u>62,158,875.08</u>		<u>64,794,182.80</u>

Director General

Director Finance

NATIONAL BUILDING RESEARCH ORGANISATION
INCOME STATEMENT FOR THE YEAR ENDED
31ST DECEMBER 2002

		2002 Rs.	2001 Rs.
Revenue	Annex 15	26,820,114.08	42,153,066.30
Other operating income		1,028,092.06	1,982,732.69
Work in progress		500,000.00	1,558,000.00
Work performed by the enterprise and capitalised	Annex 16	<u>7,826,563.00</u>	<u>13,521,385.00</u>
		36,174,769.14	59,215,183.99
Raw materials and consumables used	Annex 17	(1,305,788.73)	(1,927,708.36)
Staff costs	Annex 17	(31,786,258.40)	(33,245,227.57)
Depreciation expenses		(12,298.81)	(400,086.71)
Other operating expenses	Annex 17	<u>(14,308,634.38)</u>	<u>(22,289,060.48)</u>
Profit/(loss) from operations		(11,238,211.18)	1,353,100.87
Income tax expenses		<u>0.00</u>	<u>0.00</u>
Net profit/(loss) from ordinary activities		(11,238,211.18)	1,353,100.87
Extra ordinary items			
Bad debts		(47,670.00)	(317,237.00)
Prior year adjustments		(514,200.35)	(2,977,983.64)
Loss on disposal of equipment		<u>(18,242.00)</u>	<u>0.00</u>
Net profit/(loss) for the period		(11,818,323.53)	(1,942,119.77)
Net loss b/f		<u>(62,139,907.47)</u>	<u>(60,197,787.70)</u>
Net loss c/f		<u><u>(73,958,231.00)</u></u>	<u><u>(62,139,907.47)</u></u>

NATIONAL BUILDING RESEARCH ORGANISATION

CASH FLOW STATEMENT - 2002

	Rs.	Rs.	Rs.	Rs.
Cash flows from Operating Activities				
Net loss from ordinary activities			(11,238,211.18)	
Adjustments for				
Depreciation		12,298.81		
Expenditure capitalised		(7,826,563.00)		
Provision for gratuity		838,785.12		
Prior year adjustments		(514,200.35)		
Provision for bad debts		(47,670.00)		
Loss on disposal		(18,242.00)	(7,555,591.42)	
			(18,793,802.60)	
Less	2001	2002		
Decrease in inventories	36,800,507.20	23,953,098.84	12,847,408.36	
Decrease in trade payables	9,194,729.05	4,527,910.94	(4,666,818.11)	
<i>Net cash from operating activities</i>				(10,613,212.35)
Cash flows from Investing Activities				
Purchase of fixed assets			(307,471.34)	
<i>Net cash used in investing activities</i>				(10,920,683.69)
Government grant received			8,347,000.00	
Net decrease in cash				(2,573,683.69)
Cash balance at beginning of period				6,708,708.35
Cash balance at end of period				<u><u>4,135,024.66</u></u>

NOTES TO ACCOUNTS

(1) **FUNDAMENTAL ACCOUNTING ASSUMPTIONS**

- (a) Going concern
- (b) Accounting Policies consistently applied
- (c) Revenue and cost are accrued and recorded in the year to which they relate

(2) **GENERAL ACCOUNTING POLICIES**

- (a) Depreciation is not being provided for in the year of purchase. It is being provided for in the year of disposal
- (b) Assets are depreciated on a straight line method as follows

	%
Buildings	2.5
Machinery and Lab Equipment	20.0
Furniture & Fittings	10.0
General Office Equipment	20.0
Drawing Office Equipment	10.0
Tools	50.0
Library Books	5.0
Bicycle	20.0
Fire Extinguishers	10.0
Vehicles	20.0

Rate of depreciation of Books has been changed from 1 % to 5 % effective from 1995

Materials are issued on First In First Out basis and the closing stock is valued at the last purchase price.

- (c) Depreciation of assets have been deducted from Grants as stipulated in para 24 of Sri Lanka Accounting Standards 24.

TRANSFERRED FROM UNDP

- (a) The items of equipment received for the Landslide Hazard Mapping Project from the UNDP were taken over in terms of the agreement No. SRL/89/001 at the completion of the project on 30.07.1995 at their depreciated value as at that date.

Depreciation of the balance period of 1995 has been included in the Income and Expenditure Statement.

- (b) To regularise the transfer of ownership, these vehicles were valued at Rs. 1,931,862.00 in 1997 by the Department of Public Finance for the payment of customs duty. As a result of this revaluation, the increase in the carrying cost of this asset has been recognised as an income.

(4) PAYMENT OF CUSTOMS DUTY FOR EQUIPMENT RECEIVED FROM JICA

Direct payment was made by the Treasury to the Department of Customs for clearing the equipment received from JICA. Since the actual cost is not known to us it was not disclosed in the accounts.

(5) BASIS OF PROVIDING FOR BAD DEBTS

2001 Accounts

A provision for bad debts was kept from the 4th year (1998) as per the percentage given below on the outstanding balances of each year.

Year	%
1998	1
1997	1
1996	1
1995	10
1994	10
1993	10
1992	25
1991	25
1990	100
1989	100
1988	100
1987	100

2002 Accounts

1 % was applied on the balance remaining after deducting the provision already kept in the 2001 accounts up to 1999.

EXTRACTS OF THE AUDITOR GENERAL'S REPORT

2. Accounts

2:1 Consolidation of the Accounts of the National Building Research Organisation (NBRO)

In terms of a Cabinet decision of 29 September 1993, the National Building Research Organisation (NBRO) was brought under the Institute for Construction Training and Development to function as a separate institution. However, since the inception of the merger in 1993 up to the year 2002, the accounts of the National Building Research Organisation (NBRO) had not been consolidated with the accounts of the Institute for Construction Training and Development. However, the audit observations on the accounts of the National Building Research Organisation for year under review are included in this report.

2:2 Audit Opinion

Except for the effects on the financial statements of the matters referred to in paragraph 2:2 of this report, I am of opinion, so far as appears from my examination and to the best of my information and according to the explanations given to me, the financial statements have been prepared and presented in accordance with Sri Lanka Accounting Standards and the stated accounting policies as set out in Notes to the financial statements and give a true and fair view of the financial position of the Institute as at 31st December 2002 and the financial results and cash flow for the year then ended.

2:3 Comments on Accounts

2:3:3 Accounting Deficiencies

ii) NBRO

- a) Interest had neither been paid no provision made therefore for the long term loan of Rs. 10,879,186 obtained from the Institute for Construction Development and Training and remaining over a period exceeding 15 years.
- b) The warehouse rent and clearing charges amounting to Rs. 142,074 paid on laboratory and field equipment which should be capitalized in terms of SLAS 18 had been written off to the Income and Expenditure Accounts as revenue expenditure.
- c) Expenditure of Rs. 91,114 incurred on the partitioning of the laboratory had been written off to Income and Expenditure Account as repair and maintenance expenditure instead of capitalizing.
- d) Although debtors balances aggregating Rs. 4,155,202 had been outstanding for over 5 years, an adequate provision for doubtful debts had not been made. The provision of Rs. 374,261 for doubtful debts had been shown under the current assets instead of being shown as deduction from the total debtors.
- e) Depreciation amounting to Rs. 3,369,255 relating to the year under review had been shown as a deduction from the Government Grant instead of being shown in the Income and Expenditure Account.
- f) The Bank balance and the creditors balance had been understated by Rs. 1,500,000.
- g) Although laboratory and field equipment valued at Rs. 2,870,029 had been paid for and physically received during the year under review, the provision for depreciation had been overstated by Rs. 574,006 as a result of non-compliance with the policy on depreciation.

2:3:4 Accounts Receivable and Payable

ii) NBRO

- a) Debtors and other receivables aggregating to Rs. 16,149,294 and payables aggregating to Rs. 3,051,802 had not been confirmed by the parties concerned.
- b) Debtors and advances aggregating to Rs. 6,002,045 and Rs. 1,845,305 respectively had remained outstanding for more than two years.
- c) Age analysis had not been prepared in respect of advances aggregating to Rs. 7,014,232.

2:3:5 Lack of Evidence for Audit

ii) NBRO

Fixed assets valued at Rs. 180,365,330, debtors and other receivables aggregating Rs. 16,149,294, book balances totaling Rs. 7,756,052 expenditure totaling Rs. 7,826,563, creditors and other payables aggregating Rs. 1,867,369 and advances aggregating to Rs. 3,865,863 could not be satisfactorily vouched or accepted in audit due to the non-availability of Register of Fixed Assets, verification reports, detailed schedules, vehicle licenses, insurance certificates, transfer books, confirmations, age analysis, Bank Certificates, detailed schedules details of project expenditure, an Register of Advances, etc.

Non-compliance with Laws, Rules & Regulations

Several instances of non-compliance with the provisions in the following Laws, Rules, Regulations and Management Decisions observed in audit had been pointed out to the Chairman of the Institute from time to time.

b) NBRO

- i) Sections 8(a), 13(5)(a) and 15(5)(d) of the Finance Act No. 38 of 1971.
- ii) Sections 144, 147.5 and 163 of Guidelines on Government Tender Procedure.
- iii) Public Administration Circular Nos. 02/99 of 26 February 1999, 6/97 of 03 February 1997, 22/99 of 05 October 1999 and 7/97 of 03 February 1997.
- iv) Sections 10.1 and 10.3 of Chapter VIII of the Establishment Code.
- v) Sri Lanka Accounting Standard No. 9.
- vi) Sri Lanka Accounting and Auditing Standard Act No. 15 of 1995.
- vii) Circular No. 1/93 of 17 May 1993 of the Ministry of plan Implementation.
- viii) Public Finance Circular No. PF/PE 14 of 18 February 2001.
- ix) Financial Regulations Nos. 387, 502(2), 454, 751(1), 754, 753(1), 756(1)(2)(a), 758(1) and 1646.

Financial & Operating Review

3:1 Financial Results

ii) NBRO

The working of the NBRO for the year ended 31 December 2002 had resulted in a deficit of Rs. 11,238,211 after taking into account the Government Grant of Rs.7,826,563 for Research Project Expenditure as against the surplus of Rs. 1,353,101 for the preceding year after taking into account the Government Grant of Rs. 13,521,385 for Research Project Expenditure for that year thus showing deterioration in the financial results by Rs. 12,591,312.

3:2 Liquidity

Current liabilities of the ICTAD and NBRO represented 17.55 and 46.49 percent of the current assets respectively as at end of the year under review compared with 8.13 and 38.09 percent respectively as at end of the preceding year.

3:3 Physical Performance

ii) NBRO

Out of a targeted income of Rs. 62 million from the services rendered by the Organisation, an income of Rs. 30.07 million or 48.5 per cent of the target had been achieved.

3:4 Funding Arrangements for Provision for Payment of Gratuity (NBRO)

Although a provision of Rs. 1,073,645 had been made in the accounts of NBRO as at 31 December 2002 in respect of gratuity payable, no funding arrangement had been made to meet future obligations for payment of gratuity as and when they arise.

3:5 Idle and Under-utilised Assets

The following observations are made.

ii) NBRO

The balance of a current account at the Bank of Ceylon amounting to Rs. 377,918 had not been used for more than three years. Although the matter was referred to in my reports for the years 2000 and 2001, no action had been taken thereon.

3:6 Identified Losses

ii) NBRO

A sum of Rs. 41,505 had been paid to an outside party during the year under review for carrying out repairs to Computers though the Organisation has its own Computer Unit.

3:7 Uneconomic transactions

ii) NBRO

A seismography machine was purchased during the year under review with one year guarantee period and the Technical Evaluation Committee also had recommended about the quality of the machine. However, it had to be repaired on three occasions before the elapse of one year from the date of purchase. The retention of Rs. 182,750 had been paid since the date of purchase on the understanding that the machine was in good working condition. At the audit verification carried out on 20 January repairs. In the circumstances the recommendation of the Technical Evaluation Committee had not acted in a responsible manner in recommending the machine.

COMMENTS ON THE REPORT OF THE AUDITOR GENERAL ON THE ACCOUNTS FOR THE YEAR ENDED 31.12.2002

2:3:3 Accounting deficiencies

- a) Funds were advanced by the ICTAD for additional building space required to accommodate the laboratories, equipment etc. funded by the UNDP. Even though this has been shown as a long-term long in the accounts, there has been no indication that interest is chargeable on the funds advanced.
- b) Rs. 142,074 was treated as recurrent expenditure and not as revenue expenditure. This amount has now been capitalised by journal entry No. 08 of 2003.
- c) Rs. 91,114 incurred on partitioning has now been capitalised by journal entry No. 25 of 2003.
- d) We have noted to show the provisions for doubtful debts as a deduction from the total debtors in future.
- e) The depreciation of assets for the year was deducted from the government grant in accordance with chapter 27 of SLAS 24, where the grant is deducted in arriving at the carrying account of the assets and the grant is recognised as income over the life of the depreciable assets by way of a reduced depreciation charge.
- f) Rs. 1.5 million was released by the CHPB to NBRO for procurement of computers on their behalf. Therefore, the money that was received was shown under refundable payments under accounts code 1123. In order to reserve funds to meet this commitment, a cheque for the equivalent amount was drawn during the course of the year.
- g) This situation arose as we had treated this expenditure as a creditor in the year 2001.

2:3:4 Accounts Receivable and Payable

- a) Action is being taken to get confirmation of debtors and other receivables.
- b) No comments.
- c) This has been noted for compliance in future.

2:3:5 Lack of Evidence for Audit

The fixed assets register and verification reports had been submitted to the Government Audit. Detailed schedules have been submitted as and when requests are made. Vehicle license and insurance certificates are available in the office.

3:1 Financial Results

This situation arose in view of the fact that the Treasury released only Rs. 8.3 million against an allocation of Rs. 9 million, which happened to be the lowest allocation received since 1990. Furthermore, NBRO was not able to generate the income target of 2002 as there was a remarkable drop in the construction activities in the country during this year.

3:2 Liquidity

The NBRO was able to achieve a healthy ratio of 2:1 for current assets: current liabilities.

3:3 Physical Performance

For NBRO to sustain its activities, it has to procure consultancies from the state and other agencies by carrying out investigations and testing services.

In the year 2002, we found it extremely difficult to procure consultancies from agencies concerned, as there was a remarkable drop in construction activities in the year 2002 due to a reduction of capital grant by the government to state agencies on which NBRO has been relying for consultancies. Thereby, we were not able to achieve the income targets of 2002.

3.4 Funding Arrangements for Provision for Payment of Gratuity (NBRO)

Since NBRO has been facing severe liquidity crisis as stated at 3.3 above it was not possible to make funding arrangements for the provision for payment of gratuity.

3:5 Idle and Under-utilised Assets

The current account at the Bank of Ceylon was maintained as a rolling fund for the payment of distress loans to the employees. However, due to the financial crisis faced by the NBRO, we were not able to operate it. Action will be taken to transfer the amount lying in this current account to a fixed deposit.

3:6 Identified Losses

The main task of the computer unit of the NBRO is to engage in activities related to landslide hazard mapping project. They also offer their services in software and hardware trouble shooting. However, they do not possess skills in carrying out major repairs to computers and therefore we depend on outside parties.

3:7 Uneconomic transactions

The NBRO has followed the recommendations of the Technical Evaluation Committee (TEC) and the payment to the supplier including the release of the balance payment was made in accordance with the provisions of the contract. The observations that the TEC has not acted in a responsible manner is not acceptable.