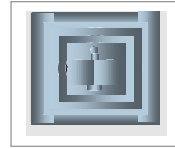


WATER AND SANITATION DIVISION (CWSD)



UNIT COST STUDY

Final Report

June 1999

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ABBREVIATIONS

	ASHANTI REGION
BAR	BRONG AHAFO REGION
BH	BORE HOLE
CIDA	CANADIAN INTERNATIONAL DEVELOPMENT AGENCY
COWAP	.....	COMMUNITY WATER PROGRAMME
CWSD	.....	COMMUNITY WATER & SANITATION DIVISION
CWS	.....	COMMUNITY WATER & SANITATION
CWST	.....	COMMUNITY WATER & SANITATION TEAM
CWSP	.....	COMMUNITY WATER & SANITATION PROJECT
DA	.....	DISTRICT ASSEMBLY
DANIDA	.....	DANISH INTERNATIONAL DEVELOPMENT ASSOCIATION
DWST	.....	DISTRICT WATER & SANITATION TEAM
ER	.....	EASTERN REGION
EU	.....	EUROPEAN UNION
GoG	.....	GOVERNMENT OF GHANA
GWSC	.....	GHANA WATER & SEWERAGE CORPORATION
HDW	.....	HAND DUG WELL
HE	.....	HYGIENE EDUCATION
HP	.....	HAND PUMP
IDA	.....	INTERNATIONAL DEVELOPMENT AGENCY
ITTU	.....	INTERMEDIATE TECHNOLOGY TRANSFER UNIT
KA&A	.....	KWAME ASANTE & ASSOCIATES
KVIP	.....	KUMASI VENTILATED IMPROVED PIT
LCB	.....	LOCAL COMPETITIVE BIDDING
NCWSP	.....	NATIONAL COMMUNITY WATER & SANITATION PROGRAMME
NGO	.....	NON GOVERNMENTAL ORGANISATION
NR	.....	NORTHERN REGION
POs	.....	PARTNER ORGANISATIONS
PPT	.....	PROJECT PREPARATION TEAM
RWST	.....	REGIONAL WATER & SANITATION TEAM
RWS	.....	REGIONAL WATER & SANITATION TEAM
SBDUs	.....	SMALL BUSINESS DEVELOPMENT UNITS
TOR	.....	TERMS OF REFERENCE
UER	.....	UPPER EAST REGION
VLOM	í í í í í í í í í í í í í í í í	VILLAGE LEVEL OPERATING MAINTENANCE
VR	.....	VOLTA REGION
VIP	.....	VENTILATED IMPROVED PIT
WA	.....	WATER AID
WR	.....	WESTERN REGION
WVI	.....	WORLD VISION INTERNATIONAL

1.1 Background

Under on-going reforms in its development policies, the Government of Ghana (GoG), through the Ghana Water and Sewerage Corporation (GWSC), set up the Community Water and Sanitation Division (CWSD). The National Community Water and Sanitation Programme (NCWSP), a programme of the CWSD was launched in 1994 as a means of implementing the Government's new sector policy for rural and small town community water and sanitation.

The Government's role under the NCWSP is to evolve from one of active involvement towards encouraging greater user-community, self-reliance, ownership and management of water and sanitation services.

The International Development Agency (IDA) an affiliate of the World Bank (WB), through the on-going Community Water and Sanitation Project (CWSP-1), has supported the NCWSP. In the course of reviewing the CWSP-1, a follow-up project (CWSP-2) was identified as a means of building upon the achievements of CWSP-1 and to support the district water and sanitation programmes within the broader context of on-going decentralisation reforms and other rural development initiatives. The CWSD was made responsible for preparing the new project. The review also identified the need for a Unit Cost study to assist the implementation of CWSP-2.

1.2 Project Objectives/Terms of Reference

1.2.1 Objectives of CWSP-2

CWSP-2 is to increase the effective and sustained use of improved Community Water and Sanitation (CWS) services in villages and small towns. CWSP-2 will also build upon the achievements of CWSP-1 to support district water and sanitation programmes within the broader context of on-going decentralization reforms and other rural development initiatives in Ghana. Specifically CWSP-2 is to achieve:

- (a) the implementation of a demand-responsive and sustainable water and sanitation services;
- (b) the strengthening of community capacity to manage the services;
- (c) the development of district level capacity to deliver CWS services; and

vision of support to GoG as facilitator of the national
Community Water and Sanitation programme and administrator of a
CWS Fund.

1.2.2 Objectives of the Unit Cost Study/Terms of Reference (TOR)

- (a) The objectives of the unit cost study is to make CWSP-2 more cost effective and make more equitable use of government subsidies to the sector. Specifically, the unit cost study is to:
- (i) Analyse the actual costs of different Regional Water and Sanitation (RWS) projects in Ghana to help determine an ideal unit cost structure of different sub project components by:
 - Identifying the various categories of cost units in CWSP-1.
 - Determining cost differences in similar units.
 - Assessing the effectiveness of costing procedures of the present project and making recommendations for phase 2.
 - (ii) Define an appropriate cost structure for the subsidy that will be provided in CWSP-2;
 - (iii) Identify and understand the factors that allow some RWS projects to experience lower unit costs than others; and
 - (iv) Produce a database of unit costs for standard designs of the project of the CWSP (with allowances for local variations).
- (b) The Consultants are to:
- (i) Serve as members of the Steering Committee set up for the study.
 - (ii) Propose and then, in consultation with the Steering Committee, agree on methodology data sheet format.
 - (iii) Play the lead role in providing orientation and some basic skills of data extraction to project personnel who will assist in the process of data collection.
 - (iv) Make use of the report on the preparatory activities of the Steering Committee for definition of scope of study, concepts, clarification of themes etc. (excluding reference to other source materials).
 - (v) Personally carry out the actual data collection exercise.

liaise with the External Consultants (World Bank) in the period that they will be in the country, (18th November – 4th December 1998).

- (vii) Conduct the unit cost study and present the report in such a way as to capture the issues identified above as objectives of the study, as well as the details given below as project design features, project practice and results, lessons learned and recommendations.
- (viii) Conduct a price analysis of cost units and recommend a price structure for CWSP-2.

1.3 Project Scope/Coverage

To undertake the study it was agreed between the Consultants and the Project Preparation Team (PPT) to study the following institutions located in specific regions.

- (a) IDA (CWSP) Projects in four regions namely: Western, Ashanti, Brong Ahafo and Northern Regions;
- (b) Two bilaterally funded projects implemented with CWSD e.g. DANIDA in Volta Region and CIDA in Upper East Region;
- (c) Two NGO type projects implemented separately from CWSD e.g. WVI in Afram Plains and Water Aid in the Easter Region.
- (d) One EU Micro Project or Social Funds Project in Ashanti Region; and
- (e) Interviews with selected private sector suppliers and consultants.

1.4 Our Understanding/Comments on the Terms of Reference

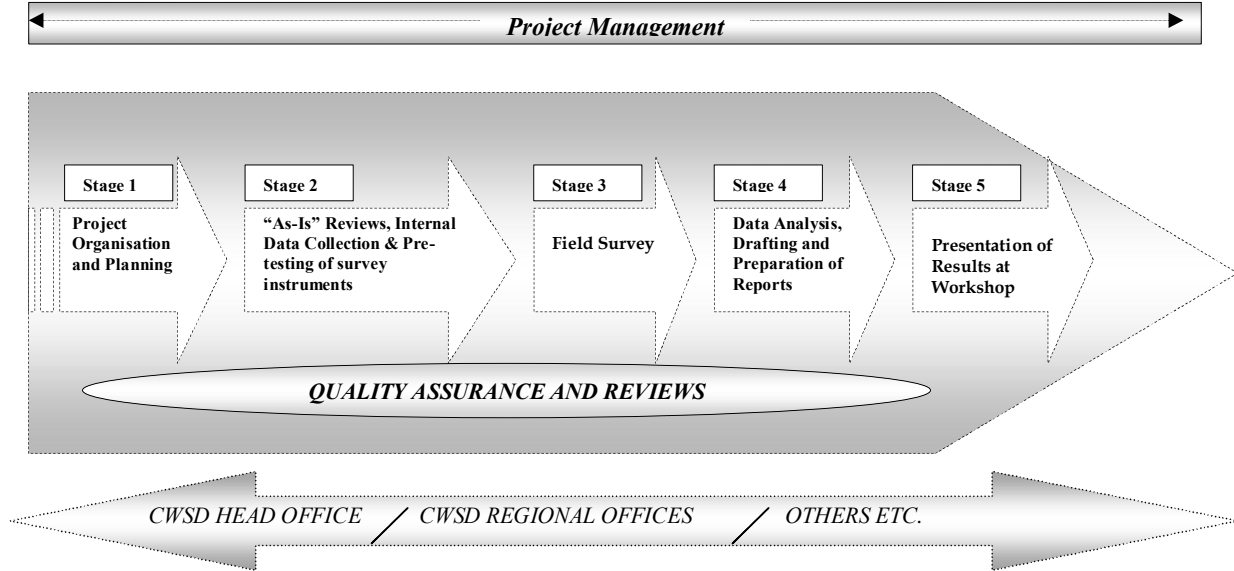
The conclusions and recommendations made in this report are set against objectives and tasks established in the Terms of Reference for the unit cost study. (Refer to section 1.2 above).

The TOR specifically referred to a comparative cost analysis of different RWS projects as well as assessing the effectiveness of costing procedures for the present IDA projects. We have undertaken limited reviews of existing costing procedures under the CWSP project in the regions. We noted that there are no elaborate costing procedures, but a simple accumulation of costs based on existing manuals and other policy documents of the CWSP.

Our work has thus been directed at determining the accuracy of data captured in the regions of the CWSP for analysis.

proach

Our work management approach is captured in the diagram below:



1.5.1 Project Organisation and Planning

Our work approach was structured to clearly understand the study requirements, and agree the scope of work. We thus held various meetings and discussions with the Project Preparation Team (PPT) and other key CWSP officials.

1.5.2 As-Is Reviews and Pretesting of Survey Instruments

This provided a diagnosis of the current CWSP activities and projects in the regions, as well as the organisation and respective responsibilities of the CWSD at head office and in the regions.

As the key objective of this study is to produce cost information of the CWSP projects, the objective of the review was to clearly understand the chart of accounts, operational structures and organisation of CWSP activities.

The review incorporated an analysis of documents furnished to the Consultants and interviews with key CWSD officers.

which covered the following:

- (a) Obtaining and reviewing preliminary information on cost units of CWSP-1 and other community water and sanitation projects for comparative purposes;
- (b) Obtaining and reviewing copies of contract (tender) documents, and information on private sector participants of the CWSP; and
- (c) Designing and preparing questionnaire for data collection.

The following documents were reviewed:

- Financial Statement (1997)
- Draft Management Report - April 1994
- Audit Report of the Special Account and Statement of Expenditure
- Development Credit Agreement
- Draft Staff Appraisal Reports - January 14, 1994
- Bill of Quantities of Contractors/Consultants
- Various Contract Document signed between CWSD & Contractors/Consultants (Nov. 1995-1998)
- Comwasan Consult (Hydrological Service Document) - May 1996
- The World Bank: Standard Bidding Document (Procurement of Goods) January 1995
- Guidelines: Use of Consultants by World Bank Borrowers and by the World Bank as Executing Agency (August 1981)
- Third Quarter Progress Report CWSD-1998 (DANIDA)
- Bore Hole Drilling Contracts (1995, 1997, 1998)
- Quarterly Reports from the Regions (September 1998)
- The World Bank: Standard Bidding Document (Procurement of Works - Jan. 1995)
- Disbursement Hand Book - The World Bank (1992)
- Quarterly Report - Head Office (1998)
- Accounting System & Manual for District Water and Sanitation Program Management (May 1998)
- Contract for the Procurement of 300 Low Lift and 250 High Lift Hand pumps (Aquagro/GRATIS Project Joint Venture) - April 1997

Questionnaires/Data Sheets were designed and discussed at a workshop, which was attended by key CWSD officials from the Head Office and the regional accountants/project managers/engineers.

The discussions determined the extent of field surveys in the regions and re-defined the work programme to ensure that the objectives of the study are achieved.

This stage involved:

- (a) Incorporating the views and comments of the Project Preparation Team (PPT) and Regional Management Staff of CWSP in survey instruments.
- (b) Visiting CWSD Head Office, Regional Offices and selected communities to gather the necessary information and data needed for the study as well as learn at first hand, the various activities undertaken in these areas;

The field survey provided the major input that effectively informed the development and completion of the study.

1.5.4 Data Analysis and Presentation of Reports

This involved collating data from all the regions (including market data) and undertaking a comparative analysis to determine the unit cost of the projects and the standard prices of the projects sub components taking into account the different designs and locations of the projects and activities of the CWSP.

1.6 Structure of the Report

This report sets out the determination of unit costs of the activities/projects within the CWSP and recommends a standard cost structure for the implementation of CWSP-2. The report is structured into various sections to deal with specific aspects of the discharge of the assignment.

This section (Section 1) has introduced and provided background information on the unit cost study and detailed our work management approach to the assignment.

Section Two (2) presents our “As-Is Review” findings on the organisation, project and activities and our cost survey information from the CWSD head office, the CWSP IDA funded projects, the other bilaterally funded projects, the NGO type projects, the EU Micro project (Ashanti) and other selected private suppliers and consultants.

Section Three (3) presents the survey results and data analysis undertaken.

In Section Four (4), we have determined and recommended standard prices for the CWSP projects’ sub components for their various regional locations.

Section Five (5) presents recommendations on the costing procedures and other system improvements that would impact the implementation of the standards proposed and that which would ensure a cost effective RWS project.

2.1 Overview of Activities Undertaken by CWSD

This section reviews the various operational activities of CWSD at the community, district, regional and national (head-office) levels.

The main activities undertaken by the CWSD include education, water supply and sanitation and construction. CWSD categorises its operational activities into two main headings, namely Hardware and Software.

2.2 Hardware

Hardware includes all civil works undertaken in providing improved water supply and sanitation facilities. It also includes the procurement and installation of equipment required for improved water supply and sanitation.

2.2.1 Improved Water Supply Systems:

Improved water supply facilities include boreholes and hand-dug wells. Rain harvesting (also called Roof Catchment) and stream and spring gravity systems have also been designed for some communities in the Volta Region under DANIDA assistance.

(a) Bore-holes

Two main types of boreholes are provided under the CWSP. These are the 126mm-type and the 152mm-type. The 126mm type is the most common. A borehole may be fitted with a hand pump or may be mechanised. Most of the boreholes provided to the communities under the CWSP are fitted with hand pumps. The two major hand pumps are the Afridev and Nira.

Boreholes fitted with hand pumps are usually drilled up to about 20 meters deep. A few are, however, fitted with mechanised pumps. Mechanised boreholes are usually above 20 meters in depth, and are high yielding in terms of water flow. For those that are high yielding, the water is usually pumped into over-head reservoirs from where they are distributed through conduit pipes to homes and/or stand pipes placed at vantage locations in the community. The pumping system would usually be electric powered, however solar powered pumping systems are also being developed.

(b) Hand-dug Well

Most of the hand-dug wells provided under CWSP are covered and fitted with hand pumps. In a few communities however, hand-dug wells are not fitted with hand-pumps but are operated by the rope-and-bucket method.

average depth of a hand-dug well lie between 10 and 15 meters for funded projects though wells of greater depth are possible. The hand-dug well in the CIDA funded project areas in the Upper East Region is about 17 meters.

(c) Stream and Spring Gravity System

This system involves damming a stream or spring at or close to its source on the slope of a hill. From here the raw water is piped by gravity to a filtration plant. The treated water is then stored in a reservoir and distributed by gravity through conduit pipes to homes and/or stand pipes placed at vantage points in the community. This system is not common to the IDA project areas under CWSP-1. Under DANIDA funded projects, two communities in the Ho district of the Volta Region have been provided with this system, while construction of the system is ongoing in four other communities in other parts of the region.

(d) Rain Harvesting (Roof Catchment) System

This system involves collection of rainwater from roofs of houses into reservoirs through filtration systems. The treated water is then distributed to homes and/or standpipes. This system is usually provided in areas where there are technical problems with well development. Volta Region appears to be the only region considering this currently.

2.2.2 Sanitation Facilities

Sanitation facilities provided under the CWSP comprise institutional latrines (KVIP) and household latrines (VIP).

(a) Institutional Latrines (KVIP)

Institutional latrines are constructed for the community or institutions such as schools and clinics within the community. The major difference in the various types of institutional latrines provided under the CWSP is the number of their seating capacities. The seating capacity of a KVIP latrine ranges from two to twelve or more, depending on the needs of the institution or community for which it is being provided. The most common ones provided under CWSP are the four-seater types.

(b) Household Latrines (VIP)

Household latrines are constructed for individual homes. They are usually one-seater latrines. The difference in the various types can be found in the shape of the pit and whether the inner surface is covered (lined) or not. The major types are:

- (i) Mozambique Slab Unlined Type (MSUT)
- (ii) Mozambique Slab Lined Type (MSLT)
- (iii) Rectangular Unlined Type (RUT)
- (iv) Sandplat Type (ST)
- (v) Water-Tight Pit (Single-Vent KVIP) [WTSP]

... common type provided under the IDA projects is the ...
... ar Unlined type.

2.3 Software

Software includes all activities that are undertaken to complement the provision of facilities to the communities and to ensure the successful implementation, management and sustained utilisation of the facilities by the communities. Thus activities such as sanitation education, training, development of training materials and short-term consultancy form part of Software.

2.3.1 Hygiene and Sanitation Education

Hygiene education is an integral part of the process of helping communities and households to plan their water supply and sanitation systems. The fundamental objective of hygiene education in the context of the water supply and sanitation project is to minimise the amount of fecal material ingested into water systems by the target group. The approach adopted is participatory, in the sense that beneficiaries are encouraged to get involved in identifying how this happens and in making suggestions to prevent it, thus making the target group more likely to change their behaviour.

Partner Organisations (POs), Water and Sanitation (WATSAN) Committees and volunteers including teachers in schools, undertake hygiene and sanitation education in the communities.

2.3.2 Training

Capacity building in improved water and sanitation is a fundamental element of the CWSP. This involves extensive training for all those involved in the programme implementation. Training is given to all key players from the national level to the community level. Of particular significance is the training that is given to those directly involved in the provision of facilities to the communities. At the community level, training programmes are organised for WATSAN committees, women groups, and hygiene education volunteers. Latrine artisans, hand-dug well contractors, and hand-pump repairers are given on-the-job training. Training workshops are also organised for POs and certain categories of consultants at the regional level.

POs receive training at the regional level from private consultants and RWST. The POs in turn provide on-the-job training to WATSAN committees and hygiene education volunteers. Hand-dug well contractors, hand-pump mechanics and pump attendants are trained by area mechanics at the district and community levels.

Consultancy contracts are awarded for such specialist activities as training materials development, hydro-geological investigation, and feasibility studies.

(a) Material Development

Information and training materials are needed by all those involved in the CWSP, including decision makers, project personnel (e.g. CWSD, DWSTs and SBDUs), beneficiaries (e.g. communities, schools and clinics), service providers (e.g. POs, hand-dug well contractors, hand-pump mechanics and latrine artisans). Various types of training materials, including promotional materials or brochures, handbooks, visual aids, exercise kits, trainers' guides and other resource materials, are developed either by private specialists on contract or in-house by CWSD officials. Once developed, training materials are revised as and when field experience or periodic review shows such revisions to be necessary.

(b) Hydro-geological Investigations

Hydro-geological investigation or well siting is undertaken prior to constructing hand-dug wells or drilling boreholes. Well siting and supervision contracts are usually awarded together in lots covering several districts in a region for several communities.

(c) Well Siting

Activities involved in well siting and for which costs are determined include the following:

- (i) Carrying out desk study on each community,
- (ii) Making reconnaissance survey using appropriate methods to delineate possible locations,
- (iii) Discussing possible locations with beneficiary communities,
- (iv) Carrying out detailed geophysical investigations that can lead to selecting final sites for borehole drilling or hand-dug well construction,
- (v) Selecting two sites in each community and identifying them as first and second choices, and
- (vi) Preparing and submitting a report on the survey.

(d) Supervision for borehole drilling

Activities involved in supervision for borehole drilling for which costs are determined include the following:

- (i) Showing selected sites in each community to the drilling contractor,
- (ii) Administering the drilling contract to ensure the contractor's compliance to specifications and condition of the contract,

Determining the final depth of drilling at each site;

Drawing up geological sections of the borehole;

- (v) Designing the borehole and supervising its construction;
- (vi) Supervising pumping tests and analysing the results;
- (vii) Checking and certifying all daily drilling reports prepared and invoices raised by the contractor; and
- (viii) Preparing and submitting reports to the Zonal Geologist.

Where a hydro-geological investigation contract includes the supervision of rehabilitation of existing boreholes, costed activities would include:

- (i) Assessing the nature of rehabilitation works to be carried out on each borehole;
- (ii) Discussing and approving the contractor's rehabilitation plan;
- (iii) Certifying the contractor's daily reports and monthly invoices on rehabilitation; and
- (iv) Preparing and submitting reports on rehabilitation works to the Zonal Geologist.

(e) Consultancy Services

Cost of providing consultancy services is determined by the number of man-days that each consultant spends on the assignment, their travelling and other allowances, and cost of materials.

2.4.1 Operational Activities at the Community Level

(a) Activities/Responsibilities

The Communities participate in the planning, design, construction, operation and maintenance of improved water supply and sanitation systems in their communities. The acquisition of improved water facilities starts with the application for financial assistance to provide specific facilities filed by a community through its district. During the planning, construction and follow-up period the community participates in hygiene education and training and is also responsible for improving environmental sanitation. The communities are responsible for the operation and maintenance of water supplies, including revenue collection for use of specific facilities. Depending on the size of the community and complexity of technology, the operations and maintenance and service of major equipment may be contracted to private companies.

(b) Service Delivery Organisations

Under service delivery we have:

(i) *WATSAN Committees*

These are specially formed groups, or an existing community organization, made responsible for managing the respective community inputs into the program, and the long term operation and maintenance of the improved facilities.

Operations and maintenance are the responsibilities of the individual communities with day to day management provided by their WATSAN Committees. The WATSAN Committees supervise the use of pumps, collect revenues for recurrent costs, maintain records and books of accounts, and make repairs themselves or hire the service of private mechanics and other artisans. Currently equipment and spare parts are purchased by these from local retailers.

(ii) *Partner Organisation (PO)*

They are (2-3 person) teams contracted to work in 10 communities at any one time, strengthening community organizational capacity, leading the planning and design process, implementing hygiene education and establishing community operation and maintenance capacity.

Artisans

Artisans are trained under the CWSP packaged contracts to build five or more units or facilities at a time in a community. 50% of the cost of artisans are paid by the District Assemblies (reimbursable by the CWSP), while the client provides the remainder.

2.4.2 Facilities Provided at the Community Level

Improved water systems and sanitation facilities are provided at the community level.

(a) Water Supply

These include Boreholes, Hand Dug Wells, Pipe Systems etc. These facilities are provided for communities, schools and health clinics that are prepared to pay part of the capital cost and all of the normal operations, maintenance and repair costs of their systems.

(b) Sanitation

Sanitation facilities such as KVIP and VIP latrines are provided for households, schools and public places. This is the responsibility of the DWST with assistance from the RWST.

2.4.3 Operational Activities at the District Level

The District Water and Sanitation Teams (DWSTs), are responsible for the activities in the districts.

These are permanent 3-member teams established and employed by the District Assemblies to manage water supply and sanitation activities in the district. They support, supervise and monitor the service delivery agencies, and provide day to day contract management assistance to the District Assemblies or the CWSD. The DWST manages the sanitation and schools elements of the program, providing training and back up to the latrine builders, and logistics support for upgrading school water supply and sanitation facilities. The districts pre-finance and give out contracts for household latrines. The funding agencies then reimburse them every three months for 50% of eligible cost and the other 50% is paid by the beneficiaries. The DWSTs pre-qualify local artisans annually and arrange on-the-job training for them. Payment for household latrines are based on a lump sum, set by RWSTs each year in consultation with experienced latrine artisans. Public facilities are contracted according to local tendering procedures for small works and are limited to pre-qualified artisans and small contractors.

Activities at the Regional Level

(a) Regional Water and Sanitation Team (RWST)

The Regional Water and Sanitation Team assist the DAs in forming the DWSTs, train them, and backstop their activities. They are responsible for the institutional elements of the program and the more complex construction contracts for the borehole and pipe systems. They coordinate all training activities in the region, some of which they undertake directly, and with outside support where necessary, or indirectly, through the DWSTs and SBDUs. They also do monitoring, evaluation and program development. Specialist services are generally provided through international firms or local consultants who undertake periodic visits to advice on key issues affecting project implementation.

Semi annual reports covering all project components are prepared by each participating RWST. These reports include:

- (i) progress against implementation and disbursement schedules and key performance indicators; and
- (ii) work programs and cost estimates for the coming year

(b) Small Business Development Units (SBDUs)

SBDUs are private consulting firms or NGOs identified to provide specific services under the CWSP. They operate at the regional level. The territorial area of operation of an SBDU may cover a few contiguous districts up to several regions according to its administrative capacity.

The major responsibilities of SBDUs under the CWSP are:

- (i) To scout for and select Partner Organisations (POs), and WATSAN Committee members in partnership with District Assemblies and RWSTs;
- (ii) Train and strengthen POs;
- (iii) To provide resource personnel for workshops organised by RWSTs at the regional level for WATSAN Committee members; and
- (iv) To develop and provide training materials for POs and WATSAN Committees.

Examples of SBDUs are:

- COMWASSAN
- GAS Associates
- African Centre for Human Development etc.

receive some training from the CWSD but they may also on their own enter into external contracts for further assistance.

2.4.5 Operational Activities at the Head Office

The overall program management, including administration, planning and budgeting are carried out at the Head Office. The Head Office coordinates work in the water sector with other government institutions and ministries. The Head Office provides training materials such as training guides, handbooks, manuals, flip charts, etc. The Head Office also carries out general research and development including continuous development of detailed project methodology, and is responsible for the overall monitoring and evaluation of the CWSP.

Each region estimates its funding requirements according to existing implementing capacity and plans. The head office collates the individual budgets from the regions. Local competitive bidding for pipelines, boreholes and storage tanks for piped systems, electrical/ mechanical equipment for piped systems, and hand pumps are contracted at head office. Contracts are also signed at head office for consultants' services, and for the procurement of office equipment. The head office acts as a clearing house for collating experience gathered in the field and organizes the processing of this into improvement in strategies.

2.5 Other Key Players in the CWSP

The following are the other key players in the Community Water and Sanitation Programme (CWSP).

- (a) Artisans
- (b) Private Suppliers
- (c) Area Mechanics
- (d) Care Takers
- (e) Contractors/consultants

2.5.1 Artisans

There are about 4 - 5 active Artisans in a district. The Artisans construct the sanitation facilities in the communities. The Artisans are trained by the RWSTs and POs. Usually, the heads and leaders of the communities are approached by the DWST to elect nominees to be trained to become Artisans.

Through pre-qualification, tests and interviews, about 20 individuals are selected for training by the RWST. The Artisans are expected to market their services in the communities. After their training they are authorised to seek construction applications from interested households.

Private suppliers are usually small storeowners in the districts. Most of these stores sell hardware items especially spare parts for hand pumps. Private suppliers also include storeowners selected by other Contractors of CWSP to stock and distribute the spare-parts for the hand pumps etc. For each district, the contractors train the storeowners to identify the names of parts they deal in. The Storeowners make a profit, which is usually a very small margin, on their sales.

Other inputs for Civil Works (such as cement, iron rods, timber etc.) are obtained in the open market from within 100 miles in most districts and communities.

2.5.3 Area Mechanics

Area mechanics are individuals trained to repair major faults in the pumps installed under the CWSP. They are the principal customers of the spare parts outlets in the districts. In the CIDA funded project areas, the Area Mechanics are trained under Community Water Program (COWAP). Specialist staff sent from a major supplier of spare parts for hand pumps (e.g. Aquagro with its Head office in Accra) undertake training in the IDA project area. Each Area Mechanic is equipped with a set of repair and maintenance manual.

The area mechanics are expected to charge the communities for their services but lack of mobility has put a constraint on their operations and most of them are not very active. They do not make any profit on the parts they supply to the communities.

2.5.4 Caretakers

These are trained to carry out minor repairs on hand pumps and they are usually from the communities where the pumps are installed. There are usually two caretakers per community. The caretakers and the Area Mechanics are the main customers of the stores set up or selected to distribute spare parts in the districts.

2.5.5 Contractors

(a) Hand Pumps

The principal supplier of spare parts for hand pumps under the IDA funded CWSP is Aquagro Limited which operates a joint venture agreement with GRATIS. Other Companies also involved in the supply of spare parts for hand pumps are:

- Ghanira Limited
- Water and Energy Systems Limited.
- Agroverts Limited

from Ghanira and Aquagro Limited (involved more in the CIDA project areas), none of the above companies is active in the districts at the community level. Contracts for the supply of spare parts for hand pumps usually also include the training of area mechanics and the opening of at least two store outlets in each district for the distribution of spare parts.

Aquagro installs hand pumps for bore holes and hand-dug wells under the CWSP using specialist staff from its head office in Accra. This involves mobilising and demobilising from region to region and between districts. Under CIDA funded project areas, the Intermediate Technology Transfer Unit (ITTU) undertakes the installations.

(b) Bore Holes

The main contractors in IDA project areas for the construction of boreholes include Geomechanik Bohrgesellschaft, China Geo-Engineering Corporation (GEC), Geocore and Environmental Services (Ghana) Limited China International Water and Electric Corporation, and Geo-Engineering Surveying Institute of China.

The Geophysical studies are handled by two zonal Hydrogeologists. The zonal Hydrogeologist for the southern zone is based in Kumasi and that for the northern zone

is in Tamale. The zonal Hydrogeologists contract the services of private contractors to conduct siting and supervision. The private contractors involved in the northern zone are Unihydro Limited and Terrahydro Associates limited and in the southern zone is Comwassan Limited.

Contracts are entered into through competitive bidding. All borehole contracts are awarded at the CWSD head office in Accra.

- (i) In the CIDA funded project areas, redevelopment of boreholes is also undertaken. This involves the cleaning of wells from a



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stock of 1,750 existing boreholes which were drilled in the 1970s and determining the yield and defects for replacement. The siting and supervision of borehole drilling was undertaken by the RWST for the 1997/98 season, but for the 1998/ 99 season this has been awarded to Unihydro Limited.

- (ii) The EU 4th Micro Project has awarded borehole construction contracts to Geomechanik. The siting and supervision are awarded on contract to an Engineering Consultancy-Burgeap Engineering Consultants.



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Hand Dug Well Contractors

There are about two (2) or three (3) active hand dug well contractors in each District. These are usually trained by SBDUs.

The HDW Contractors are smaller private businesses who bid for Contracts from the RWST or DWST. Upon completion of a project, the DWST and the RWST inspects and signs a certificate of Completion before payment is effected to the Contractor on behalf of the beneficiary community.

3.1 Introduction

This section presents the main activities of the CWSP for which costs have been accumulated, the survey methods and scope, survey findings and analysis of the data sheets.

3.1.1 Main Activities of the CWSP

The activities undertaken under CWSP have been discussed in section 2.1 of this report. We briefly outline them here as follows:

(a) Improved Water Systems

- (i) Borehole (126mm and 152mm type),
- (ii) Hand Dug Wells (fitted with hand pump/rope and bucket type),
- (iii) Stream and Spring Gravity System/Rain Water Harvesting (Roof Catchment System),
- (iv) Supply and procurement of Equipment, and
- (v) Village Level Operating Maintenance (VLOM) conversion system.

(b) Sanitation

- (i) Institutional Latrines (KVIP) - 2 to 12 or more seater types
- (ii) Household Latrines (VIP)
 - Mozambique Slab Unlined type
 - Mozambique Slab Lined type
 - Rectangular type (unlined)
 - Sandplat type
 - Water Tight Pit (single pit) type

(c) Hygiene and Sanitation Education

(d) Training (Partner Organisations)

- (i) WatSan Committees
- (ii) Women Groups
- (iii) Hygiene Education Volunteers
- (iv) Latrine Artisans
- (v) Hand-dug Well Contractors
- (vi) Hand Pump Repairers/ Area Mechanics

uncy

- (i) Material Development
- (ii) Hydrological Investigation
- (iii) Well/Borehole siting and supervision
- (iv) Short term consultancy

3.2 Scope of Field Survey and Methods

3.2.1 Scope of Survey

CWSP projects are funded by various organisations e.g. CIDA, IDA, DANIDA JICA and UNDP. The study focused on IDA funded projects and compared cost of these with projects of the other funding agencies.

We visited at least one community in each region. The communities visited were selected based on the number of projects undertaken and, proximity to the regional capitals.

Thus the survey covered the following areas:

- (a) IDA funded projects in the following regions:
 - Ashanti
 - Brong Ahafo
 - Northern
 - Western
- (b) CIDA funded project in Upper East Region,
- (c) DANIDA funded projects in the Volta Region,
- (d) NGO type projects including WVI/Water Aid and UNDP in the Eastern Region, and
- (e) EU 4th Micro Projects in the Ashanti and Eastern Regions.

We also interviewed key staff and obtained data from the Head Office of the above funding agencies.

3.2.2 Cost Items

The cost activities and units for which cost data were obtained included the following:

- (a) Bore holes
- (b) Hand-dug wells
- (c) Institutional Latrine (KVIP)
- (d) Household Latrine (VIP)
- (e) Operations
- (f) Health and Sanitation Education undertaken by POs
- (g) Short-term Consultancy Services undertaken by SBDUs

communities visited in the IDA regions had stream and spring water harvesting systems. Cost data of these are therefore not available for the survey. We have also not obtained any cost data for borehole distribution systems.

3.2.3 Survey Methods

The following instruments were used for the survey:

(a) Documents Review

We reviewed the documents listed under section 1.5.2 at the head office to gain understanding of the activities of the CWSP and the costing of projects including the award of contracts. This formed the basis for designing the data sheets used in the survey.

(b) Questionnaires/Data Sheets

Questionnaires/Data Sheets were prepared and discussed with PPT members and pre-tested at a workshop with regional accountants from the selected project areas. The data sheets were designed to gather cost data on the projects undertaken in the various regions and reflect the bill of quantities for contracts and chart of accounts of the CWSP. (A sample questionnaire is attached as Appendix 1).

(c) Interviews

We visited the regions to follow up on the questionnaires through interviews. The visits and interviews afforded us the opportunity to learn at first hand about the activities undertaken in the project areas and also to interact with other stakeholders (e.g. POs, SBDUs, Artisans and Contractors).

3.3 Data Sheets

The unit cost and the costs of the sub components of the activities currently undertaken in the Regions under CWSP-1 are presented in the Appendices 2 – 8 attached.

In estimating the unit cost, we used current prices obtained from the RWST. These prices were verified in a sample of districts or communities in each region through personnel interviews, project site visits and working closely with the DWSTs and the district assemblies. Current costs reflect costs in 1997 or in 1998. All operational costs, however, are costs incurred in the 1997 financial year.

All costs quoted in Deutsche Marks or in United States Dollars have been translated into cedis at the rate of €1,200:1DM and €2,400:1US\$ respectively.

Appendix 2 presents the bill of quantities of contracts awarded for the construction of boreholes in the Upper East, Volta, Eastern, Ashanti, Brong Ahafo, Western and Northern Regions to the funded projects indicated. The contractors are China Geo Engineering Corporation, Geomechanik Bohrgesellschaft, Geocore and Environmental Services Limited and China International Water and Electric Corporation. Rehabilitation costs do not form part of this survey.

The main cost drivers in borehole construction include the depth of drilling before hitting the water table, depth of drilling below water table and the nature and structure of geology of the drilling site and mobilisation which depends on distance covered moving contractors' equipment to the project area. Another important driver is the number of wells per contract. Costs thus include cost of mobilising and demobilising equipment to and from regional capitals to the district capitals, moving between borehole sites, drilling, construction, borehole development, borehole concrete pad, pump testing and water quality analysis.

A borehole is usually drilled by experienced contractors. Each borehole is equipped with a UPVC screen and casing and has a gravel filter around the screen. Boreholes are usually sealed and furnished with a concrete well pad.

Most boreholes are drilled to 126mm or 152mm diameter and are 400-500m deep. All the bills of quantities reviewed are for 126mm type boreholes. The design of a borehole including the depth of the well and choice of technology affect the unit cost. The type of pump installed also depends on the depth of the well.

The success rate of hitting the water table determines the depth of a borehole. The success rate varies from region to region. The results of test drilling by the Northern Regional Rural Integrated Program (NORRIP) indicated that the average drilling success rate for Northern regional is 26%. In the CIDA funded project area in the upper East, the success rate is about 71%. IDA funded projects in the other regions have a success rate of about 70%.

Borehole contracts are quoted with a foreign exchange component. The foreign exchange component is usually between 80- 85% of the total cost. The contracts reviewed showed that the bills of quantities are quoted in foreign currency. We noted that about 20% of the contract price is quoted and paid for in local currency. Some activities/operations, which could be quoted in local currency, tend to cost more when quoted in foreign currency. However, the use of the all-foreign currency approach is justified due to delays in the award of contracts. Avoiding delays in awarding contracts will make this practice unnecessary.

cost per borehole is given in Table 1 below.

Average Cost Per Borehole

Description	Regions									
	UER (CIDA)	VR (DANIDA)	ER (WA)	AR (IDA)	WR (IDA)	BA (IDA)	NR (IDA)	AR (EU)	BA (EU)	WR (EU)
	€'m	€'m	€'m	€'m	€'m	€'m	€'m	€'m	€'m	€'m
Average Unit Cost (No Hand Pump)	14.97	7.72	13.37	16.11	13.07	13.87	16.89	7.94	22.74	18.90
Average Unit Cost (Hand Pump)	-	-	15.90	-	-	-	-	12.44	27.84	24.00

3.3.2 Hand Dug Wells

The cost details of the sub components of hand dug wells are presented in Appendix 3 attached. Unit costs have been provided for the four (4) IDA regions and for Volta (DANIDA), Upper East (CIDA), and Eastern (UNDP, JICA, Water Aid) regions.

Factors that are taken into consideration in determining the cost of a hand-dug well include the depth of digging divided into strata of 4 meters each before hitting the water table and the rock formation of the area. The cost of well lining is determined by depth (also divided into strata of 4 meters each). Cost of head works, well testing and disinfecting are charged per well.

Hand-dug wells (HDW) become costly where there are rocky formations and when there is a low success rate. Rocky formations require the use of compressors, explosives and other breakers to get through to the water table. Equipment for blasting are obtained or hired from the RWST in some regions or the respective Roads and Highways Department.

The Average depth of a hand-dug well is between 10-15m in the IDA funded project areas. Wells of greater depth are also possible. In the CIDA funded project area in the Upper East Region the deepest wells are about 17m.

The inputs required for the construction of a well include explosives, cement, aggregates, iron rods etc. and lining equipment. The market prices of these inputs therefore affect the unit cost of a HDW.

The summary in the table below shows the average cost of a Hand-dug-well under the different funding bodies in the regions.

Table 2 - Average Cost of Hand Dug Wells

Region	UER	BA	NR	AR	WR	VR	ER	UWR	WR	BA
Funding Agency	CIDA	IDA	IDA	IDA	IDA	DANIDA	ADRA	WA	EU	EU
Unit Cost (€'m)	3.82	5.30	8.34	4.14	4.50	3.35	4.49	5.07	3.50	4.26

These exclude the cost of the hand pump.

hand dug well provided by ADRA in the Eastern Region was 36 million. The break down was given as follows:

	¢
1. Labour for digging, 6 persons per day @ ¢10,000/person/day for 14 days	840,000
2. Well Lining	1,300,000
3. Well Cover	80,000
4. Cost of 2 trips of aggregate	160,000
5. Cost of 2 trips of rough sand	170,000
6. Cost of blasting	873,000
7. Well testing and disinfecting	800,000
8. Others	263,000
Total	4,486,000

The cost of one hand dug well provided by Water Aid in the Upper West Region was also estimated at ¢5.07 million. The cost details were not provided to us.

The cost of a hand dug well provided under EU Micro Projects in Western Region was also estimated at ¢3.5 million, and in the Brong Ahafo Region at ¢4.26. We could not obtain the details of the EU estimates for Western Region. The breakdown of the estimate for Brong Ahafo was given as follows:

	¢
1. Materials (EDF)	2,767,000
2. Materials (Community/ DA)	354,000
3. Skilled & Unskilled Labour	936,300
4. Transport Cost	138,350
5. Administration Cost	69,175
Total	4,264,825

3.3.3 Hand Pumps

Costs of hand pumps used by some of the funding agencies are presented in table 3 below:

Table 3 - Cost of Hand Pump

	Price/Price Range
Water Aid funded project in Upper West Region	¢1,800,000
IDA funded projects : <i>Ghana Indian Modified Mark II</i>	¢4,800,000 (\$2,000)
<i>Afridev</i>	¢1,200,000 (\$500)
<i>Vergnet</i>	¢3,840 (\$1,600)
<i>Nira AF-85</i>	¢1,920 (\$800)
Water Aid funded projects in Eastern Region (Boreholes)	¢2,526,000/DM2,105
ADRA funded projects in Eastern Region	¢2,000,000
EU Third Micro Projects (Boreholes)	¢4,500,000 - ¢5,100,000
EU Third Micro Projects (Hand Dug Wells)	¢1,300,000 - ¢1,800,000

and Pumps for boreholes provided by EU includes cost of

3.3.4 Household Latrines (VIP)

Household latrines are constructed by latrine Artisans. Beneficiary households are expected to contribute to the cost of the facility. Their contributions usually include pit digging and provision of sand, stone and soil bricks.

The District Assemblies finance the construction of Household Latrines and are reimbursed by the CWSP. The Regional CWSD also contributes towards the cost of the facility. The cost details and unit cost of a household latrine (VIP) for the various regions and project areas are provided in Appendix 4.

The Unit Cost of Household Latrines vary with the type of latrine. The Rectangular unlined and the Mozambique types are most popular among the IDA communities.

The unit cost ranges from about ₵158,400 for the sandplat type in the Volta Region to about ₵653,750 for the watertight pit type also in the Volta Region. The table below shows the average unit costs of VIP for the different funding agencies in the regions mentioned.

Table 4 - Average Unit Cost Across Funding Agencies

Type of VIP	Funding Agency	Region	Unit Cost (₵)
Unlined Mozambique Slab	DANIDA	Volta	198,300
Lined Mozambique Slab	DANIDA	Volta	466,150
Water Tight Pit	DANIDA	Volta	653,750
Sand Plat	DANIDA	Volta	158,400
Rectangular Unlined	IDA	Western	288,250
Rectangular Lined	IDA	Northern	541,737
Rectangular Unlined	IDA	Ashanti	297,950
Rectangular Unlined	IDA	Brong Ahafo	320,750
Rectangular Single Pit	DANIDA	Volta	246,050
Rectangular Lined	JICA./UNDP	Eastern	578,000
Single Pit	WVI	Afram Plains	271,000

The unit cost generally varies depending on the type, quality of finish and whether the facility is lined or unlined. Cheaper options include the use of thatch roofing and the erection of a superstructure that is neither plastered nor painted.

3.3.5 Institutional Latrines (KVIP)

The cost of providing institutional latrines are determined by the cost of material and labour used in construction, and the contractor's margin.

The 4-seater KVIP Latrine is popular among the Communities in the IDA funded project areas. The cost of the sub components and unit cost of various designs of the KVIP is provided in Appendix 5.

The table below shows the variation in unit cost for the different funding agencies in their respective regions of operation.

Table 5 - Unit Cost Among Funding Agencies

<i>KVIP Type</i>	<i>Funding Agency</i>	<i>Region</i>	<i>Unit Cost (€'m)</i>
4-Seater	EU	Upper West	5.26
4-Seater	EU	Ashanti	5.26
4-Seater	EU	Brong Ahafo	5.51
4-Seater	IDA	Brong Ahafo	6.30
4-Seater	IDA	Northern	6.37
4-Seater	IDA	Ashanti	4.27
4-Seater	IDA	Western	6.28
6-Seater	EU	Upper West	7.75
12-Seater	EU	Ashanti	13.33
12-Seater	EU	Brong Ahafo	17.21
16-Seater (Vault Chamber)	EU	Brong Ahafo	14.35

The KVIPs are usually partitioned and lined with 6" sandcrete blocks. They may also be fitted with vent pipes with full screen. The superstructure is a brick wall roofed with corrugated roofing sheets and hardwood timber. The partitions are plastered to a smooth finish. The wall is painted with oil paint to about 2' above ground and with emulsion paint to roof level. They are fitted with doors and locks.

EU 4th Micro Projects

The EU 4th Micro Project constructs up to the 20 seater type for schools and other institutions. Their projects are usually packaged with Urinals. The vault Chamber type is common among EU Latrine projects particularly for the larger seater types.

As part of the cost recovery strategy and to facilitate the Ownership and Management of these facilities by the communities, a user fee of about €20 per visit is charged.

3.3.6 Consultancy - Small Business Development Unit (SBDU)

The cost build-up of SBDUs in the regions is shown in Appendix 6. The cost drivers are the number of man-days per specialist staff or educational activities in the regions. Daily rates are provided for the various trainers, and consultants in the Volta and Ashanti Regions. In the Western Region, the price per trainer/consultant or other participants are quoted on a monthly basis, and in the Brong Ahafo and Northern Regions as per the contract man-days applicable.

We have translated these and obtained daily rates in all the regions to ensure uniform comparison. This is further explained in section 3.4.5.

Partnerships (POs)

The cost build-up of partner organisation (PO) services is shown in Appendix 8.

The unit costs (i.e. costs per community) are basically the same for the IDA funded Projects. The cost-drivers here are the number of man/days spent by the specialist staff for training activities in the communities.

The following table shows the cost summary, which includes the average cost of partner organisation services and the cost per community.

Table 6 - Average Cost of PO Services

Region	BA	NRE	ARE	WR	UER	ER
Funding Agency	IDA	IDA	IDA	IDA	CIDA	JICA
Average Cost Per Community (€'m)	1.6	1.83	1.62	1.62	1.80	1.76

3.3.8 Operational Costs

The regional operational costs (1997 financial year) are attached as Appendix 8.

Table 7 - Summary of Regional Operational Cost (1997)

Description	WR (IDA)	AR (IDA)	BA (IDA)	NR (IDA)	VR (DANIDA)	UER (CIDA)	ER (JICA)
	€'000	€'000	€'000	€'000	€'000	€'000	€'000
Staff Salary & Allowances	80,328.6	251,168.7	98,198.8	103,283.3	206,948.6	98,782.1	110,368.9
Furniture/Equipment/ Vehicles	22,151.4	5,440.0	46,629.1	18,799.6	159,588.4	-	8,470.8
Travelling : Local	15,458.0	14,281.2	5,118.2	1,253.2	237,547.5	4,318.2	2,162.6
Travelling : Foreign	14,908.7	2,165.3	666.0	-	-	-	-
Utilities	-	8,326.3	5,525.5	9,381.5	32,107.9	585.5	4,018.7
Repairs & Maintenance	52845.0	122,350.4	24,446.5	74,859.1	114,802.1	126,794.7	30,541.1
Other Overheads	18,308.3	73,649.8	33,408.5	50,249.6	50,216.3	28,589.1	19,278.6
TOTAL	205,000	462,478	212,925	258,071	1,418,701	271,210	210,992

3.3.9 Other Market Data

We obtained cost data on the open market for some of the items used in the construction of VIPs and KVIPs and have used these in determining their standard prices

Market data includes information obtained from artisans in the communities that we visited.

3.4 Data Analysis

The unit costs of the various CWSP facilities comprise direct costs of materials and labour incurred in constructing the facilities. We have not allocated the operational costs of the regions to the projects undertaken.

Table 8 below shows the summary of the sub components of the stated number of boreholes for the regions as per Appendix 2.

Table 8 - Unit Cost of Borehole

Description	UER (CIDA)	VR (DANIDA)	ER (Water Aid)	AR (IDA)	WR (IDA)	WR (EU)	NR (IDA)	BA (IDA)	BA (EU)	AR (EU)
	€'000	€'000	€'000	€'000	€'000	€'000	€'000	€'000	€'000	€'000
Mobilisation	216,240	480	14,904	69,753	72,524	4,800	34,016	182,286	4,800	189
Moving Between Sites	4,800	480	7,032	24,655	33,900	-	111,540	72,014	-	-
Drilling	189,216	19,320	56,874	362,365	220,376	6,860	422,912	382,576	10,080	3,780
Construction	183,254	18,216	21,685	178,934	284,243	3,194	164,396	337,793	3,818	1,689
Borehole Development	44,376	4,560	5,942	29,614	31,531	45	34,949	29,752	45	45
Pump Testing	97,848	7,800	11,146	35,084	79,420	1,800	21,606	125,238	1,800	940
Water Quality Analysis	19,440	3,000	5,766	23,778	11,028	700	23,758	23,630	700	450
Abandonment of Test Hole	12,000	-	-	86	2,451	-	7,346	9,002	-	-
Borehole Capping/Bail Plug	7,776	480	-	2,685	14,458	-	1,193	8,270	-	-
Borehole Concrete Pad	33,696	22,800	10,380	78,792	34,310	1,500	22,983	28,817	1,500	850
Total Cost Without Hand Pump	808,646	77,136	133,729	805,746	784,240	18,899	844,698	1,456,491	22,743	7,943
Hand Pump	-	-	25,260	-	-	5,100	-	-	5,100	4,500
Total Cost With Hand Pump	-	-	158,989	-	-	23,999	-	-	27,843	12,443
Number of Boreholes	54	10	10	50	60	1	50	105	1	1
Unit Cost of BH without Hand Pump	14,975	7,714	13,373	16,115	13,071	18,899	16,894	13,871	22,743	7,942
Unit Cost of BH with Hand Pump	-	-	15,899	-	-	23,999	-	-	27,843	12,443

We have also calculated and shown in table 9 below an average unit price for each of the individual cost items of the borehole contracts/bill of quantities.

Table 9 - Average Cost of Borehole

Description	UER (CIDA)	VR (DANIDA)	ER (Water Aid)	AR (IDA)	WR (IDA)	WR (EU)	NR (IDA)	BA (IDA)	BA (EU)	AR (EU)
	€'000	€'000	€'000	€'000	€'000	€'000	€'000	€'000	€'000	€'000
Mobilisation	4,004	48	1,490	1,395	1,209	4,800	680	1,736	4,800	189
Moving Between Sites	89	48	703	493	565	-	2,231	685	-	-
Drilling	3,504	1,932	5,687	7,247	3,673	6,860	8,458	3,644	10,080	3,780
Construction	3,394	1,822	2,169	35,79	4,737	3,194	3,280	3,217	3,818	1,689
Borehole Development	822	456	594	592	526	45	699	283	45	45
Pump Testing	1,812	780	1,115	702	1,324	1,800	432	1,193	1,800	940
Water Quality Analysis	360	300	577	476	184	700	475	225	700	450
Abandonment of Test Hole	222	-	-	2	41	-	147	86	-	-
Borehole Capping/Bail Plug	144	48	-	54	241	-	24	79	-	-
Borehole Concrete Pad	624	2,280	1,038	1,576	572	1,500	460	2,744	1,500	850
Hand Pump	-	-	2,526	-	-	5,100	-	-	5,100	4,500
Total	14,975	7,714	15,899	16,116	13,072	23,999	16,886	13,892	27,843	12,443

Mobilisation includes mobilisation to the regional capitals, demobilisation between project locations in the regions or districts, and dismantling equipment at each site. High mobilisation costs may be due to the distance of the project regions and/or districts from the equipment site or the head office of the relevant contractor. It also depends on the weight/number of drilling equipment and materials moved.

ve mobilisation cost per borehole varies between €48,000 on Volta region to a high of €4.8 million on EU projects in the Brong Ahafo and Western regions. Reasons given for higher mobilisation costs do not explain the rather low mobilisation cost for the Northern IDA projects unless the contractors' equipment site/head office is located in the region.

On the IDA projects, the Northern Region reports a rather high unit cost of moving between sites and drilling. This may be due to the region's lower success rate for borehole projects, currently at about 21%. Though transportation costs appear higher in the North than in the other regions, the cost of moving between sites quoted is otherwise not justified. The size of the region and the dispersion of the drilling sites are also important factors

Drilling costs are noted to be uncharacteristically high in Ashanti (IDA), Northern (IDA) and Brong Ahafo (EU). This may be due to the nature of rock formation in the area.

The unit cost of pump testing for the EU projects in Western and Brong Ahafo regions and for the CIDA project area in the Upper East region is also high comparatively.

Overall, the unit costs of one Borehole without hand pump for the EU projects in the Western and Brong Ahafo regions are higher driven thus by the mobilisation, drilling, pump testing and water quality analysis costs.

The average cost of one IDA funded borehole in Ashanti is about €3.7 million higher than the cost of one constructed under EU projects in the same region. We note however, that mobilisation costs of the EU borehole in Ashanti are significantly lower. On the other hand, the unit cost of an EU borehole in Western and Brong Ahafo regions is about €5.53 million and €8.87 million higher than the IDA boreholes in the same regions respectively.

The IDA boreholes in Ashanti and the Northern regions have a unit cost of €16.12 million and €16.89 million respectively, while those in the Western and Brong Ahafo regions cost between €13.07 million and €13.87 million respectively.

The differences are accounted for mostly by the higher drilling costs of the Ashanti and Northern regions boreholes compared to the Western and Brong Ahafo drilling costs.

The Upper East (CIDA) and Eastern (Water Aid) boreholes are comparable to the IDA cost range.

However, the cost of a DANIDA borehole appears to be significantly lower.

Table 10 below presents a summary of the individual cost items and the unit cost of a hand dug well for the regions visited.

Table 10 - Unit Cost of Hand Dug Well

Description	WR (IDA)	AR (IDA)	BA (IDA)	NR (IDA)	VR (DANIDA)	UER (CIDA)	ER (JICA)
	€'000	€'000	€'000	€'000	€'000	€'000	€'000
Mobilisation	300	450	300	260	888	525	250
Site Clearing & Excavation	1,360	1,040	815	4,215	277	1,167	1,180
Well Lining	1,780	1,840	1,885	2,916	1,206	1,445	1,900
Head Works	790	610	950	747	92	625	685
Well Testing & Disinfecting	270	200	150	208	470	55	320
Others	-	-	1,200	-	420	-	-
TOTAL	4,500	4,140	5,300	8,346	3,353	3,818	4,335

The average unit cost for an IDA hand dug well in the Northern Region is significantly higher at about €8.35 million. The cost reduces to €3.36 million for a DANIDA hand dug well in the Volta Region.

Mobilisation is comparatively higher on DANIDA projects. Site clearing and excavation is very high for the Northern region IDA project area, costs being driven by the extra charge of excavating through soft and hard rocks of about 5m and 10m respectively, and below water table of about another 4m (see Appendix 3). This reflects the reported low success rate of hand-dug wells and boreholes dug and drilled in the region.

Cost of well lining is also higher for the IDA Northern hand-dug well than the IDA projects in the other regions. The difference is due to the extra depth of about 8m of lining required for wells in the Northern Region.

The unit cost of hand-dug well for the IDA project in Brong Ahafo is also comparatively higher than that for the IDA project in Western and Ashanti. The differences arise from other extra costs incurred as a result of price fluctuations and general variations, as well as the occurrence of dry wells, all totalling about €1.2 million. If the cost of the dry well of €600,000 is excluded from the unit cost of a Hand dug well in the Brong Ahafo region, the unit cost reduces to about €4.7 million, which is comparable to those of Western and Ashanti Regions.

The unit cost of hand-dug well in the DANIDA project area (Volta) is lower due to the very high success rate for wells in that region.

The unit cost of hand-dug well for CIDA project in Upper West Region and UNDP or JICA projects in the Eastern Region do not vary significantly from the those in IDA funded projects in the Western and Ashanti Regions.

nes (VIP)

The summary unit cost of a VIP in the regions is presented in table 11 below.

Table 11 - Unit Cost of Household Latrine (VIP) Regional Comparisons

Funding Agency	IDA				DANIDA				JICA/UNDP	
Region	WR	AR	BA	NR	Volta				Eastern	
Type	RSPU	RSPU	RSPU	RSPU	MSTU	MST-L	RSPU	SP	WTP	RSPL
Costs (€'000)	288	298	321	542	198	466	246	157	654	575

Type Key:

- RSPU - Rectangular Single Pit Unlined
- RSPL - Rectangular Single Pit Lined
- MSTU - Mozambique Slab-Type Unlined
- MSTL - Mozambique Slab-Type Lined
- SP - Sandplat Type
- WTP - Water Tight Pit

The following table presents the prices of the various items used in the construction of VIP latrines. Most of these are also used in the construction of KVIP.

Table 12 - Price Data of Household Latrines (VIP)

	Description	Unit of Measure	Regions					
			WR (IDA)	AR (IDA)	BA (IDA)	NR (IDA)	VR (DANIDA)	ER (JICA/UNDP)
			€	€	€	€	€	€
1.	Cement	Bag	12,500	13,000	13,000	15,000	13,500	12,500
2.	Sand	Headpan/Trip	250	250	250	500	135,000	429
3.	Stone	Headpan/Trip	500	400	500	700	-	75,000
4.	Iron Rods	Length	6,000	10,000	23,000	8,000	8,800	8,000
5.	Binding Wire	Bundle	1,000	2,000	2,000	3,000	3,800	3,636
6.	Sandcrete Blocks (6")	Piece	-	-	-	1,700	-	1,000
8.	Soil Bricks	Piece	100	100	100	200	-	300
9.	Roofing Sheets	Piece	20,000	24,000	20,000	21,000	9,800	10,000
10.	4" PVC Pipes	Piece	18,000	20,000	20,000	20,000	25,000	17,000
11.	Roofing Nails	Lb.	2,000	1,500	1,500	2,500	3,500	2,000
12.	Assorted Nails	Lb.	-	-	-	-	3,500/5,200	-
13.	Nylon Net	Yard	5,000	1,200	2,000	6,000	8,000	-
14.	Hard Wood (2" x 4")	Piece	6,000	5,000	6,000	13,000	-	7,000
15.	Hard Wood (2" x 3")	Piece	3,000	7,000	6,000	7,000	-	11,000
16.	Soft Wood (Wawa Board)	Piece	6,000	5,000	6,000	13,000	-	6,000
17.	Hinges	No.	1,500	1,500	2,000	2,000	-	2,000
18.	Locks	No.	15,000	2,000	4,000	2,000	-	2,000
19.	Solignum	Gal.	-	4,000	4,000	5,000	-	-
20.	Emulsion Paint	Gal.	-	6,000	-	10,700	-	-
21.	Oil Paint	Gal.	-	-	-	27,000	-	-
22.	Turpentine	Gal.	-	-	1,500	4,496	-	-
23.	Lime	Sachet	-	-	-	1,500	-	-
24.	Door Frame		-	-	-	-	-	38,000
25.	Moulding		-	-	-	15,000	-	-
26.	Labour:							
	Slab		12,000	5,000	-	15,000	-	-
	Pit digging		40,000	40,000	60,000	50,000	40,000	-
	Lining and Cover		-	-	-	20,000	-	-
	Super Structure		28,000	15,000	50,000	30,000	25,000	-

The costs of materials required for the construction of a household latrine (VIP) are presented in Appendix 4.

amount of materials are used for VIP projects in the regions.

3.4.4 Institutional Latrines (KVIP)

The unit cost of institutional latrines for the regions is provided in table 13 below. Details are presented in Appendix 5.

Table 13 - Unit Cost of Institutional Latrines (KVIP)

Funding Agency	IDA				EU						
Type	4-Seater				4-Seater	6-Seater	4-Seater	12-Seater	16-Seater(V)	4-Seater	12-Seater
Region	WR	AR	BA	NR	UWR	UWR	BA	BA	BA	AR	AR
Cost (€'000)	6,281	4,269	6,299	6,370	5,258	7,755	5,510	17,211	14,350	5,265	13,331

The quantities of the materials used for the construction of the 4-seater IDA KVIPs differ between the regions though similar type KVIPs are constructed in all the regions. The differences in material costs in the regions are insignificant. However, Ashanti records a significantly lower cost of labour, which results in a lower unit cost for the region.

The unit cost of an IDA 4-seater KVIP in Ashanti is lower by about €1.0 million compared to a similar type EU funded KVIP in Brong Ahafo and Ashanti. However, the unit cost of an IDA 4-seater KVIP in Brong Ahafo is higher than an EU similar type KVIP in the same region.

The current unit costs of items used in the construction of KVIPs are presented in table 14 below.

Table 14 - Unit cost of items used in construction of KVIP

Description	Unit of Measure	IDA (4-Seater KVIP)				EU (4-Seater KVIP)		
		WR	AR	BA	NR	AR	UWR	BA
		€	€	€	€	€	€	€
Cement	Bag	12,500	20,000	11,000	15,000	10,000	12,200	10,000
Sand	Trip/Headpan	120,000	500	70,000	500	35,000	5,000	70,000
Aggregate/Stone	Trip/Headpan	198,000	700	300,000	700	90,000	10,000	90,000
Iron Rods 0.5" diameter	Piece	7,000	10,000	8,000	8,000	6,500	7,500	6,400
Iron Rods 0.25" diameter	Piece	-	-	-	-	3,500	3,000	3,000
Iron Rods 3/8" diameter	Piece	-	-	-	6,500	-	-	4,500
Binding Wires	Piece/Roll	30,000	16,500	10,000	33,000	55,000	80,000	60,000
Sandcrete Blocks	Piece	1,200	790	1,000	1,750	-	-	-
Soil Bricks	Piece	150	150	100	1,000	-	-	-
Roofing Sheets	Piece/Pkt.	27,000	11,000	10,000	10,500	350,000	400,000	350,000
4" PVC Pipes	Piece	22,000	20,000	20,000	20,000	13,500	12,600	11,600
Roofing Nails	Lb./Box	2,300	2,000	3,000	4,000	9,000	8,000	17,000
Wire Nails	Lb./Box	-	3,000	1,500	-	30,000	36,000	28,000
Nylon Net	Yard	6,000	6,000	2,000	6,000	-	-	-
Anchor Strips	Bundle	-	-	-	7,000	-	-	-
Hardwood 2"x 4"	Piece	8,500	7,000	6,500	12,000	6,000	5,500	7,500
Hardwood 2"x 3"	Piece	6,500	6,000	6,000	7,000	4,500	4,500	4,500
Hinges	No.	2,000	2,000	2,000	2,000	1,500	4,000	8,000
Facia Board	No.	-	-	10,000	-	-	-	-
Locks	No.	1,800	2,000	4,000	2,000	-	-	-
Solignum	Gal.	8,000	8,000	4,000	5,000	4,500	3,500	4,000
Emulsion Paint	Gal.	20,000	12,000	12,000	10,500	9,000	9,000	8,500
Oil Paint	Gal.	30,000	28,000	36,000	27,000	25,000	27,000	29,000
Lime	Sachet	-	-	-	4,500	1,000	1,200	-

cost of some of the items listed, which should on the average be similar to the unit costs as those provided under the VIPs or between the funding regions, are notably different. The price recorded in Ashanti Region (IDA) for cement could well have been at the time in 1998 when there were sharp increases in the price of cement. We understand that the EU purchases material inputs in bulk and supplies these directly to its projects. This may account for the lower unit cost of some of the cost items of the EU projects. Clear comparisons are made difficult due to the different quantities and unit of measurement used for similar items used on similar type projects.

3.4.5 Small Business Development Units (SBDUs)

The cost per day for the specialist staff used on SBDU contracts in the regions are presented in table 15 below.

Table 15 - Cost Per/Day Per SBDU Contract

Description	VR (DANIDA)	WR (IDA)	AR (IDA)	BA (IDA)	NR (IDA)
	€	€	€	€	€
Consultants' Remuneration (Per Day)					
Co-ordinator	288,000	-	120,000	120,000	75,000
Team Leader	240,000	-	-	-	-
Team Member	216,000	-	-	-	-
Trainer (Per Day)					
Technical Officer	-	50,000	100,000	100,000	57,500
Health Officer	-	60,000	100,000	100,000	57,000
Mobilisation Officer	-	50,000	-	-	-
DSA Co-ordinator (Per Day)					
Team Leader	96,000	-	90,000	90,000	-
Team Member	96,000	-	-	-	-
Project Director	96,000	-	-	-	300,000
District Support Specialist	-	-	-	-	250,000
O & M Specialist	-	-	-	-	200,000
DSA Trainer (Per Day)					
Technical Officer	-	350,000	75,000	75,000	-
Health Officer	-	250,000	75,000	75,000	-
Mobilisation Officer	-	200,000	-	-	-
Transport (Km)	960	-	-	-	-
Fuel/Repair & Maintenance Per Day	-	210,000	117,000	120,000	-
Office Management					
Regional Secretariat/Day	-	30,000	-	-	50,000
National Secretariat/Day	-	20,000	-	-	60,000
Reports Per Month	-	-	120,000	-	-
Stationery Per Month	120,000	-	120,000	-	-
Travel Allowances (Per Day)					
Regional Team	-	-	-	-	60,000
Head Office	-	-	-	-	75,000

Referring to Appendix 6, some costs have been quoted per contract on a daily, monthly or annual basis. We have determined the cost per man-day by assuming a 20-day month.

Unit costs were quoted in the United States Dollars by the Volta Region DANIDA project. This has also been translated at €2,400: 1US\$.

We note that each of the regions employ a staff of about six (6) different specialists.

skills of these personnel differ between the SBDU contractors providers. This is reflected in the remuneration and daily allowance (DSA) paid to the staff. For example, the costs of the Technical/Health and Mobilisation officers in Western Region compares to the costs of the Project Director, District Support Officer and O & M Specialists respectively in the Northern Regions. None of these rates however compare to any of the rates quoted for Ashanti and Brong Ahafo (IDA) SBDU contracts where the highest rate is only €120,000 per day for the project co-ordinator.

3.4.6 Partner Organisations (POs)

The summary of the costs per community of Partner Organisation service is presented in Table 16 below.

Table 16 - Partner Organisation Cost Per Community

Description	WR (IDA)	AR (IDA)	BA (IDA)	NR (IDA)	UER (CIDA)	ER (JICA)
	€'000	€'000	€'000	€'000	€'000	€'000
Avg. Trainer Remuneration	772.0	772.0	772.0	862.5	655.2	1,080.0
Travelling Expenses	700.0	700.0	700.0	800.0	365.2	576.0
Stationery & Other Overheads	147.2	147.2	147.2	166.3	491.4	165.0
Others	-	-	-	-	300.0	-
TOTAL	1,619.2	1,619.2	1,619.2	1,828.8	1,801.8	1,821.0

We have also shown in table 17 below the cost per day of personnel of the POs of the various regions.

Table 17 - Unit Cost of Specialist Staff of Partner Organisations

Description	WR (IDA)	AR (IDA)	BA (IDA)	NR (IDA)	UER (CIDA)	ER (JICA)
	€	€	€	€	€	€
Trainer Remuneration					163,800	71,053
Manager	20,000	20,000	20,000	20,000	-	-
Co-ordinator	15,500	15,500	15,500	15,500	-	71,053
Hygiene Educator	11,000	11,000	11,000	11,000	-	71,053
Comm. Mobilisation Officer	11,000	11,000	11,000	11,000	-	-
Travelling Expenses (Per Km)	-	-	-	-	-	-
Travelling Expenses (Per Day)	20,000	20,000	20,000	20,000	-	-
Overheads	10%	10%	10%	10%	163,800	14,803
Others						
Meetings	-	-	-	-	-	-
PMC Training	-	-	-	-	-	-
Stationery	-	-	-	-	-	17,763

The daily charge rates for the Specialist PO staff are the same in all the four IDA regions. However, the number of days spent by the Northern Region POs is slightly higher than in the other IDA regions (see Appendix 7). As a result, the PO cost per community in the Northern Region is higher.

The cost per day of PO staff employed on the JICA or UNDP funded projects in Eastern region appears high compared to the IDA regions. The CIDA project - Upper East region PO staff daily rates are also on the high side.

The POs and other trainers that we interviewed in Ashanti, Western and Northern regions all complained about and expressed dissatisfaction with the

received for their services. We gathered that they might not be effort in their work.

The costs of training the various operatives are given as follows:

One Area mechanic (incl. repair tools, accommodation, meals, T&T, etc.)	¢850,000
DWST per district for 4 participants for 5 days (incl. meals, accommodation, T&T, stationary, etc.)	¢890,000
PO per district for 5 participants for 5 days (incl. meals, accommodation, T&T and Stationary	¢990,000
Latrine artisans per district for 10 participants for 10 days (incl. meals, accommodation, training materials, construction kits, etc)	¢3,576,000

3.4.7 Regional Operational Costs

We are unable to intelligently compare operational costs between the regions. For example, while staff salary and allowances for IDA Ashanti and DANIDA Volta regions appear quite high, we note that this is determined based on the organisational structures, number and skill of staff and projects undertaken in their respective regions among others.

The 1998 operational cost for the IDA regions are as shown in Appendix 8. A summary is presented in table 18 below.

Table 18 - Summary of Regional Operational Cost (1998)

	<i>WR</i>	<i>AR</i>	<i>BA</i>	<i>NR</i>
DESCRIPTION	AMOUNT (¢)	AMOUNT (¢)	AMOUNT (¢)	AMOUNT (¢)
1. Salaries & Allowance	80,328,587.00	120,032,729	107,266,071	138,169,886
2. Furniture/Equipment /Vehicles	43,997,700	36,108,492	28,153,390	47,340,065
3. Travelling: Local	100,000	665,700	173,900	165,000
4. Travelling: Foreign	152,000	0	0.00	1051768
5. Utilities	2,485,650	4,449,150	4,305,650.00	3,924,050
6. Repairs & Maintenance	1,533,500	7,255,700	1,911,830	14,499,150
7. Other Overheads	71,950,444.00	90,959,472.00	118,417,624	73,800,192.00
TOTAL	200,547,881	259,471,243	260,228,465	278,950,111

4.1 Boreholes

The standard costs calculations for a borehole is attached as Appendix 9.

We have determined the price per unit for each cost item as a simple mean of the current unit price of the items as quoted by three contractors in the regions.

We note the wide dispersions between the mean and the actual price per unit amounts. The standard deviation for each line item has also been determined.

Working with a confidence interval of 95%, we determined the lower and upper unit price scenarios for each of the line items for constructing boreholes. However, we believe that the lower prices do not serve CWSD any useful purpose for determining standard costs of their projects especially for those cost items with very wide dispersions such as mobilisation, abandonment of test hole etc. The higher cost scenarios also appear to be on the high side. We have thus also determined the cost at a 95% level of confidence (a one-tail test).

This translates as the highest unit price that may be incurred by CWSD for each of the cost items indicated in Appendix 9.

Thus the standard price per unit measure is determined as a range (i.e. the mean up to the highest standard costs as determined in the last column of Appendix 9).

The summaries are shown in table 19 below:

Table 19 - Summary Standard Price Sheets for Borehole

	Mean		95% Confidence Interval		
	Simple Mean	Standard Deviation	Lower Price	Upper Price	One-Tail
	€	€	€	€	€
Mobilisation	1,762,212	1,314,132	236,309	1,500,980	1,400,987
Move Between Sites	21,341	6,915	15,280	27,403	26,444
Drilling	105,948	30,035	79,621	132,275	128,111
Construction	165,092	54,054	117,712	212,472	204,978
Development	190,878	120,576	85,188	296,567	279,851
Pumping Test	544,102	300,336	280,846	807,358	765,721
Water Quality Test	327,986	160,301	187,476	468,497	446,273
Abandonment of Test Hole	462,366	401,397	110,526	814,206	758,558
Capping/Bail Plug	107,003	87,081	30,673	183,333	171,260
Concrete Pad	709,627	188,787	544,148	875,106	848,933

4.2 Hand Dug Wells

The standard unit price for each cost item for constructing a hand dug well is attached as Appendix 10. The cost sheets are designed based on a unit used for each cost item on an activity for each of the regions. The standard prices are based on the current unit prices in the regions and are compared to the prices prevailing in the other regions that formed part of the study.

mobilisation cost including mobilisation to site and to other sites are determined as an arithmetic mean for the 4 IDA regions.

4.2.2 Site Clearing

Western Region was the only IDA region that recorded this at €200,000. Even though we have included this amount for site clearing in the standard cost data sheet, we wish to suggest that the following rates be used when contracting out site clearing.

The average daily charges for farm labour is about €5,000 per day. Thus assuming a one-acre equivalent site to be cleared by 5 persons in 4 days, total site clearing costs for one hand dug well may be put at €100,000.

4.2.3 Setting Out/Excavation

The cost of preparation of site (225m²) has been determined as the modal cost for the four regions plus €10,000. The cost in the Western region is too high and distorts the simple mean.

Cost of excavation represents the simple mean of the costs as determined in the four IDA regions.

The cost per meter for extra for hard rock has been determined as €200,000 for all the regions, even though the simple mean was determined as €175,000. This is closer to the cost in the Northern Region, which recorded the highest.

4.2.4 Well Lining

The costs for well lining are determined as a simple mean for the various cost items.

We note the wide disparities in the cost per base plug/gravel filter and the cost per meter for gravel back filling in the IDA regions. We have therefore included the other regions in determining the standard unit cost for the line items mentioned.

4.2.5 Head Works

The standard price per well for Head works for well cover has been determined as the simple mean for the three (3) IDA regions i.e. Western, Brong Ahafo and Northern Regions. The cost of Ashanti appears skewed. The cost per well for drainage channel or trough is determined as the modal value of the four regions.

4.2.6 Well Testing and Disinfecting

ce per well for testing and cleaning have been determined as a
the relevant regions. Disinfecting is determined as a modal

4.2.7 Others

We have not provided standard prices for general variations. Dry well is estimated at €600,000, which was the cost in the Brong Ahafo region. This may change after our discussions with the CWSD PPT.

Price fluctuation adjustment is pegged at 15%, based on current rate of inflation.

Summary standard cost sheets for a hand dug well is presented in Table 20 below:

Table 20 - Summary of Standard Unit Cost (Hand Dug Well)

Description	Region			
	Ashanti	Western	Brong Ahafo	Northern
	€	€	€	€
Mobilisation	378,000	378,000	378,000	378,000
Site Clearing	200,000	200,000	200,000	200,000
Setting Out/Excavation	733,000	733,000	733,000	733,000
Well Lining	885,000	885,000	885,000	885,000
Head Works	775,000	775,000	775,000	775,000
Well Testing & Disinfecting	225,072	225,072	225,072	225,072
Others	1,000,000	1,000,000	1,000,000	1,000,000
Total	4,196,075	4,196,075	4,196,075	4,196,075

4.3 Household Latrines (VIP)

The standard costs for a Household latrine is provided in Appendix 11 attached.

For each of the regions we have used the market costs of the items as at December 1998 in the regions to determine the standard unit prices. The unit costs are higher in the Northern Region. We have used the modal average in determining cost of pit digging. The labour cost of super structure is determined as a simple mean of costs in the 4 IDA regions.

standard price per unit for the vent pipe, which is only used in Table 21 below, the summary standard cost of a VIP,

Table 21 - Summary of Standard Unit Cost (1-Seater VIP)

Description	Region			
	Ashanti	Western	Brong Ahafo	Northern
Materials & Labour (€)	493,375	477,875	518,050	619,300
Materials, Labour & Others (€)	493,375	477,875	518,050	619,300

4.4 Institutional Latrines (KVIP)

The standard cost per unit of institutional latrines, a standard 4-seater type is provided for the 4 IDA regions and is attached as appendix 12.

The market prices as at December 1998 have been used in building up the standard cost data sheet. We have determined average quantities for some of the cost items and used this as the standard applicable in all the IDA regions and note the exceptions as follows:

- Sand is estimated at 2 trips, of smooth sand and aggregates each.
- The standard cost of stones and iron rods is based on the modal costs.
- The quantity used of binding wire is not determined due to the wide variations between the regions
- The line items under cost of labour except for lining and cover are determined based on the simple mean for the three IDA regions (i.e. Northern, Ashanti and Brong Ahafo) which is also the modal cost. Lining and cover is estimated at €500,000.

Summary standard costs of material inputs and labour for the IDA regions is presented in Table 22 below.

Table 22 - Summary of Standard Unit Cost (4-Seater KVIP)

Description	Region			
	Ashanti	Western	Brong Ahafo	Northern
Materials (€)	5,231,000	5,099,000	5,373,900	6,013,000
Labour (€)	6,958,750	6,793,750	7,137,375	7,936,250

ment Unit (SBDU)

The cost per man days for the specialist staff for SBDU contracts are designated differently in the IDA regions and based on designations of the contractors.

Reviewing the per man-day charges (see Appendix 6) for the IDA and DANIDA regions, one can compare the Co-ordinator under DANIDA (VR) to the Project Director of the IDA in the Northern Region and the Technical Officer under DSA trainer in the Western Region. We have also reviewed some SBDU contracts and note that the SBDU team comprises 6 people including the Group Leader, a Team Leader, a Professional Trainer and three other Trainers as back-up support.

We have therefore used these 6 specialist staff in determining and designing the standard cost data sheet for SBDUs.

The standard charge out rates per man-day for the specialist staff of SBDU contract is shown in Table 23 below:

Table 23 - Standard Charge-Out Rates for SBDU Contract

Description	WR (IDA)	AR (IDA)	BA (IDA)	NR (IDA)
	€	€	€	€
Consultants' Remuneration (Per Day)				
Co-ordinator/Project Director/Head	300,000	300,000	300,000	300,000
Team Leader/District Support Specialist	250,000	250,000	250,000	250,000
1 Other Team Member	200,000	200,000	200,000	200,000
Other Trainers (Per Day)				
Technical Officer	110,000	110,000	110,000	110,000
Health Officer	110,000	110,000	110,000	110,000
Mobilisation Officer	110,000	110,000	110,000	110,000
Other	110,000	110,000	110,000	110,000
DSA (Per Day)				
Co-ordinator	80,000	80,000	80,000	80,000
Team Leader	80,000	80,000	80,000	80,000
1 Other Team Member	80,000	80,000	80,000	80,000
DSA Other Trainers (Per Day)				
Technical Officer	50,000	50,000	50,000	50,000
Health Officer	50,000	50,000	50,000	50,000
Mobilisation Officer	50,000	50,000	50,000	50,000
Other	50,000	50,000	50,000	50,000
Transport				
Fuel/Repair & Maint'ce Per Day)	150,000	150,000	150,000	150,000
Office Management				
Regional Secretariat/Day	40,000	40,000	40,000	40,000
National Secretariat/Day	40,000	40,000	40,000	40,000
Reports Per Month	120,000	120,000	120,000	120,000
Stationery Per Month	120,000	120,000	120,000	120,000

4.5.1 Group Head/Co-ordinator/Project Director:

This is determined as €300,000/day equal to the fees per day for the Project Director in the Northern Region and it is comparable to the fees per day for the Co-ordinator in Volta Region (DANIDA). The fees per day for the Technical Officer (DSA Trainer) in the Western region (IDA) is considered too high.

District Support Specialist

This is determined based on the average cost per day of both the District Support Specialist in the Northern Region and the DSA Trainer (Health Officer) in the Western Region. This compares to the cost of Team Leader in the Volta Region.

4.5.3 Other Team Member

This is determined based on the average cost per day of the O & M Specialist in the Northern Region, the DSA Trainer (Mobilisation Officer) in Western Region and compares favourably to the rate for Team Leader in the Volta Region (DANIDA).

4.5.4 Other Trainers

The standard rates per day for the other trainers are determined as the average cost of Co-ordinator and Trainer (Technical/Health Officers) for Ashanti and Brong Ahafo Regions.

4.5.5 Daily Subsistence Allowance (DSA)

DSA for the Group Head, Team Leader and one Other Team Member is determined based on the average unit cost of DSA Team Leader and DSA Trainer (Technical/Health Officers) in Ashanti and Brong Ahafo Regions.

DSA –Other Trainers is determined based on the modal cost per day of the trainers in the Western region (IDA).

4.5.6 Other Cost Items

The rates per day for transport, and office management is determined based on the average daily cost of fuel/repairs and maintenance for the three IDA regions rounded up to the nearest €10,000 and office management in the Western and Northern Regions.

Stationery and reports costs per month are determined based on the cost per month in Ashanti Region. This is comparable to the cost of stationery per month in the Volta Region.

The standard average cost per PO per community is presented in Table 24 below.

Table 24 - Standard Cost per Partner Organisation

Description	WR (IDA) €	AR (IDA) €	BA (IDA) €	NR (IDA) €
Trainer Remuneration (Per Day)				
Manager	70,000	70,000	70,000	70,000
Co-ordinator	65,000	65,000	65,000	65,000
Hygiene Educator	60,000	60,000	60,000	60,000
Comm. Mobilisation Officer	60,000	60,000	60,000	60,000
Travelling Expenses (Per Day)	40,000	40,000	40,000	40,000
Overheads	10%	10%	10%	10%

4.6.1 Trainer Remuneration

The average cost per day for the Manager, Co-ordinator, Hygiene Educator and Community Mobilisation trainer are €20,000, €15,000, €10,000 and €11,000 respectively.

Our understanding is that POs are usually made up of three person teams. We have therefore proposed that a team of three persons per PO be used at the following standard rates:

Manager/Co-ordinator	€70,000/day
Hygiene Educator	€65,000/day
Community Mobilisation	€60,000/day

These rates are based on our discussions with POs in the regions and are comparable to the rates provided under the UNDP or JICA funded projects in the Eastern Region.

4.6.2 Travelling Expenses

The standard rate proposed is €800 per km at a maximum of 50 km for each visit. This works up to a maximum of €40,000 per visit/day.

4.6.3 Overheads

Overheads are maintained at 10% of Trainers remuneration plus travelling expenses.

4.7 Operational Costs

We are unable to give a standard cost of operation for any item. We however propose that operational costs should be well budgeted for and allocated to the respective project activities/facilities based on their costs, for instance and thus included in the determination of unit cost of the facilities/activities of CWSP-2.

4.8 Summary of Standard Costs for IDA Projects

We have determined in Appendix 13 summary costs of the various projects of IDA, broken down into the Southern and the Northern Sectors. The Southern Sector costs are applicable to relevant IDA projects located in Ashanti, Brong Ahafo and Western Regions. The Northern Sector costs are applicable to relevant IDA projects located in the Northern and Upper East Regions.