

**GOVERNMENT OF INDIA
CENTRAL WATER COMMISSION
HYDROLOGY PROJECT
INTERNATIONAL COMPETITIVE BIDDING
INVITATION FOR BID (IFB)**

IFB No. ICB/CWC/RDD/I-1/2001

1. The Government of India has received a credit from the International Development Association in various currencies towards the cost of **Hydrology Project (CR 2774-IN)**. It is intended that part of the proceeds of this credit will be applied to eligible payments under the contract for design, supply, installation, testing and commissioning of software.
2. **The Director, River Data Directorate, Central Water Commission, New Delhi** on the behalf of President of India now invites sealed bids from eligible bidders for design, supply, installation, testing and commissioning of software for 30 data storage centers.

Bid Security in the currency of bid or US Dollar equivalent to **Indian Rupees 6,00,000/- (Rupees Six Lakhs Only)**.

3. Interested eligible bidders may obtain further information from and inspect the bidding documents at the office of the **Director** at the address given at the end on any working day during office hours.
4. A complete set of bidding document may be purchased by any interested eligible bidder on submission of a written application to the Director and upon payment of non-refundable fee equivalent to Indian Rupees 10000/- (Rs. 12000/-if required by courier overseas or Rs. 11000/- by courier inland) in US Dollars or UK Pound Sterling by demand draft / cashier's cheque/certified cheque in favour of the DDO, R.D. Directorate, Central Water Commission payable at New Delhi, INDIA or in cash in Indian Rupees. The bidding documents shall be made available for sale from, March 9, 2001 to May 8, 2001.
5. The provisions in the bidding document under Instructions to Bidders and the General Conditions of Contract are the provisions of the World Bank Standard Bidding Document: Procurement Of Goods.
6. A Prebid meeting will held at 11.00 hrs on April 10, 2001 at River Data Directorate, West Block - I, 2nd floor, Wing No. 4, R.K. Puram, New Delhi, (INDIA).
7. The bidders must offer a bid for full quantity of the items, failing which the bid shall be considered as non-responsive. The bids would be evaluated and the contract awarded accordingly.

PURCHASER

BIDDER

8. The attention of bidders is drawn to the facts (i) that they will be required to certify in their bids that software is either covered a valid license or was produced by the bidder and (ii) that violations are considered fraud, which, among other remedies, would make bidders ineligible for participation in future World Bank financed procurements.
9. Bid must be delivered in the office of the **Director** on or before **1430 hours (IST), May 9, 2001** and must be accompanied by bid security of the amount as indicated above in the format prescribed in the bidding document.
10. Bid will be opened in the presence of bidders or their representatives who choose to attend at **1445 hours (IST) on May 9, 2001** in the office of the **Director at the address given below**

ADDRESS for communication:

**The Director,
River Data Directorate, CWC,
West Block-1, 2nd Floor,
Wing-4, R.K. Puram,
New Delhi-110066, INDIA
Phone: 011/6108075,
011/6100285**

Fax : 011/6181267

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Bid Data Sheet

The following specific information relating to the Information System to be procured and the procurement procedures that will be used, shall complement, supplement or amend the provisions in the Instructions to Bidders (ITB). Whenever there is a conflict, the provisions in the Bid Data Sheet (BDS) shall prevail over those in the ITB.

A. GENERAL

ITB 1.1	<p>Name of Purchaser: <i>Director, River Data Directorate, Central Water Commission, West Block 1, Wing 2, 2nd Floor, R.K. Puram, New Delhi – 110 066 Phone: 00-91-11-6100285, 6108075 Fax: 00-91-11-6181267</i></p> <p>Name of authorized Purchasing Agent: <i>“none”</i>.</p> <p>Description of the Information System for which bids are invited: <i>Design, Supply, Installation, Testing, Training and Commissioning of Software for Data Storage Centres.</i></p>
ITB 1.2 & 20.2(b)	<p>Name of IFB: <i>Design, Supply, Installation, Testing, Training and Commissioning of Software for Data Storage Centres.</i></p> <p>Number of IFB: ICB/CWC/RDD/I-1/2001 Name of resulting Contract: <i>Design, Supply, Installation, Testing, Training and Commissioning of Software for Data Storage Centres.</i></p>
ITB 2.1	<p>Name of the Borrower: <i>Government of India</i> Loan or credit number: <i>2774 – IN</i> Loan or credit amount: <i>\$ 122 million</i> Name of Project: <i>Hydrology Project</i></p>
ITB 4.1 & 5.2	<p>Applicable edition of the Guidelines: Procurement under IBRD Loans and IDA Credits: January 1995, Revised January and August 1996, September 1997 and January 1999.</p>
ITB 6.1 (a)	<p>Qualification requirements for Bidders including members of Joint Ventures, Sub-Suppliers or Vendors are:</p> <p>The Bidder shall be a producer/developer of software products of similar nature and complexity including database software packages, GIS tools, customized RDBMS package etc., or already have a solution software package meeting the Purchaser’s requirement. The bidder may have a joint venture with other agencies. The Bidder or Joint Venture partners shall satisfy the following requirements:</p>

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1. Qualification requirements for the Bidder and Joint Venture Partners are :

The bidder should have had an annual turnover of not less than the equivalent of US\$ 5,000,000 in all the last five (5) years (1995-96 to 1999-2000). In case of a Joint Venture, each of Joint Venture partners should have had an annual turnover of not less than the equivalent of US\$ 5,000,000 in all the last 5 years (1995-96 to 1999-2000). Each should be ISO 9000 certified or SEICMM certified. Each should be in their respective business for a minimum period of five years.

2. The application software bidder shall have developed and sold software of similar nature and complexity involving a multi-user RDBMS platform and running in a client/server environment with a minimum of 6 (window environment) clients operating concurrently, to at least three different customers during the last five years (including the customization, adaptation and implementation of the software), which have been in successful operation for a minimum period of one year. This should be supported by Performance Statements from the end users. The bidder shall have proven experience with the implementation of environmental/water resources databases of similar complexity.
3. The bidder shall have provided software maintenance service and support to at least 5 different customers, each involving support of at least 20 clients and multiple servers. The software support experience should include support database (Oracle, MS SQL server, Sybase, Informix, etc.), GIS as well as systems software support with satisfactory support for a minimum period of one year. This should be supported by performance statements from the end users.
4. The bidder shall have permanent establishments in the project area, manned by skilled software professionals for providing future "Help Desk" and support services. The facilities shall be available at four locations within the project area including Delhi, in towns within the range of 200 km of the respective state capitals of the eight states under Hydrology Project.

All bids submitted shall also include the following information along with formats as per sample forms:

- i) Copies of original documents defining the constitution or legal status, place of registration and principle place of business of the company or firm or partnership, etc.
- ii) The bidder should furnish a brief write-up backed with adequate data, explaining his available capacity and experience (both technical and commercial) for the manufacture and supply of the required systems within the specified time of completion after

	<p>meeting all their current commitments.</p> <p>iii) The bidder should clearly confirm that all the facilities exist in his firm for inspection and testing and these will be made available to the Purchaser or his representative for inspection.</p> <p>iv) Details of Service Centers and information on service support facilities that would be provided after the warranty period (in the Service Support Form given in sample forms)</p> <p>(v) Reports on financial standing of the Bidder such as profit and loss statements, balance sheets and auditor's report for the past three years, Bankers certificates etc.</p>
ITB 6.1 (b) & 13.1 (e)(ii)	If applicable, Manufacturer's Authorizations are required for the following types of Information Technologies: All software
ITB 6.2 (g)	Add the following sub-clauses ITB 6.2 (g), (h)
ITB 6.2 (h)	The Joint Venture agreement should indicate precisely the responsibility of all members of the JV in respect of planning, design and development of software, supply, installation, commissioning and training for the project. This should not be varied/modified subsequently without prior approval of the Purchaser.
ITB 6.2 (i)	The joint venture agreement should be registered so as to be legally valid and binding on each of the partners;
ITB 9.1	A copy of the agreement entered into by the joint venture partners shall be submitted with the bid.
ITB 9.1	<p>The following are the other sample Forms:</p> <p>(i) Performance statement form (Form 9)</p> <p>(ii) Technical responsiveness form (Form 10)</p> <p>(iii) Format for qualification application (Form 11)</p> <p>(iv) Capability statement of personnel, equipment plant and past performance (Form 12)</p> <p>(v) Service support details form (Form 13)</p>

B. THE BIDDING DOCUMENTS

ITB 10.1	<p>Purchaser's Address:</p> <p>Director, River Data Directorate, CWC, West Block-1, Wing -4, 2nd Floor, R.K. Puram, New Delhi – 110 066, India</p>
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ITB 10.2 & 8.2	<p>Dates, times and places for the pre-bid meeting: Date: April 10, 2001 Time: 11.00 IST Place :River Data Directorate ,CWC, West Block-1, Wing –4, 2nd Floor, R.K. Puram, New Delhi – 110 066, India</p> <p>Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.</p>
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C. PREPARATION OF BIDS

ITB 12.1	<p>The language of all correspondence and documents related to the bid is: English. Unless explicitly specified in the Technical Requirements section, the key passages of all accompanying printed literature in any other language must be translated into the above language.</p>
ITB 13.1 (e)(ii)	<p>See the above data for ITB Paragraph 6.1 (b), for the required Manufacturer’s Authorization Forms to be included in Attachment 2 to the Bid.</p>
ITB 13.1 (e) (vii)	<p>Insert words “& 7A” after the word ‘Attachment 7’ in line 1 of the second sub-para of this clause.</p>
ITB 13.1 (e) (viii)	<p>Add a new sub-clause as 13.1 (e) (viii)</p> <p>(vii) Attachment 8: Local Representation</p> <p>If a foreign bidder has engaged an Indian agent, it will be required to give the following details in its bid as per the format enclosed in the Bidding Documents:</p> <ul style="list-style-type: none"> (i) The name and address of the local agent; (ii) What service the agent renders; and (iii) The fixed amount of remuneration for the agent included in the offer. <p>The agency commission shall be indicated in the space provided for in the Price Schedule and will be paid to the Bidder’s agent in India in Indian Rupees using the Telegraphic Transfer buying market rate of exchange ruling on the date of award of contract and shall not be subject to any escalation or any further exchange variations.</p>
ITB 14.2	<p>Substitute the following for sub-clauses 14.2(a), (b), (c), & (d).</p>
ITB 14.2 (a)	<p>Bidders shall give the required details and a breakdown of their prices as follows in the price schedules:</p>

(a) Information systems (software) and associated goods to be supplied from abroad (Schedule no. 2.2) shall be quoted on CIP.

(b) Information systems (software) and associated goods to be supplied from within INDIA (Schedule No. 2.3) shall be quoted on an EXW (ex factory, ex works, ex warehouse or off-the-shelf, as applicable) basis, and shall be inclusive of all costs as well as duties and taxes paid or payable on components and raw materials incorporated or to be incorporated in the facilities.

Sales tax, local tax and other levies in respect of direct transactions between the purchaser and the supplier shall not be included in the ex-works price but shall be quoted separately in Schedule 2.7 as indicated below.

(c) Local transportation, insurance, port clearance and port charges and other local costs incidental to delivery of the hardware, software and associated goods in Schedule No. 2.4. The purchaser shall be responsible and be liable only for payment of custom duty on CIP component of the Information systems (software) and associated goods to be supplied from abroad. (However, the Purchaser, as an importer, shall furnish promptly necessary clarifications and documents as may be required to be furnished by the importer for the purpose of customs clearance).

(d) Software development, installation, customization, integration, commissioning, testing, training, technical support, maintenance, repair and other services for proper installation and operation of the Information Systems shall be quoted separately (Schedule no. 2.4) and shall include rates or prices for all services, supplier's equipment, materials, consumables and office support, provision of operations and maintenance manuals, training, etc., as necessary for the proper execution of the Installation Services, including all taxes, duties, levies and charges payable in India as of twenty-eight (28) days prior to the deadline for submission of bids.

(e) Recurrent costs to be incurred either during the one year Warranty period and/or during the Post-Warranty Service Period of 3 years that commences at the end of the Warranty Period on the recurrent Costs form (Schedule 2.5) as follows:

(i) the cost of all items, such as diagnostic equipment spare parts, consumables, supplies, software update and recurrent licensing fees, that are needed to operate the Information System, as indicated in the Recurrent Costs Form and described in the Technical Requirements

	<p>and/or the SCC, quoted on a <i>CIP for respective locations as specified in Inventory table in Section VI, I, cleared, taxes-paid basis</i>; and</p> <p>(ii) The recurrent cost of all maintenance, technical support, and other services, as indicated in the Recurrent Costs Form and described in the Technical Requirements and/or the SCC, including all taxes payable by the Bidder on these services, broken down into local and foreign currency components.</p> <p>(f) Sales tax, local taxes and other levies as defined at 14.2 (b) above (Schedule 2.7).</p>
ITB 14.2.1	<p>Add a new Sub-clause 14.2.1 as below:</p> <p>“Deemed Export Benefits</p> <p>Bidders may like to ascertain availability of deemed export benefits. They shall solely be responsible for obtaining such benefits, which they have considered in their bid and in case of failure to receive such benefits for reasons whatsoever, the Purchaser will not compensate the Bidder.</p> <p>Where the Bidder has quoted taking into account the deemed export benefits, he must give all information required for issue of Project Authority/ Payment certificate in terms of the Export Import Policy of the Govt. of India along with his bid in Attachment 11. The Project Authority/ Payment Certificate will be issued on this basis only and no subsequent change will be permitted. Where such certificates are issued by the Purchaser, excise duty will not be reimbursed separately.</p> <p>Bids which do not conform to this provision will be treated as non-responsive and rejected.”</p>
ITB 15.1(a)	<p>Until December 31, 2001, bid prices may be expressed in the former national currencies of the member countries of the European Monetary Union (the Austrian Schilling, Belgian Franc, Finnish Markka, French Franc, Deutsche Mark, Irish Pound, Italian Lira, Luxembourg Franc, Netherlands Guilder, Portuguese Escudo and Spanish Peseta), although on January 1, 1999, the euro was substituted for these currencies. To convert these national currencies vis-à-vis the euro, see ITB Paragraph 27.1 (c).</p>
ITB 15.1(b)	<p>The currency to be used for quoting prices of the softwares and services components of the Information System offered from India, as well as local currency expenditures for local technical support, training, and maintenance is as follows:</p>

	<p>a) Sub-clause 15.1(b) is not applicable and sub-clause 15.1(a) applies to all software/associated goods and services.</p> <p>b) Local transportation, insurance and other local costs incidental to delivery of the Information Systems (software) and associated goods covered under ITB Sub-clause 14.2(a) & (b) and services covered under ITB Sub-clause 14.2 (c), (d) & (e) shall be quoted in Indian Rupees. However, the foreign component, if any, of installation services or insurance may be quoted in foreign currency.</p>
ITB 16.2 (b)	<p>Substitute sub-clause 16.2(b) as under:</p> <p>“An item-by-item commentary on the Purchaser’s Technical Requirements, demonstrating the substantial responsiveness of the Information Systems offered to meet those requirements. In demonstrating responsiveness, the commentary shall include explicit cross-references to the relevant pages in the supporting materials included in the bid.” The bidder shall furnish the technical details and the systems responsiveness with respect to the Technical Specifications, in Technical Detail Form (9.2) in Sample Forms in Section VII. Whenever a discrepancy arises between the item-by-item commentary and any catalogue, technical specifications or other pre-printed material submitted with the bid, the item-by-item commentary shall prevail.</p>
ITB 16.2 (c)	<p>In addition to the topics described in ITB Paragraph 16.2 (c), the Preliminary Project Plan must address the following topics: Implementation Schedule in Section VI.</p>
ITB 16.3	<p>In the interest of effective integration, cost-effective technical support, and reduced re-training and staffing costs, Bidders are required to offer specific brand names and models for the following limited number of specific items: <i>RDBMS package, GIS Tools.</i></p>
ITB 17.1	<p>A bid security will be required.</p> <p>The amount of bid security required is equivalent of Indian Rupees 6,00,000/- (Rupees six lakhs) in the bid currency or in US Dollar or in Indian Rupees.</p>
ITB 17.2	<p>Add the words “cashier’s or” in the beginning of line 2.</p> <p>Add the word “irrevocable” before the words “letter of credit” in line 2.</p> <p>In lines 10/11, change the words “twenty-eight (28) to “forty-five (45).”</p>
ITB 18.1	<p>The bid validity period shall be 90 days after the deadline for bid submission, as specified below in reference to ITB Clause 21. Accordingly, each bid shall be valid through 90 days.</p> <p>The bid security must be valid forty-five (45) days after the end of the bid validity period. Accordingly, a bid with a bid security that expires before 45 days after the end of the bid validity period shall be rejected as non-responsive.</p>
ITB 19.1	<p>Required number of copies of the bid <i>Two</i></p>

D. SUBMISSION OF BIDS

ITB 20.2(a), 21.1 & 23.3(a)	<p>The address for bid submission is</p> <p style="text-align: center;">Director, River Data Directorate, Central Water Commission West Block –1, Wing –4, 2nd Floor, R.K. Puram New Delhi – 110 066 India Tel : 00-91-11-6100285, 6108075 Fax: 00-91-11-6181287</p>
ITB 20.2(b)	<p>See the above data for ITB 1.2 for the name of the Contract. The Invitation for Bids Title and Number are: Design, Supply, Installation, Testing, Training and Commissioning of Software for Data Storage Centres.</p> <p style="text-align: center;">IFB No: ICB/CWC/RDD/I-1/2001</p> <p>See the data for ITB 21.1 for the deadline for bid submission.</p>
ITB 21.1	<p>See the above data for ITB Paragraph 21.1(a) for the address and deadline for bid submission.</p> <p>Deadline for bid submission is:</p> <p style="text-align: center;">Date: May 9, 2001 Time: 14.30 (IST)</p> <p>Add at the end of the Sub-Clause as follows:</p> <p>“In the event of the specified date for the submission of bids being declared a holiday for the Purchaser, the bids will be received upto the appointed time on the next working day.”</p>
ITB 22.1	<p>See the above data for ITB Sub-Clause 21.1 for the deadline for bid submission.</p>
ITB 23.2(a)	<p>The required number of copies of bid modifications is the same as the number of copies of the original bid specified above in the data for ITB Sub-Clause 19.1.</p>
ITB 23.3(a)	<p>See the above data for ITB Paragraph 20.2(a) for the address to use for submission of a bid withdrawal notice.</p>

E. BID OPENING AND EVALUATION

ITB 24.1	<p>Time, date, and place for bid opening are:</p> <p style="text-align: center;"><i>Time: 14.45 (IST)</i> <i>Date: May 9, 2001</i> <i>Place: Office of Director, River Data Directorate, Central Water Commission, West Block 1, Wing -4, 2nd Floor, R.K. Puram, New Delhi – 110 066</i> <i>Tel: 00-91-11-6100285-6108075</i> <i>Fax: 00-91-11-6181267</i></p> <p>Add at the end of the Sub-Clause as follows:</p> <p>“In the event of the specified date of bid opening being declared a holiday for the Purchaser, the bids shall be opened at the appointed time and location on the next working day.</p>
ITB 26.4	<p>Add the word “generally” after the word “is” and before the word “complete” in line 2.</p>
ITB 26.4.1	<p>Add the following:</p> <p>“26.4.1 Bids containing deviations from critical provisions relating to GCC Clauses 5 (Governing Law), 6 (Settlement of Disputes), 12 (Terms of Payment), 13.3 (Performance Security), 14 (Taxes and duties), 28 (Operational Acceptance Time Guarantee), 29 (Defect Liability), 30 (Functional Guarantees), 33 (Limitation of Liability) as read with corresponding S.C.C. clauses, will be considered as non-responsive. However, the bidders wishing to propose deviations to any of the above provisions, must provide in the Attachment-7A of the bid the cost of withdrawal of such deviations. If the deviation to any of these provisions is not priced, the bid will be rejected. The evaluated cost of the bid shall include, in addition to the costs described in ITB Clause 28, the cost of withdrawal of the deviations from the above provisions to make the bid fully compliant with these provisions.</p> <p>At the time of Award of Contract, if so desired by the Purchaser, the Bidder shall withdraw these deviations along with others listed in Attachment 7 and Attachment 7A at the cost of withdrawal stated by it in the bid. In case the Bidder does not withdraw the deviations proposed by it, if any, at the cost of withdrawal stated by it in the bid, its bid will be rejected and the bid security forfeited”.</p>

ITB 27.1 (c)	On January 1, 1999, the Euro was substituted for the currencies of the member countries of the European Monetary Union. From that date, these currencies were irrevocably fixed vis-à-vis the Euro. Until December 31, 2001, these currencies remain in existence as non-decimal sub-denominations of the Euro.
ITB 27.2	<p>Currency chosen for the purpose of converting to a common currency is Indian Rupees.</p> <p>Source of exchange rate is Bills selling exchange rates established by the State Bank of India.</p> <p>Date of exchange rate is date of opening of bids.</p>
ITB 28.1 (b)	<p>The bidders are to submit the bids for the complete requirements of goods and services specified in the Technical Specifications on a single responsibility basis, failing which such bids will not be taken into account for evaluation and will not be considered for award.</p> <p>Discount, if any, indicated in the bid will be considered in the bid evaluation.</p>
ITB 28.4	The bid evaluation <i>will not</i> take into account technical factors in addition to cost factors. However, bids not meeting fully the technical requirements as specified in the Section VI will be treated as Non-responsive.
ITB 28.5	
ITB 28.6(c)(i)	<p>Completion of installation and commissioning offered by Bidders can be beyond that specified in the Implementation Schedule in the Technical Requirements by upto a maximum of four (4) weeks.</p> <p>The percentage for adjustment of a bid offering to complete Design, Supply, Installation, Testing, Training and Commissioning later than the specified date, but earlier than the maximum delay, is 0.5% of the bid price per week.</p>
ITB 28.6(c)(ii)	The SCC stipulate the payment schedule offered by the Purchaser. If a bid deviates from the schedule and if such deviation is considered acceptable to the Purchaser, the bid will be evaluated by calculating interest earned for any earlier payments involved in the terms outlined in the bid as compared with those stipulated in this invitation, at 12% per annum .
ITB 28.6(c)(iv)	In line 2 correct the attachment nos. as “7 & 7A”. In line 4 correct the sub-paragraph number as 13.1 (e) (vii).

ITB 28.6(d)	<p>See the above data for ITB Paragraph 14.2(d) for the number of years (N) for the Post Warranty Services Period.</p> <p>Interest Rate (I) for net present value calculations of recurrent costs: for Indian Rupees – 12% for Foreign Currency – LIBOR + 2%</p> <p>In partial modification of what is stated in 28.6(d) of ITB, the discounting will be done for all annual future cost/s to the present value as on the date of the bid opening.</p>
ITB 29.1	<p>A margin of domestic preference will apply; and the price component in the bid against which the preference will be applied will be that specified in the information for ITB Paragraph 14.2(a)(i).</p> <p>Insert words “payable by a non-exempt importer” in line 8 after the words “imported tariff (custom duties and other import taxes)”.</p>

F. POST-QUALIFICATION AND AWARD OF CONTRACT

ITB 31.2	<p>The information technologies offered by Bidders may be subjected to the following tests and performance benchmarks prior to Contract award: measures that will be used in the evaluation of bids, such as performance benchmarks, documentation reviews.</p>
ITB 33.1	<p>Percentage for quantity increase or decrease is 20%.</p>
ITB 35.2	<p>Add the following at the end of the Sub-Clause:</p> <p>“Bidder would be required to comply with all other requirements of the Bidding Documents except for those deviations which are accepted by the Purchaser.”</p>
ITB 36.3	<p>Add a new Sub-Clause 36.3 as follows:</p>
	<p>The mode of contracting with the successful bidder will be as per stipulation outlined in Clause SCC 43 and briefly indicated below:</p>
	<p>In the case of successful Indian Bidder, the award shall be made as follows:</p> <ul style="list-style-type: none"> (i) First Contract: For Ex-Works supply and CIF/CIP supply, if any, of all Information Systems (hardware/software) and associated goods identifying separately the CIF/CIP and Ex-Works components of the Supply. (ii) Second Contract: For providing all services i.e. inland transportation for delivery at Site, unloading, storage,

	<p>handling at site, installation, testing and commissioning including performance testing, training, etc. in respect of all the systems supplied under the 'First Contract' and any other services specified in the Contract Documents.</p> <p>Both contracts will contain a crossfall breach clause specifying that breach of one will constitute breach of the other.</p>
	<p>In the case of a successful foreign bidder, the award shall be made as follows:</p> <p>(i) First Contract: For CIF/CIP supply of all offshore Information Systems and associated goods.</p> <p>(ii) Second Contract: For Ex-Works supply of all Information Systems and associated goods of Indian origin and for providing all services i.e. port handling and clearance for the imported goods, further loading and inland transportation for delivery at site, unloading, storage, handling at Site, installation, testing and commissioning including performance testing and training in respect of all the systems supplied under both the contracts and any other services specified in the contract documents.</p>
ITB 38.1	<p>Replace the words "an hourly" with the words "a daily" in line 5 and line 10.</p> <p>Name of the Adjudicator proposed by the Purchaser: Sh. S.C. Chitkara, Ex-Member (RM),CWC</p> <p>Daily fee for the Adjudicator: Indian Rupees 3,000/-</p> <p>The expenses that would be considered reimbursable are travel, boarding & lodging costs at actuals.</p>

Résumé of proposed Adjudicator.

NAME : Sh. S.C. Chitkara

QUALIFICATIONS : B. Tech. (Hons) in Civil Engineering
P.G. Diploma in Hydrology (Hons.)

ADDRESS : D – 404, Narmad Appartments
Alakananda, New Delhi – 110019
Ph: 6211783

SERVICE : Ex-Mamber (RM), CWC

Special Conditions of Contract

The following Special Conditions of Contract (SCC) shall supplement or amend the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions of the SCC shall prevail over those in the General Conditions of Contract. For the purposes of clarity, any referenced GCC clause numbers are indicated in the left column of the SCC.

A. CONTRACT AND INTERPRETATION

1. Definitions (GCC Clause 1)

GCC 1.1 (a) (ix)	The applicable edition of the World Bank <i>Guidelines: Procurement under IBRD Loans and IDA Credits</i> is dated: “January 1995, Revised January and August 1996, August 1997, January 1999” .
GCC 1.1 (b) (i)	The Purchaser is: The Director, River Data Directorate, Central Water Commission West Block –1, Wing –4, 2nd Floor, R.K. Puram New Delhi – 110 066 Tel : 00-91-11-6100285, 6108075 Fax : 00-91-11-6181267
GCC 1.1 (b) (ii)	The Project Manager is: The Deputy Director, River Data Directorate, Central Water Commission West Block –1, Wing –4, 2nd Floor, R.K. Puram, New Delhi – 110 066 Tel: 00-91-11-6100285, 6108075 Fax: 00-91-11-6181267
GCC 1.1 (e) (i)	The Purchaser’s Country is: INDIA
GCC 1.1 (e) (ii)	The Project Site(s) are <i>state capitals</i> in <i>Andhra Pradesh, Madhya Pradesh, Kerala, Karnataka, Gujarat, Tamil Nadu, Maharashtra, Orissa and New Delhi</i> .
GCC 1.1 (e) (x)	Time for completion of Information Systems: The Design, Supply, Installation, Training, Commissioning and Operational Acceptance of Software Systems as detailed in the implementation schedule.

2. Contract Documents (GCC Clause 2)

GCC 2	<i>“There are no Special Conditions of Contract applicable to GCC Clause 2.”</i>
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3. Interpretation (GCC Clause 3)

GCC 3.1.1	The language of the Contract, all correspondence and communications to be given, and all other documentation to be prepared and supplied under the Contract not otherwise specified in the Technical Requirements shall be: English.
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4. Notices (GCC Clause 4)

GCC 4.1	<p>Notices shall be addressed to:</p> <p style="text-align: center;">The Deputy Director, River Data Directorate, Central Water Commission West Block –1, Wing –4, 2nd Floor, R.K. Puram, New Delhi – 110 066 Tel: 00-91-11-6100285, 6108075 Fax: 00-91-11-6181267</p>
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5. Governing Law (GCC Clause 5)

GCC 5.1	The Contract shall be interpreted in accordance with the laws of the Union of India.
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6. Settlement of Disputes (GCC Clause 6)

GCC 6.1.3	Substitute the word “hourly” with “daily”
GCC 6.1.4	The Appointing Authority for the Adjudicator: President, Institution of Engineers, (INDIA)
GCC 6.2.3 & 6.2.4	<p>Any dispute, controversy or claim arising out of, or relating to this contract or breach, termination or invalidity there of, which has not become final and binding pursuant to G.C.C. 6.1.2, shall be settled by arbitration by arbitral tribunal as under.</p> <p>The arbitral tribunal shall have full power to open-up, review and revise any decision, opinion, instruction, determination, certificate or valuation of the Project Manager and any Recommendation(s) of the Adjudicator related to the dispute.</p>

- (i) A dispute with an Indian Supplier shall be finally settled by arbitration in accordance with the Arbitration & Conciliation Act, 1996, or any statutory amendment thereof.

The arbitral tribunal shall consist of three arbitrators, one each to be appointed by the Purchaser and the Supplier. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties and shall act as Presiding arbitrator. In case of failure of the two arbitrators, appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding arbitrator shall be appointed by the President, Institute of Engineers, New Delhi. For the purpose of this sub-clause, the term “Indian Supplier” means a Supplier who is registered in India and is a juridic person created under Indian law as well as a Joint Venture between such a Supplier and a Foreign Supplier.

- (ii) In the case of a dispute with a Foreign Supplier, the dispute shall be finally settled in accordance with the provisions of UNCITRAL Arbitration Rules. The arbitral tribunal shall consist of three Arbitrators, one each to be appointed by the Purchaser and the Supplier. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the parties, and shall act as presiding arbitrator. In case of failure of the two arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed by the President, Institute of Engineers, New Delhi. For the purposes of this Clause 6.2 the term “Foreign Supplier” means a Supplier who is not registered in India and is not a juridic person created under Indian Law.

- (iii) Neither party shall be limited in the proceedings before such tribunal to the evidence or arguments before the Adjudicator for the purpose of obtaining its Recommendation(s) pursuant to Sub-Clause 6.2.2. No recommendation shall disqualify any Adjudicator from being called as a witness and giving evidence before the arbitrator(s) on any matter whatsoever relevant to the dispute.

- (iv) Arbitration may be commenced prior to or after completion of the Works, provided that the obligations of the Purchaser,

	<p>the Project Manager, the Supplier and the Adjudicator shall not be altered by reason of the arbitration being conducted during the progress of the Works.</p> <p>(v) If one of the parties fail to appoint its arbitrator in pursuance of Sub-Clause (i) and (ii) above, within 30 days after receipt of the notice of the appointment of its arbitrator by the other party, then the President, Institute of Engineers, New Delhi both in cases of foreign Suppliers as well as Indian Suppliers, shall appoint the arbitrator. A certified copy of the order of the President, Institute of Engineer, New Delhi making such an appointment shall be furnished to each of the parties.</p> <p>(vi) Arbitration proceedings shall be held at <u>New Delhi</u> (India), and the language of the arbitration proceedings and that of all documents and communications between the parties shall be in English.</p> <p>(vii) The decision of the majority of arbitrators shall be final and binding upon both parties. The cost and expenses of Arbitration proceedings will be paid as determined by the arbitral tribunal. However, the expenses incurred by each party in connection with the preparation, presentation, etc., of its proceedings as also the fees and expenses paid by the arbitrator appointed by such party or on its behalf shall be borne by each party itself.</p> <p>(viii) The arbitrator(s) shall give reasoned award.</p>
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B. SUBJECT MATTER OF CONTRACT

7. Scope of the System (GCC Clause 7)

GCC 7.3	<p>The Supplier's obligations under the Contract will include recurrent cost items required for repair and restore of the systems into working condition, except the items required for repairs due to any faulty action attributable to the Purchaser or his representative.</p> <p>The Supplier agrees to supply software updates for the operation and maintenance of the System, for a period of 3 years beginning from the time Operational Acceptance.</p>
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8. Time for Commencement and Operational Acceptance (GCC Clause 8)

GCC 8.1	The Supplier shall commence work on the System within 7 (seven) days from the Effective Date of the Contract.
GCC 8.2	Operational Acceptance will occur on or before six (6) months from the Effective date of Contract.

9. Supplier's Responsibilities (GCC Clause 9)

GCC 9.5	<p>Add the following at the end of GCC Clause 9.5</p> <p>SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN MANUFACTURE AND OTHER CONSTRUCTION WORKS.</p> <p>a) <u>Workmen Compensation Act 1923</u>: - The Act provides for compensation in case of injury by accident arising out of and during the course of employment.</p> <p>b) <u>Payment of Gratuity Act 1972</u>: - Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years service or more or on death the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.</p> <p>c) <u>Employees P.F. and Miscellaneous Provision Act 1952</u>: The Act provides for monthly contributions by the Purchaser plus workers @ 10% or 8.33%. The benefits payable under the Act are:</p> <p>(i) Pension or family pension on retirement or death, as the case may be.</p> <p>(ii) Deposit linked insurance on the death in harness of the worker.</p> <p>(iii) Payment of P.F. accumulation on retirement/death etc.</p> <p>d) <u>Maternity Benefit Act 1951</u>: - The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.</p>
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- e) Contract Labour (Regulation & Abolition) Act 1970: - The Act provides for certain welfare measures to be provided by the Supplier to contract labour and in case the Supplier fails to provide, the same are required to be provided, by the Principal Purchaser by Law. The Principal Purchaser is required to take Certificate of Registration and the Supplier is required to take license from the designated Officer. The Act is applicable to the establishments or Supplier of Principal Purchaser if they employ 20 or more contract labour.
- f) Minimum Wages Act 1948: - The Purchaser is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employments.
- g) Payment of Wages Act 1936: - It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers.
- h) Equal Remuneration Act 1979: - The Act provides for payment of equal wages for work of equal nature to Male and Female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.
- i) Payment of Bonus Act 1965: - The Act is applicable to all establishments employing 20 or more employees. The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages to employees drawing Rs.3500/-per month or less. The bonus to be paid to employees getting Rs.2500/- per month or above upto Rs.3500/- per month shall be worked out by taking wages as Rs.2500/-per month only. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.
- j) Industrial Disputes Act 1947: - The Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.
- k) Industrial Employment (Standing Orders) Act 1946: - It is

applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Purchaser on matters provided in the Act and get the same certified by the designated Authority.

- l) Trade Unions Act 1926: - The Act lays down the procedure for registration of trade unions of workmen and Purchasers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.
- m) Child Labour (Prohibition & Regulation) Act 1986: - The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in Building and Construction Industry.
- n) Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979: - The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home upto the establishment and back, etc.
- o) The Building and Other Construction workers (Regulation of Employment and Conditions of Service) Act 1996 and the Cess Act of 1996: - All the establishments who carry on any building or other construction work and employs 10 or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Purchaser of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as Canteens, First-Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Purchaser to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.
- p) Factories Act 1948: - The Act lays down the procedure for approval at plans before setting up a factory, health and safety

	provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.
GCC 9.9	The following personnel of the Purchaser are “Key Personnel”. <i>“name or titles of the Purchaser’s key personnel shall be determined at contract finalisation and recorded as amendment to the contract.”</i>

10. Purchaser’s Responsibilities (GCC Clause 10)

GCC 10.7	The technical personnel would be as mutually agreed between the supplier and the purchaser.
GCC 10.12	The following personnel of the Supplier are “Key Personnel” <i>“name or titles of the Supplier’s key personnel shall be determined at contract finalisation and recorded as amendment to the contract.”</i>

C. PAYMENT

11. Contract Price (GCC Clause 11)

GCC 11.2 (c)	Prices are fixed and no adjustment will be made to the contract price.
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12. Terms of Payment (GCC Clause 12)

GCC 12.1	<p>The Contract Price shall be paid as follows:</p> <p>In accordance with the provisions of GCC Clause 12 (Terms of Payment), the Purchaser shall pay the Supplier, in the manner specified below:</p> <ul style="list-style-type: none"> (a) The Supplier shall submit claims and/or invoices at most once during any month. (b) For all items covered by the Contract, with the exception of any Recurrent Cost items, payment shall be as follows:
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	<p>(i) Advance Payment: 10% of the Contract Price, exclusive of all Recurrent Costs, shall be paid within twenty eight (28) days of the Contract, on submission of a claim together with evidence of export authorization and a bank guarantee for the equivalent amount valid until the System is delivered, installed and operationally accepted.</p> <p>(ii) Software Development and Operational Acceptance: 80% of the part of the Contract Price associated with these components against installation and operation certificates of the systems at thirty Data Storage Centres.</p> <p>(iii) Procurement of standard DBMS softwares and other software licenses: 80% of the part of the Contract Price associated with standard softwares like RDBMS, front tools, client licenses etc. on successful installation of the same on purchasers' computers systems and operationally accepted.</p> <p>(iv) Training: 80% of the part identified for training will be paid on submission of the attendance sheets signed by the scheduled participants for respective locations and certified by the Project Manager.</p> <p>(v) Balance part of the Contract Price associated on Operational Acceptance of the system complete in all respects for the respective locations and submission of all Service call reports, showing the outstanding works specified in Installation Certificates are completed for the respective locations.</p>
GCC 12.3	The Purchaser shall pay to the Supplier interest on the delayed payments at a rate of LIBOR plus 2% for foreign currency and a rate of 12% for Indian Rupees.
GCC 12.4 & 12.5	Payment for Goods and Services supplied will be made in the currency of the contract in the form of an irrevocable Letter of Credit.

13. Securities (GCC Clause 13)

GCC 13.2	The Supplier shall provide within twenty-eight (28) days of the notification of Contract award an Advance Payment Security equal to the amount of the Advance Payment specified in SCC Clause 12 above with a validity of 90 days beyond the day of completion of facilities in accordance under GCC clause 8.
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GCC 13.3.1	Performance Security shall be for an amount equal to 5% of the Contract Price excluding any Recurrent Costs. The Performance Security of a Joint Venture shall be in the name of the Joint Venture
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14. Taxes and Duties (GCC Clause 14)

GCC 14.2	<p>Add the following at the end of the Sub-Clause:</p> <p>“The Purchaser shall also bear and pay/reimburse to the Supplier Sales Tax, Local Tax and Octroi, in respect of direct transaction between the Purchaser and the Supplier imposed upon on the Information Systems and associated goods specified in Price Schedule No.2 to be incorporated into the System, by the Law of the country where the site is located”.</p>
GCC 14.4	<p>In line 11 & 12, delete the words “Sub Suppliers or their employees”.</p> <p>Add the following at the end of the Sub-Clause:</p> <p>“However, these adjustments would be restricted to direct transactions between the Purchaser and the Supplier and not to procurement of raw materials, intermediary components etc. by the Supplier. Further, no adjustment of the Contract Price shall be made on account of variation in deemed export benefits.”</p>

D. INTELLECTUAL PROPERTY

15. Copyright (GCC Clause 15)

GCC 15.3	The Purchaser may assign, license or otherwise voluntarily transfer its contractual rights to use the Standard Software or elements of the Standard Software, without the Supplier’s prior written consent.
GCC 15.4	The Purchaser’s and Supplier’s rights and obligations with respect to Custom Software or elements of the Custom Software are as follows: These rights and obligations include: (I) duplicating and using the software on different equipment, such as back-ups, additional computers, replacements, upgraded units, etc. (ii) transferring the license or sub-licensing the software for other entities to use, modify, develop commercialize, etc., (iii) sharing proprietary information regarding the Custom Software with various parties.

	The Purchaser's and Supplier's rights and obligations with respect to Custom Materials or elements of the Custom Materials are as follows " not applicable "
GCC 15.5	No software escrow contract is required for the execution of the contract.

16. Software License Agreements (GCC Clause 16)

GCC 16.1 (a)(iii)	The Standard Software license shall be valid throughout India.
GCC 16.1 (a) (iv)	Use of the software shall be subject to the following additional restrictions " none "
GCC 16.1 (b)(ii)	The Software license shall permit the Software to be used or copied for use or transferred to a replacement computer " provided the replacement computer falls within approximately the same class of machine and maintains approximately the same number of users, if a multi-user machine "
GCC 16.1 (b)(vi)	The Software license shall permit the Software to be disclosed to and reproduced for use by " support service suppliers or their sub-Suppliers, exclusively for such suppliers or sub-Suppliers in the performance of their support service contracts , subject to the same restrictions set forth in this Contract.
GCC 16.1 (b) (vii)	In addition to the persons specified in GCC Sub-Paragraph 16.1 (b)(vi), the Software may be disclosed to, and reproduced for use by consignees listed in schedule of requirements, subject to the same restrictions as are set forth in this Contract.
GCC 16.2	Audits of the Standard Software by the Supplier shall be performed in accordance with the following terms: Not applicable

17. Confidential Information (GCC Clause 17)

GCC 17.1	"There are no modifications to the confidentiality terms expressed in GCC Sub-Clause 17.1."
GCC 17.3	"There are no modifications to the confidentiality terms expressed in GCC Sub-Clause 17.3."

E. SUPPLY, INSTALLATION, TESTING, COMMISSIONING AND ACCEPTANCE OF THE SYSTEM

18. Representatives (GCC Clause 18)

GCC 18.1	The Purchaser's Project Manager shall have the following additional powers and / or limitations to their authorities to represent the Purchaser in matters relating to the Contract: " <i>no additional powers or limitations.</i> "
GCC 18.2.2	The Supplier's Representative shall have the following additional powers and / or limitations to their authorities to represent the Supplier in matters relating to the Contract: " <i>no additional powers or limitations.</i> "

19. Work Program (GCC Clause 19)

GCC 19.1	Chapters in the Project Plan shall address the following subject: (a) Project Organization and Management Plan; (b) Delivery and Installation Plan (c) Training Plan (d) Pre-commissioning and Operational Acceptance Testing Plan (e) Warranty Service Plan (f) Task, Time and Resource Schedules (g) Post-Warranty Service Plan (h) Technical Support Plan
GCC 19.2	Within thirty (30) days from the Effective Date of the Contract, the Supplier shall present a Project Plan to the Purchaser. The Purchaser shall, within fourteen (14) days of receipt of the Project Plan, notify the Supplier of any respects in which it considers that the Project Plan does not adequately ensure that the proposed program of work, proposed methods, and/or proposed Information Technologies will satisfy the Technical Requirements and/or the SCC (in this Sub-Clause 19.2, "non-conformities"). The Supplier shall, within five (5) days of receipt of such notification, correct the Project Plan and resubmit to the Purchaser. The Purchaser shall, within five (5) days of resubmission of the Project Plan, notify the Supplier of any remaining non-conformities. This procedure shall be repeated as necessary until the Project Plan is free from non-conformities. When the Project Plan is free from non-conformities, the Purchaser shall provide confirmation in writing to the Supplier. This approved Project Plan ("the Agreed and Finalized Project Plan") shall be contractually binding on the Purchaser and the Supplier".

GCC 19.5	<p>The Supplier shall submit to the Purchaser the following reports: <i>Monthly progress reports, summarizing:</i></p> <ul style="list-style-type: none"> (i) results accomplished during the prior period; (ii) cumulative deviations to date from schedule of progress milestones as specified in the Agreed and Finalized Project Plan; (iii) corrective actions to be taken to return to planned schedule of progress; proposed revisions to planned schedule; (iv) Other issues and outstanding problems, proposed actions to be taken; (v) Resources which the Supplier expects to be provided by the Purchaser and/or actions to be taken by the Purchaser in the next reporting period; (vi) Other issues or potential problems which the Supplier foresees that could impact on project progress and/or effectiveness; (vii) Training participants test results.
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20. Subcontracting (GCC Clause 20)

GCC 20.	“There are no Special Conditions of Contract applicable to GCC Clause 20.”
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21. Design and Engineering (GCC Clause 21)

GCC 21.2	The Contract shall be executed in accordance with the edition or the revised version of all referenced codes and standards current at the date <i>“as specified in the GCC”</i> .
GCC 21.3.1	The Supplier shall prepare and furnish to the Project Manager the following documents for which the Supplier must obtain the Project Manager’s approval before proceeding with work on the System or any Sub-system covered by the documents: <i>“none”; Not applicable</i>
GCC 21.3.4	<p>In line 6, after the words “modification(s)”, insert the words “and upon resubmission with the required modifications”.</p> <p>Add the following at the end of the Sub-Clause:</p> <p>“The procedure for submission of the documents by the Supplier and their approval by the Project Manager shall be discussed and finalized with the Supplier”.</p>

22. Procurement, Delivery and Transport (GCC Clause 22)

GCC 22.5	The Supplier shall provide the Purchaser with shipping and other documents <i>“as specified in the GCC”</i>
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GCC 22.6	In line 4 insert “including liability for port charges if any,” between words ‘clearance’ and ‘subject’.
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23. Product Upgrades (GCC Clause 23)

GCC 23.4	The Supplier shall provide the Purchaser: <i>“with all new product updates to all Standard Software during the Warranty Period(36 months), for free, as specified in the GCC”</i> .
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24. Implementation and other Services (GCC Clause 24)

GCC 24	There are no special conditions of contract applicable to GCC clause 24.
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25. Inspection and Test (GCC Clause 25)

GCC 25.	There are no special condition of contract applicable to GCC 25.
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26. Installation of the Information System (GCC Clause 26)

GCC 26.	Please refer Clause No: SCC 24
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27. Commissioning and Operational Acceptance (GCC Clause 27)

GCC 27.2.1	Operational Acceptance Testing shall be conducted in accordance with the relevant sections of the Technical Specifications and operation of the system.
GCC 27.2.2	If the Operational Acceptance Test of the System, or Sub-system(s), cannot be successfully completed within 30 days from the date of Installation or any other period agreed upon between the Purchaser and the Supplier, then GCC Sub-Paragraph 27.3.5 (a) or (b) shall apply, as the circumstances may dictate.

F. GUARANTEES AND LIABILITIES

28. Operational Acceptance Time Guarantee (GCC Clause 28)

GCC 28.2	Liquidated damages shall be assessed at 0.5% of the contract price per week. The maximum liquidated damages are <i>10%</i> of the Contract Price.
GCC 28.3	Liquidated damages shall be assessed <i>“only with respect to achieving Operational Acceptance .”</i>

29. Defect Liability (GCC Clause 29)

GCC 29.3 (iii)	All standard softwares must have been commercially available in the market for at least three months.
GCC 29.4	The Warranty Period shall extend from the date of Operational Acceptance of the System, until 36 months from “ <i>Operational Acceptance of the System as a whole.</i> ” in accordance with SCC Clause 25, the Technical Requirements and/or the Agreed and Finalized Project Plan.
GCC 29.10	During the Warranty Period, the Supplier must commence the work necessary to remedy defects or damage within 2 working days of notification.
GCC 29.12	In line 3 substitute the words “remainder of the” with words “full”. In line 4/5 delete the words “or three (3) months whichever is greater”.

30. Functional Guarantees

GCC 30.	“There are no Special Conditions of Contract applicable to GCC Clause 30.”
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31. Intellectual Property Rights Warranty (GCC Clause 31)

GCC 31.	“There are no Special Conditions of Contract applicable to GCC Clause 31.”
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32. Intellectual Property Rights Indemnity (GCC Clause 32)

GCC 32.	“There are no Special Conditions of Contract applicable to GCC Clause 32.”
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33. Limitation of Liability (GCC Clause 33)

GCC 33.	“There are no Special Conditions of Contract applicable to GCC Clause 33.”
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G. RISK DISTRIBUTION

34. Transfer of Ownership (GCC Clause 34)

GCC 34.	“There are no Special Conditions of Contract applicable to GCC Clause 34.”
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35. Care of the System (GCC Clause 35)

GCC 35.	“There are no Special Conditions of Contract applicable to GCC Clause 35.”
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36. Loss of or Damage to Property; Accident or Injury to Workers Indemnification (GCC Clause 36)

GCC 36.	“There are no Special Conditions of Contract applicable to GCC Clause 36.”
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37. Insurance (GCC Clause 37)

GCC 37.1 (a)	The cargo insurance should be from “warehouse” to “warehouse (ultimate destination)” on “all risks” basis including war risks and strikes.
GCC 37.1 (c)	The Supplier shall obtain Third Party Liability Insurance for an amount required as per the Law of the Land. The Purchaser will not be liable for what so ever in this regard.
GCC 37.1 (e)	<p><i>“There are no Special Conditions of Contract applicable to GCC Clause 37.”</i></p> <p>The Supplier shall obtain Worker’s Compensation Insurance in accordance with the statutory requirements of India. The Insurance shall cover the period from <i>beginning date, in terms of the date of Contract Effectiveness</i> until <i>expiration date, in terms of the date of Contract or Completion.</i></p> <p>The Supplier shall obtain Purchaser’s Liability Insurance in accordance with the statutory requirements of <i>India</i>. Specifically Third Party Liability Insurance.</p>
GCC 37.6	In line 4 substitute the word “all” with “the”.

38. Force Majeure (GCC Clause 38)

GCC 38.1	Insert “(.)” after the word “affected” in line 4 and delete the rest of the Sub-Clause including paragraph (a) to (f).
GCC 38.6	In line 7-8-9, replace the words “failing which either party may terminate the contract by giving notice of the other” with the words “failing which the dispute will be resolved in accordance with GCC clause 6”.
GCC 38.7	Delete this Sub-Clause.
GCC 38.8	Renumber this Sub-Clause as 38.7.

39. CHANGE TO THE SYSTEM (GCC CLAUSE 39)

GCC 39	<i>“There are no Special Conditions of Contract applicable to GCC Clause 39.”</i>
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H. CHANGE IN CONTRACT ELEMENTS

40. Extension of Time for Achieving Operational Acceptance (GCC Clause 40)

GCC 40.	<i>“There are no Special Conditions of Contract applicable to GCC Clause 40.”</i>
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41. Termination (GCC Clause 41)

GCC 41.	<i>“There are no Special Conditions of Contract applicable to GCC Clause 41.”</i>
GCC 41.3.1(b)	At the end of para, after the word “System” add the words “which the Purchaser is required to obtain as per provision of the Contract as per relevant applicable laws of the country”. At the end of the next para substitute the words “terminate the contract” with words “for termination and resolve the dispute in accordance with clause GCC 6”.

42. Assignment (GCC Clause 42)

GCC 42.	<i>“There are no Special Conditions of Contract applicable to GCC Clause 42.”</i>
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43. Construction of the Contract

GCC 43	Add the following as GCC 43.
GCC 43.1	<p>The Contracts to be entered into with the successful Bidder shall be as under:</p> <p>For Foreign Bidder</p> <ul style="list-style-type: none"> • ‘First Contract’ for CIF/CIP supply of all off shore Information Systems and associated goods. • ‘Second Contact’ for Ex-works supply of all Information Systems and associated goods of Indian origin and for providing all services i.e. port handling and clearance for the imported goods, further loading and inland transportation for delivery at site, unloading, storage, handling at site, installation, testing and commissioning including Performance testing in respect of all the Information Systems and associated goods supplied under both the Contracts and any other services specified in the Contract Documents. <p>For Domestic Bidder</p> <ul style="list-style-type: none"> • ‘First Contract’ for Ex-works supply and CIF/CIP supply, if any, of all Information Systems and associated goods identifying separately the CIF/CIP and Ex-works component of the supply. • ‘Second Contract’ for providing all services i.e. inland transportation for delivery at site, unloading, storage, handling at site, installation, testing and commissioning including Performance Testing in respect of all Information Systems supplied under the ‘First Contract’ and any other services specified in the Contract Documents.
GCC 43.2	The award of two contracts shall not in any way dilute the responsibility of the Supplier for the successful completion of the facilities as per Specifications and a breach in one Contract shall automatically be constructed as a breach of the other Contract which will confer a right on the Purchaser to terminate the other Contract also at the risk and the cost of the Supplier.
GCC 43.3	If the foreign bidder has proposed an Assignee in his bid to execute the Second Contract and has also furnished written unequivocal consent of the proposed Assignee to work as independent Supplier on the terms offered by the bidder and the Purchaser is satisfied with experience/qualification of the proposed Assignee, the Purchaser will enter into the ‘Second Contract’ with the said Assignee. Further, the said Assignee, in addition to the Contract Performance Security to be provided by the Supplier for five percent (5%) of the value of both the

	contracts, i.e. First contract and the second contract, shall provide within twenty-eight (28) days of the notification of Contract award, a Contract Performance Security equivalent to five percent (5%) of the value of the Second Contract for the due performance of Contract with a validity upto Sixty (60) days beyond the Defect Liability Period. It is expressly understood and agreed that both the Contracts shall contain the aforesaid crossfall breach clause.
GCC 43.4	It is further expressly understood and agreed that in case the option is not exercised by the Bidder or the Assignee fails to enter into the 'Second Contract' with the Purchaser or if the Purchaser in its judgment does not find acceptance of the proposed Assignee as its Supplier, than the bidder shall be obliged to enter into and execute both Contracts with the Purchaser and both Contracts shall contain the aforesaid crossfall breach clause.
GCC 43.5	In case of two Contract entered into as above or where the Purchaser hands over his equipment to the Supplier for executing the Contract, then the Supplier shall, at the time of taking delivery of the of the equipment through Bill of Lading or other dispatch documents, furnish trust Receipt for Information Systems and associated goods and also execute an Indemnity Bond in favour of the Purchaser in the form acceptable to the Purchaser for keeping the equipment in safe custody and to utilize the same exclusively for the purpose of the said Contract.
GCC 43.6	The Contract will be signed in three originals and the Supplier shall be provided with one signed original and the rest will be retained by the Purchaser.
GCC 43.7	The Supplier shall provide free of cost to the Purchaser all the engineering data, drawing and descriptive materials submitted with the bid, in at least six (6) copies to form a part of the Contract immediately after Notification of Award.
GCC 43.8	Subsequent to signing of the Contract, the Supplier at his own cost shall provide the Purchaser with at least four (4) true copies of Contract Agreement within thirty (30) days after signing of the Contract.

10. TECHNICAL RESPONSIVENESS FORM (Clause 16.2b of ITB)

Description of the Softwares, Materials, Other Goods and Services

- The Bidder **MUST** provide detailed descriptions of the essential technical, performance or other relevant characteristics of all key softwares, materials, other goods and services offered in the bid (e.g., version, release and model numbers). Without providing sufficient clear detail, Bidders run the risk of their bids being declared non-responsive.
- To assist in the bid evaluation, the detailed descriptions should be organized and cross-referenced in the same manner as the Bidder's item-by-item commentary on the Technical Specification described below. All information provided by cross-reference **MUST**, at a minimum, include clear titles and page numbers.

Item-by-Item Commentary on the Technical Specifications

- The Bidder **MUST** provide an item-by-item commentary on the Purchaser's Technical Specifications, demonstrating the substantial responsiveness of the overall design of the System and the individual softwares, goods and services offered to those Technical Specifications.
- In demonstrating the responsiveness of its bid, the Bidder are strongly urged to use the Technical Responsiveness Check List provided in the bid document. Failure to do so, increases significantly the risk that the Bidder's Bid will be declared technically non-responsive. Among other things, the check list should contain explicit cross references to the relevant pages in the Bidder's bid.

Preliminary Project Plan

- The Bidder **MUST** prepare a Preliminary Project Plan describing, among other things, the methods, and human and material resources, which the Bidder proposes to employ in the design, management, coordination and execution of all its responsibilities, if awarded the Contract, as well as the estimated duration and completion date for each major activity. The Preliminary Project Plan **MUST** also address the topics and points of emphasis specified in *[state: "SCC Clause 19" and /or specify: items in the **Bid Data Sheet** in relation to ITB Paragraph 16.2 (c)]*. The Preliminary Project Plan should also state the Bidder's assessment of the major responsibilities of the Purchaser and any other involved third parties in System supply and installation, as well as the Bidder's proposed means for coordinating activities by each of the involved parties to avoid delays or interference.

Confirmation of Responsibility for Integration and Interoperability of Information Technologies

- The Bidder must submit a written confirmation that, if awarded the Contract, it shall accept responsibility for successful integration and interoperability of all the proposed softwares included in the System, as specified in the Bidding Documents.

Training

- The Bidder is responsible for training the designated purchaser's technical and end user personnel at respective Data Storage Centres to create User accounts and management of the network Operating System and Network at respective locations.
- The Bidder is responsible for training the designated purchaser's technical and end user personnel in imparting hand-on training for all software Products and GIS in particular wherever supplied.

**FORM 13. SERVICE SUPPORT DETAILS
(CLAUSE 6.1A OF INSTRUCTIONS TO BIDDERS)**

		NEAREST SERVICE CENTRE							
		Location							
Pack No.	Destination	Phone No	Telex/ Fax No.	Status of Office Working Days and Hours	Numbers of Software Engineers	Numbers of Hardware Engineers	Number of Hardware Staff	Value of Min. Stock Available at all times	List of Models & Types of PCs services in Last 2 years

Signature and seal of the
Manufacturer/Bidder

PURCHASER

BIDDER

PURCHASER

BIDDER

Government of India
Central Water Commission
River Data Directorate

West Block – I, Wing No. 4
2nd Floor, R.K. Puram,
New Delhi

Dated: May, 2001

To,
The Commissioner (WM)
Lok Nayak Bhawan
Khan Market
New Delhi – 110 003

Subject: Hydrology Project - Software for Data Storage Centres – April 26, 2001

Dear Sir,

As scheduled, the pre-bid meeting in connection with the above procurement was held on April 26, 2001 at the Committee Room, Sewa Bhawan, CWC, New Delhi. The representatives of some of the participating agencies and officers of CWC have participated in the pre-bid meeting. There was very good response from the bidders.

The minutes of the pre-bid meeting combined with Addenda No. 1 and replies to the clarifications of the bidders are enclosed herewith for your kind reference. It is requested that these may kindly be forwarded to the World Bank for their perusal and issue of “No Objection Certificate” at an early date so that the approved addenda and replies could be forwarded to the bidders.

In the bid document, the date of submission of the bid has been indicated as May 28, 2001. However, based on discussions during the pre-bid meeting and the complexities involved in the bid submissions, the closing date of the bid has been extended to June 29, 2001. The approved addenda and replies of the queries need to be forwarded by 04.06.2001.

Yours Sincerely,

S. K. Sengupta
(Chief Engineer)

- Encl.: 1) Minutes of pre-bid meeting (sheets - 2)
2) Addenda No. 1 of April 26, 2001 (sheets - 5) with 4 nos. corrected sheets.
3) Replies to questionnaire (sheets – 18)
4) Bid Evaluation Form (sheets – 20)
5) Price Schedules (sheets – 10)
6) Quality Assurance Protocol (sheets - 26)
7) Implementation Schedule (sheet –1)

**HYDROLOGY PROJECT
(Credit No. 2774-IN)**

IFB No. ICB/CWC/RDD/I-1/2001

ICB for Design, Supply, Installation, Testing, Training and Commissioning of software for Data Storage Centres.

MINUTES OF THE PRE-BID MEETING HELD ON APRIL 26, 2001 AT DELHI

The pre-bid meeting for above bid was held on April 26, 2001 at the Committee Room, Sewa Bhawan, Central Water Commission, R.K. Puram, New Delhi – 110 066. The Chairman of the meeting was Mr. S.K. Sengupta, Chief Engineer (P&D), Central Water Commission.

The following Officers participated in the Pre-bid meeting:

1. Mr. S.K. Sengupta, Chief Engineer (P&D), CWC, New Delhi - In Chair
2. Mr. Kailash Nath, Director (R.D. Dte.), Central Water Commission, New Delhi
3. Mr. A.K. Goyal, Dy. Director (R.D. Dte.), Central Water Commission, New Delhi
4. Mr. S. Purushothaman, Chief Engineer, PWD, State Ground Water & Surface Water Resource Data Centre, Chennai
5. Mr. Fatehsingh Rao Jadhav, Director, GSDA, Pune
6. Mr. P.A. Jethva, Supt. Engineer, WRI, Ahmedabad, Gujarat
7. Mr. V.K. Bhatia, Director, WRD, Bhopal, MP
8. Mr. D. Shanmugam Sundram, Technical Expert, PWD, State Ground Water & Surface Water Resource Data Centre, Chennai
9. Dr. V. Subba Rao, Scientist 'D', National Informatics Centre, New Delhi
10. Mr. K.S. Vasanth Rao, Exe. Engineer, AP State Ground Water Dept. Hyderabad, AP
11. Mr. D. Srikantha Murthy, Dept. of Mines & Geology, Bangalore, Karnataka
12. Mr. M.S. Vaidya, Sr. Geologist, Groundwater Surveys & Development Agency, Pune
13. Mr. Vineet Gupta, Dy. Director, Central Water Commission, New Delhi
14. Mr. A.S. Goel, Dy. Director (SM), Central Water Commission, New Delhi
15. Mr. S.N. Gupta, EAD (RD Dte) Central Water Commission, New Delhi
16. Mr. T.K. Sadhu, Accounts Officer, Central Water Commission, New Delhi
17. Mr. J.G. Grijsen, Team Leader, HP Consultants, New Delhi
18. Mr. R.K. Visvanath, Dy. Team Leader, HP Consultants, New Delhi
19. Mr. B.W.G. Blok, Consultant, HP Consultants, New Delhi
20. Mr. S. Sangal, IT Expert, HP Consultants, New Delhi
21. Mr. Y.V.D. Rao, TA Consultant, HP Consultants, New Delhi
22. Mr. Rattan Lal Qazi, TA Consultant, HP Consultants, New Delhi

The following bidders/representative of bidders participated in the pre-bid meeting proceedings:

1. Mr. Rakesh Kapoor, M/s. Tata Infotech Ltd., New Delhi
2. Mr. Satnam Sethi, M/s. Tata Infotech Ltd., New Delhi
3. Mr. Deb Raj Saha, M/s. STG International Ltd., New Delhi
4. Mr. Rakesh Plaha, Rolta India Ltd., New Delhi
5. Mr. R.S. Rathi, Rolta India Ltd., New Delhi
6. Mr. Sanjay Dhar, Rolta India Ltd., New Delhi
7. Mr. Ajeet Prasad, Unidata Asia Pvt. Ltd. New Delhi

8. Ms. Reema Gupta, Centre for Development of Advanced Computing, New Delhi
9. Mr. Steve Brignall, Science Systems Pic, England
10. Mr. Frank Farquharson, CEH, Wallingford, United Kingdom
11. Mr. Vivek Gautam, Tata Consultancy Services, Delhi
12. Mr. Rohit, Tata Consultancy Services Delhi
13. Mr. Abhishek Manchanda, Siemens Information Systems Ltd., Gurgaon
14. Mr. Sushmito Mukherjee, Siemens Information Systems Ltd., Gurgaon
15. Mr. Achy Roa, NIIT GIS Limited, New Delhi
16. Mr. Vishal Anand, NIIT GIS Limited, New Delhi
17. Mr. M.N. Dixit, M/s. Silpa Infotech Ltd., Hyderabad
18. Mr. P. Arun Swaroop, M/s. Consoft System Pvt. Ltd. Hyderabad
19. Mr. K.V. Srinivasan, HSQ Technology, New Delhi

The meeting started at 11.00 hrs. The Chairman welcomed the participants to the pre-bid meeting and expressed that the large gathering indicates the importance of the bid. He in his opening address highlighted the importance of such a meeting and requested the participants to involve themselves fully in the proceedings so that all the clarifications required either in terms of technical specifications or commercial clauses can be discussed so that all the bidders are fully conversant with the conditions under which they would submit their bids.

The representatives of the H.P. Consultants explained the various technical features of the software and the importance of the Quality Assurance Protocol in the development of the software. Various aspects of the bid document relating to the Bank procedures were also explained.

The participants were also informed that the processing of the bid is being carried out centrally by Central Water Commission on behalf of all the states and other central agencies comprising in total 31 data storage centres. The importance of the completing the price schedule for all the items as well as the various features of joint venture deeds were brought forward. It is also been clarified that bid offered for partial item of the schedule would be considered as "non-responsive" and would not be considered for further evaluation. The participants were also been informed that all the discussions with the agencies would be processed for approval of the World Bank and thereafter would be made available to them as an addenda as per clause 13 of the ITB.

The pre-bid meeting continued in the post lunch period with good discussions on various technical as well as commercial aspect of the bid. There were written queries from the following 4 firms 1) Tata Infotech Limited, New Delhi 2) Tata Consultancy Services, New Delhi 3) Rolta India Limited, New Delhi 4) Centre for Ecology and Hydrology, United Kingdom. During the meeting there were additional queries from Siemens Information Systems Ltd., Gurgaon and STG International Ltd., New Delhi.

At the end of the meeting there were requests from the bidders for an extension for submission of the bid. It has been indicated that a clear 21 days would be allowed from the date by which the bidders receive the World Bank approved addenda and related clarifications.

The Chairman at the close of the pre bid meeting thanked the participants for a lively discussions and indicated that all the points discussed during the pre bid meeting shall be taken into account by the bidders while preparing the bid for submission.

**Hydrology Project
(Credit No. 2774-IN)**

IFB: ICB/CWC/RDD/I-1/2001

**DESIGN, SUPPLY, INSTALLATION, TESTING, TRAINING AND
COMMISSIONING OF SOFTWARES FOR DATA STORAGE CENTRE**

ADDENDA NO. 1

DATED APRIL 26, 2001

Please refer to the IFB cited above. The following addenda is issued in pursuance of **ITB clause 11**.

Invitation for Bid (IFB)

- 1. Para 2 line 3**
Replace 30 DSC with '31 DSC'.
- 2. Para 5**
Replace Procurement of Goods with 'Supply and Installation of Information System'.
- 3. Para 9**
Date of submission of bid is being suitably modified.

Section – I: Instructions to Bidders (ITB)

Nil

Section – II: Bid Data Sheet (BDS)

- 4. Page 40; ITB 6.1 (a)**
Insert the revised versions of ITB 6.1 (a), (b) and ITB 6.2 enclosed.
- 5. Page 43; ITB 14.2**
Insert the revised version of ITB 14.2 enclosed.
- 6. Page 45; ITB 14.2 (e) (i) line 2**
Replace 'locations as specified in Inventory Table in Section VI I' by 'locations of DSCs as specified at Page 182'.
- 7. Page 46; ITB 21.1**
Form 9.2 shall be replaced with Form 10.
- 8. Page 47; ITB 21.1**
Date of bid submission is being suitably revised.
- 9. Page 50; ITB 36.3**
Delete the clause ITB 36.3

Section – IV: General Conditions of Contract (GCC)

Nil

Section – VI: Special Conditions of Contract

10. Page 138; GCC 1.1(a)(ix) line 4

Add the following after January 1999 ‘and supply and installation of information systems Feb 1999’.

11. Page 138; GCC 1.1(e)(ii)

(a) Delete the words ‘State Capital’

(b) Add ‘Chhattisgarh’ between AP and MP; Add ‘Haryana’ after New Delhi

12. Page 146; GCC 12.1

Add 12.1(c) as below:

(c) For warranty and post-warranty service period all Recurrent Cost items covered by Contract, payment shall be paid in equal quarterly instalments within thirty days of receipt of claim for each quarter after completion of warranty/maintenance obligations of the previous quarter at the rates quoted in the price schedule. Bank guarantee for 2.5% of contract price (exclusive of recurrent cost) in the form provided in the bidding documents valid for 36 months from the date of completion of the 3 years warranty period. The Bank guarantee submitted towards performance guarantee will be released only after receipt of the above.

(i) to (v) Insert the revised version of SCC 12.1 (c) (i) to 12.1 (c) (v) as below

	<p>(i) Advance Payment: 10% of the Contract Price, exclusive of all Recurrent Costs, shall be paid within twenty eight (28) days of the Effective Date of the Contract, on submission of a claim together with evidence of export authorization and a bank guarantee for the equivalent amount valid until the System is delivered, installed and operationally accepted.</p> <p>(ii) Application Software (Item 1 of Price Schedule 2.1): 80% of the part of the Contract Price associated with these components against installation and operation certificates of the systems at thirty one Data Storage Centres, on pro-rata basis provided individual invoice is not less than for eight (8) DSCs.</p> <p>(iii) Procurement of Database standard RDBMS softwares and other standard software (Items 2, 3, 4 & 5 of Price Schedule 2.1) 80% of the part of the Contract Price associated with standard softwares like RDBMS, front tools, client licenses etc. on successful installation of the same on purchasers’ computers systems and operationally accepted, on pro-rata basis provided individual invoice is not less than for eight (8) DSCs.</p> <p>(iv) Training: 80% of the part identified for training will be paid on submission of the attendance sheets signed by the scheduled participants for respective locations and certified by the Project Manager.</p>
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|--|--|
| | (v) Balance part of the Contract Price associated on Operational Acceptance by the Project Manager, of the system as a whole in all respects for the respective locations and submission of all Service call reports, showing the outstanding works specified in Installation Certificates are completed for the respective locations. |
|--|--|

- 13. Page 147; GCC 13.3.4(b)**
GCC 13.3.4(b): During the Post-Warranty Periods the Performance Security shall be reduced to 2.5% of the Contract Price, exclusive of the Recurrent Costs.
- 14. Page 148; GCC 15.5**
Delete the existing clause with the following:
‘The Supplier shall supply source code, tools, functions and documentations for catalogue creation and maintenance’.
- 15. Page 149; GCC 19.1**
Add (i) at the end:
‘(i) Quality Control plan’.
- 16. Page 150; GCC 19.5**
Add (viii) at the end:
‘(viii) Quality Control aspects’
- 17. Page 152; GCC 29.10**
Replace the existing clause with the following:
‘The maximum response time for a maintenance complaint from any of the storage centres specified in the schedule of requirements (i.e., time required for suppliers maintenance engineers to report to the installation after a request call/telegram/fax is made or letter is written) shall not exceed 4 (four) days and rectification effected within 7 (seven) days from the date of complaint’.
- 18. Page 155; GCC 43**
Delete the clause GCC 43

Section – VI: Technical Specifications

- 19. Page 171**
Replace last para by:
The field data has meta-data linked to it. The database should be compatible with databases as applied under the SWDES and the GWDES as far as possible but optimised for maximum performance of the DSC and easy data transfer with the DPCs.
- 20. Page 175 (19/55)**
Add between 4th para and Non-equidistant time series the following line.
An alternative method to store time series may be proposed provided that it is optimised for time series storage and retrieval and highly efficient in data retrieval.

21. **Page 179, Figure 2**
Read Owner DPC instead of Partner DPC
22. **Page 181**
Further a central web site will be established to provide a central point of access for HDUs to the Catalogue. The central web site is not associated with a DPC, hence, it will not contain hydrological data.
23. **Page 181; Table 2**
Replace SSWD and SGWD – 6 with ‘SSWD and SGWD – 7’. Total DSCs shall be 31 instead of 30.
24. **Page 182; locations of DSCs**
Add 11 as below:
 11. State Data Centre – ChhattisgarhExisting 12 to 30 shall be numbered as ‘13 to 31’.
25. **Page 183; Chapter 7**
add to second Para:
The implementation of the DSC functions and database shall be generic and scalable.
26. **Page 187; Para 7.3**
Owner DPCs and local DPC may freely **exchange** data via the DSC hub function. The Catalogue does support such data exchange for Owner and Local DPCs only.
27. **Page 191; Para 7.5**
Replace Para on Encryption by:
Where needed and feasible, data may be delivered in encrypted format. A standard encryption system, such as SSL (Secure Sockets Layer), DES or IPsec (IP security protocol), shall be implemented. A system to manage distribution of public and private keys shall be set-up (ISAKMP or equivalent) together with a system for digital signatures like DSS. Which system has to be decided in consultation with the Purchaser.
28. **Page 196; Para 8.3.1**
Add after “Each map layer can be active or not active” to following line:
The GIS functions are intended for spatial search and selection on the meta-data only, no visualisation or processing of hydrological data and/or Objects as stored by the DSCs is required.
29. **Page 201; Para 9.8**
Replace entire last line by:
SSL and DES based encryption where needed on external data supply in association of a system for key exchange (like ISAKMP) and a digital signature standard (DSS).
30. **Page 203; Section 10 Hardware Specifications**
Hardware Specifications and quantities are enclosed.
31. **Page 209; Para 11.6, 2nd Bullet point**
Read ‘all transfer file’ instead of d Base file.

- 32. Page 210; Section 12 Acceptance Protocol**
Please refer to ‘Quality Assurance Protocol’ enclosed.
- 33. Page 210; Para 12 Acceptance Protocol**
Replace the first line of the first para by:
A Quality Assurance Protocol will be implemented during the entire project trajectory, starting from the moment of contract award. One of the requirements of the QAP is the execution of a comprehensive Acceptance Protocol; the latter shall be prepared by the vendor.
- 34. Page 212-213; List of Consignees**
Revised list of consignees is attached.
- 35. Page 214; Implementation Schedule**
Revised schedule is enclosed.

Section – VII: Sample Forms

- 36. Page 222; Price Schedule Form**
Numbering of Forms shall be as indicated below:
- 2. Price Schedule Forms**
 - 2.1** Information Systems & Associated Goods Supplied from Abroad
[ITB 14.2 (a) as modified by the bid data sheet]
 - 2.2** Information Systems & Associated Goods to be Supplied from Purchasers Country
[ITB 14.2 (b) as modified by the bid data sheet]
 - 2.3** Local Transportation, Insurance and other Incidental (including installation and commissioning) Services Price Schedule (Prior to Warranty Period)
[ITB 14.2 (c) and (d) as modified by the bid data sheet]
 - 2.4** Recurrent Cost Sub-table
[ITB 14.2 (e) as modified by the bid data sheet]
 - 2.5** Taxes and Duties
[ITB 14.2 (f) as modified by the bid data sheet]
 - 2.6** Maintenance Service Details for Warranty Period and Post Warranty Period
 - 2.7** Country of Origin Code Table
 - 2.8** Bid Price Summary Form
- 37. Page 235 to 234**
Deleted
- 38. Pages 245 – 255; Price Schedule forms**
Revised Forms 2.1 to 2.8 are enclosed.
- 39. Pages 288 – 289**
The Bid Evaluation Form (Annexure – I) shall be appended to Technical Responsiveness Form.

**Hydrology Project
(Credit No. 2774-IN)**

IFB: ICB/CWC/RDD/I-1/2001

DESIGN, SUPPLY, INSTALLATION, TESTING, TRAINING AND COMMISSIONING OF SOFTWARES FOR DATA STORAGE CENTRE

CLARIFICATIONS REQUIRED BY BIDDERS

ALL CLARIFICATIONS IN RESPECT OF ORACLE APPLY TO ORACLE/SQL SERVER

Contract Clause	Queries by Bidders	Clarifications
GCC Section 23.5 & (GCC Section 7.3 page 141)	The upgradation of any new version released has to be done at any stage of the contract, This may result in cost escalation and time overrun. Same requirement asked during maintenance of system (GCC Section 7.3 page 141)?	The upgradation refers to upgradations / service packs / fixes available from the OEM within the same generic version number, eg. Version 7.x.x
GCC 12 page 145-146	<p>1. Will the CWC accept alternative payment terms (GCC 12 page 145-146). In the proposed payment terms (in RFP) by CWC almost 80% payment will be released after operational acceptance at all sites. Its not clear as to when the final 10% payment will be released?</p> <p>2. Will the CWC provide acceptance test cases?</p>	<p>The payment conditions will remain the same Balance items of (i), (ii), (iii) and (iv) would be released after acceptance tests and installation certificates at respective locations.</p> <p>Stringent acceptance tests are part of the quality assurance protocol. These are enclosed herewith.</p>
Technical requirement	<p>3. Does various data processing centres (DPC) have their respective computer systems (both hardware and software), networks and database servers in place?</p> <p>4. Is the data updation between servers in DPC and proposed database servers in Data storage centres (DSC) done on line or in batch processing mode?</p> <p>5. The degree of complexity / transaction rate of data transfer is not explicitly specified for estimation purpose.</p> <p>a) Is there any requirement of data entry required to be done at DSC?</p>	<p>Not yet; Hardware and networking are being processed separately.</p> <p>Batch mode</p> <p>a) Data entry is primarily file based (Data Import) b) The input files come from SWDES/HYMOS/GWDES/GW dedicated</p>

	<p>b) Since various DPC can transfer updated data in various specified formats via mail etc. to DSC, how data updation in database server at DSC will be done?</p> <p>6. The tender states the requirement for a help desk with skilled staff with a permanent office (a minimum of 4 offices) within 200 km of each of the 8 state capital, please elaborate?</p> <p>7. The scope of hardware to be provided is not very clear. Can a elaborate list be provided?</p> <p>8. Will the CWC accept recommended GIS software tools/package by vendor or it has its own recommendation, please confirm?</p> <p>9. The scope of Internet access with what security levels / information to be provided is not very clear?</p> <p>10. 4 weeks will be required for Study, Development, Testing and Acceptance (Tender specifies only 16 weeks)?</p> <p>11. 8 weeks will be required by Implementation at 30 sites (tender specifies 4 weeks)</p> <p>12. 8 weeks will be required for training at 30 sites (tender specifies 4 weeks)</p> <p>13. Who will bear the cost of CDs (duplicating)?</p>	<p>software & associated software.</p> <p>Each DSC will have a helpdesk function to assist the HDUs. At 4 localities, spread over the project area the Vendor shall establish a helpdesk to support the DSC's staff.</p> <p>See attachment "A" enclosed.</p> <p>CWC does not recommend specific GIS package. The package will, however, have to be compatible with most GIS packages. A standard GIS package with universally acceptable format should be used. (only for display & relation)</p> <p>Please refer to Para 7.5 of Page 19 to 91 of Bid document</p> <p>Please refer to revised Implementation Schedule at Page 214 of Bid document</p> <p>CWC bear recurrent costs.</p>
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	14. Who will bear the cost of web site hiring, maintenance?	CWC
Software shall be scalable	(15) Please provide the detailed data models of SWDES, GWDES, HYMOS, GWDPDS, IMD and other DPCs, which data are going to be stored at DSC?	CD with table formats for data fields, for object data – description is provided
	(16) Are the systems at DPC's i.e. SWDES/GWDES/HYMOS/IMD ODBC Complaint?	SWDES/GWDES – Access – ODBC HYMOS – Access/Proprietary Dedicated GWDPDS – Oracle IMD - ASCII
	(17) What is the output format for the SWDES/GWDES/HYMOS etc.?	Data files, transfer files or Access/ASCII with controls.
	(18) (a) Typically how many field offices/stations would be under a DSC?	Surface Water: ABOUT 600 SRGs, 200 ARGs, 75 FCSs, 50 GD, 250 GDSQ stations, 300 Reservoir stations GW - 10 – 25 field offices 3000 dug wells (12 records/year) 800 piezometers all with DWLR (6 hrly) 3000 water quality samples/year (46 parameters) Resource assessment for 1500 blocks
	(b) What is the size of data file coming in from one field office?	SW: Field office if taken as Sub-Division then it would be about 1.4 mega numbers (annual) GW : 500K numbers including DWLR data (annual)
(c) What is the approximate volume of data (could be in terms of number of records per months) expected from DPCs per year)?	SW: 35 mega numbers + objects GW : 15 mega numbers + objects	
	(19) Would we have a single global database for meta data across all DSC or every DSC will keep meta data about all other DSC data? Or Will have the hyperlink to other DSC's meta data web pages?	Each DSC will generate the meta data pertaining to the data in its custody, covering the historical data as well as current data. Each DSC has the capability to hold the meta data

		of any other DSCs. Presently DSCs are 31, in future can be increased (say to 63). All DSCs should be capable to hold and use the meta data sets of all DSCs.
	(20) In case if every DSC will keep meta data about all other DSC data, then please specify frequency of Meta data exchange between DSC's.	Once per month generally.
On Page 172 Item 5.1.5 Meta data	(21) Please specify which standard is to be followed for both non-spatial and spatial Meta Data Creation.	The meta data should be conclusive to search and select any stored data in a user friendly and reproductive way.
	(22) Please specify which Oracle RDBMS Edition i.e. Standard or Enterprise Edition required under the project because it will have cost implication? Based upon our experience we strongly recommend the Oracle Enterprise Software for each DSC to handle the terabytes of data.	Enterprises version of Oracle/SQL Server
	(23) What would the purging criteria be for the database? Is there any criteria based on that we can partition the database for efficient storage/backup?	Evaluate at study stage
Page 203 Section 10.1 Computer	(24) Please correctly specify the processor speed of the Database and Web Servers since it will be required for Oracle pricing? Presently the DB and Web Servers speed are mentioned as > 500MHz.	Dual CPU processor max. 900 MHz
	(25) Does the client have preference of the OS/Hardware platform for hosting the database?	Windows 2000
Page 175 Item 5.2.3 Time Series Data,	(26) Equidistant Time Series (a) What is the time granularity for authenticated data? (b) It is needed to aggregate to higher time interval and store in the DB? (c) Does the DSC software should have facility for interpolation and extrapolation for generating equi-distant time series data of different parameters?	(a) Data dependent, currently 15 minutes to one year; scalability required. (b) No, aggregated hydrological data is delivered by DPC (c) No

Page 166 item 3.3	<p>Activities in the HIS mentioned</p> <p>(27) Is it true that the processed data (authenticated) transferred once in year from DPC to DSC i.e. after the end of the hydrological year?</p>	Updates could be monthly, seasonal upto annual
Page 167 Second Paragraph	<p>(28) “In respect of IMD a protocol has to be evolved by a special High Level Technical Group (HLTG).”</p> <p>(a) Does it mean that the IMD database will not be covered in the present DSC?</p> <p>(b) If answer is “NO”, then please clearly specify who will be responsible for evolving these protocols and also the extent of database to be stored in DSC?</p>	<p>IMD database also would be covered.</p> <p>Interface between IMD Data database and HYMOS data base are being worked out. A standard transfer program already exists.</p>
Page 167 Second Bullet List Item 6	<p>(29) “To ensure compatible database configuration and protocols by all agencies.”</p> <p>(a) Who will be responsible for ensuring the above point?</p> <p>(b) Are the above standards and protocols prevailed in HIS?</p> <p>(c) If the answer is “No”, then specify who will be responsible for evolving these compatibility, standards and protocols?</p>	<p>(a) Formats for interface are provided in the enclosed CD. Final format and protocol to be forzen during implementation. Workflow is designed in QAP document</p> <p>(b) Yes</p> <p>(c) –N. A.</p>
Page 169 Second Paragraph under Item 4.1 Hydrological Data Supply	<p>(30) “The local DPCs may deliver field and or authenticated data to assist the data validation at the other local DPCs. These data are loaded in the temporary repository and are discarded after finishing the data validation/processing. The validating DPC keeps track of which data are used for the data validation, in such a way that all steps in a validating process can be traced back.”</p> <p>(a) What do you mean by “validating process can be traced back”?</p> <p>(b) Does each of these validation steps needs to be stored into the separate tables?</p> <p>(c) As mentioned in the RFP that all the data validation will be carried out at DPCs then “Is it true that these validation-processing steps monitored and stored at DPCs not at DSCs.?”</p>	<p>(a) it should be known which data is used for processing</p> <p>(b) .Design feature : the requirement is clearly to be able to trace the validation process</p> <p>(c) The DPC keeps track and delivers relevant data for storage</p>

	<p>(31) As DSC are supposed to check for integrity of data before accepting it.</p> <p>(a) Are there defined standards/rules for quality of data?</p> <p>(b) How are different types of data (field data, object data, and temporary data) checked for integrity and correctness?</p>	<p>The DSC is not in the position to execute a thorough hydrological validation. However, the DSC should check if values are within limits as defined by the DPC (variable, date, time etc.), all entities are of the proper format types (e.g. dates, yyyy/mm/dd time, hh:mm:ss), data types are correct, text fields of proper size etc. Also, the authenticity of the transfer process needs to be validated.</p>
Field Data	<p>(32) Field Data</p> <p>(a) How field data is maintained at DPC's? Is it maintained as ASCII files or Oracle tables or any other format?</p> <p>(b) What is the format of storing field data at DSC?</p> <p>(c) Will field data be stored in Oracle as BLOB/CLOB files?</p>	<p>(a) SWDES/GWDES – Access – ODBC HYMOS – Access and Proprietary GWDPS – Oracle IMD – ASCII proprietary format</p> <p>(b) See attachment 6.3 of BEF</p> <p>(c) In RDBMS time series (native/emulated) or in BLOB.</p>
Map Data	<p>(33) Map Data</p> <p>(a) Please elaborate the actual requirement of map display?</p> <p>(b) How the maps are stored at DPC?</p> <p>(c) What are the formats of spatial maps?</p> <p>(d) Will GIS files be stored in Oracle as BLOB files?</p> <p>(e) What information you want to display as map with meta-data catalogue?</p> <p>(f) How the thematic, labels, cartography symbols etc. will be defined on the fly for map display?</p> <p>(g) On Page 173 Item 5.2.1 Geographical or Space Oriented Data under heading Maps and GIS Layers</p> <p>“Maps should be geographically referenced, and geographically referenced measurement locations added to the database should be automatically added to the map base.”</p>	<p>(a) <u>No display</u> of stored map objects</p> <p>(b) As objects</p> <p>(c) As delivered by DPC</p> <p>(d) As objects</p> <p>(e) Spatial distribution of data collection stations in administrative, infrastructure and hydro-geological context.</p> <p>(f) See attachment 3.0 BEF</p> <p>The GIS software will not be used to view the maps stored in the DSC. It will be a front end tool for the Catalogue for viewing and selection purpose only.</p>

	<p>Note: To the best of our knowledge no generic Map Display Web tools are available which can handle all the GIS data formats such as ESRI, Mapinfo, Autodesk, Bentley, Intergraph format etc. Secondly, the map service is to be created for display the GIS data. For creating these services one has to convert the data into the proprietary data format and create the map definition/geo-data-set files with layer, thematic, cartography, labels and legends information. Thirdly, when we are storing the GIS data into the Oracle as BLOB/CLOB files will not be possible. We are unable to understand how this map display will assist in HDU in searching and selection except the map display with areas falls under DSC's jurisdiction and field office locations etc.</p>	
<p>Page 170</p>	<p>(34) Hydrological Data User: “This diverse category of hydrological data users has only access to authenticated hydrological data and not to the field data and the temporary data. For search and selection of the required data a catalogue is made available. The catalogue comprises the meta-data and a search and selection engine (browser). The result of a data selection session is request for data, which is generated in computer file. This file is dubbed Data Request File (DRF). The DRF can be submitted to the specific data custodian DSC(s) via telecommunication, e.g. email or FTP (if available) or by post/hand carried on physical media. The DSC will verify the HDU's authorisation level to establish if the HDU is entitled to receive the requested data.”</p> <p>(a) Is the catalogue for search and selection should be available for only the Authenticated Hydrological Data?</p> <p>(b) Is there any standard format for DRF?</p> <p>(c) Is it apparent from the document that only Authenticated data will be used for periodical reporting? Confirmation sought.</p>	<p>(a) The Catalogue should cover all data in the custody of the DSC. However, only the owner DPCs will see the field data and the temporary data. Objects that are released for access by HDUs (e.g. manuals) may be based on SQL or any other convenient language/format.</p> <p>(b) No, it may be based on SQL or any other convenient language/format.</p> <p>(c) To the HDU, only authenticated data will be disseminated. To the DPCs, temporary data will also be given. The catalogue should provide for both.</p>

Page 172 Item 5.1.3	<p>(35) Temporary Data</p> <p>(a) What data types are requested as temporary data?</p> <p>(b) Will temporary data be stored in Oracle?</p> <p>(c) If the answer is “Yes” then how the temporary data can of any type or category be stored in Oracle?</p>	<p>a) The temporary data is of any of the types of the field, authenticated data and the objects.</p> <p>b) To be handled in the same way as the field and authenticated data as well as the objects.</p> <p>c) See (b) above and attachment</p>
Page. 179 Sec. 6.2	<p>(36) Output data flow</p> <p>(a) How many standard reports are to be developed?</p> <p>(b) What would be the periodicity of reporting?</p> <p>(c) How much period worth of data would be needed for reporting?</p> <p>(d) How much of history might be needed for reporting?</p> <p>(e) Do we have sample reports/existing reports for analysis/study?</p> <p>(f) What is the approximate number of concurrent users of reports?</p>	<p>Statistical, exception, listings for all types reporting on current and historical (archived). Also refer Section 13.13 and 16.0 of BEF</p>
Catalogue	<p>(37) Catalogue</p> <p>(a) Catalogue functionality not clears especially technology for front-end-implementation?</p> <p>(b) Would the Catalogue be based on Local DBs installed or Central DB having metadata of all DSC’s?</p> <p>(c) The document states that catalogue will be web based reporting with search capability. At other place it talks about CD-ROM implementation of Catalogue. Need clarification on that?</p> <p>(d) What is meant by CD-ROM implementation of catalogue?</p>	<p>(a) GUI, user friendly interface in standard language.</p> <p>(b) Catalogue – combination of all</p> <p>(c) Both are the project requirements.</p> <p>(d) Distribution copy of catalogue with application software, GIS tool etc.</p>
Page. 181 Section 6.5	<p>(38) Validation Services</p> <p>(a) Would National DSC be superset of its regional DSCs?</p> <p>(b) If National DSC consists of data existing in regional DSC, who would be the owner of the data as represented in catalogue?</p> <p>(c) Will the National DSC have only the meta-data of the DSC’s under their jurisdiction?</p>	<p>(a) Regional DSCs + other departments DSCs</p> <p>(b) The regional DSC</p> <p>(c) Meta-data plus any other data, possibly a selection of the regional data</p>

Page. 182	<p>HIS DSC main functions Please define DSC main functions:</p> <ul style="list-style-type: none"> (a) Accounting Module (b) Audit Module (c) Customisation by parameters 	<ul style="list-style-type: none"> (a) Billing of data supply (b) Common DB audit (c) Standardized software
Page 184	<p>(39) User Support</p> <ul style="list-style-type: none"> - Is help desk setting for HDU's falls with in the scope of work? 	The enabling of the help desk should be part of the delivery
Page 185 Section 7.2	<p>(40) "Maintenance and safe guarding of the stored data"</p> <ul style="list-style-type: none"> - What is the role of the executing agency under this item? 	The maintenance and safeguarding of data will be executed by the DSC staff. Proper tools should be part of the delivery.
Page 209 (ITB 11.6)	<p>(41) When will be client except a demo as mentioned in the document? We can deliver them evolutionary type prototype after requirements are finalized and system is designed.</p>	Please refer to para 3 of QAP document
	<p>(42) What is the expected time frame for pilot implementation?</p>	26 weeks
	<p>(43) Will legacy data porting/migration/export be the part of present scope?</p>	Through SW DES/GW DES, else stored as object. Also through dedicated GWDPS and IMD interface
Page. 247 (ITB 14.2(B))	<p>(44) Application Software and Associated Goods Supplied From Purchaser's Country. As modified in the Bid Data Sheet</p> <ul style="list-style-type: none"> (a) Standard software quantities are not mentioned? (b) The software items do not match with the proposed solution? (c) What is "Data exchange product"? (d) What is the role of Developer/2000 software etc.? 	Please refer the modified Price Schedules
Page 146 GCC 12.1 Clause 5	<p>(45) Payment Terms</p> <p>As per the clause the application software development payment can be released only after the software has been developed for all the 31 DSCs. You are requested to have the payment released on proportionate basis.</p>	The payment terms are as given in bid document

Page 151 GCC 28.2	(46) Liquidity Damage The liquidity damage will be assessed at the rate 0.5 per cent of the contract price per week and the maximum liquidity damage of 10 per cent. Kindly omit this clause	No change proposed.
Page 142 GCC 8.2	(47) Operation acceptance will occur or on before 6 months from the effective date of contract. Kindly extend to 8 months	Please refer to the modified Implementation Schedule at Page 244 of Bid document
Pg. 141 GCC 7.3	(48) The maintenance for 3 years after one year warranty. To quote maintenance support services for 3 years is not possible as per Oracle and other software product companies maintenance support policies. We will not be in a position to quote maintenance prices.	The upgradation refers to upgradations / service packs / fixes available from the OEM within the same generic version number, eg. Version 7.x.x. Support on the supplied version has to be quoted for.
	(49) Please specify the length of years of DPCs data going to be online at DSC	At least the data of present and previous hydrological years, i.e. at least all data of 2 complete hydrological years. Additionally, provision to download one year additional data.
	(50) For all third party products such as Oracle, Visual Studio, GIS web tools etc. the payment terms should be 100% against delivery of the software	The payment terms remains unaltered.
	(51) Please specify the exact number of users of Oracle DB at each DSC?	Maximum of five users
	(52) Does the purchaser have Networking infrastructure in place at various locations or sites, If not then who would be responsible for the same?	LAN is part of the hardware contract; it is being processed separately.
	(52) Who would be responsible for providing and installing standard Softwares like MS Office, RDBMS Software?	Bidder for all software except MS Office
	(53) Does the Purchaser has the existing Back up data, Archiving Software? a) If Yes, then we would request you to furnish us the details of the same? b) If No, then whether to be supplied by the Vendor or the purchaser?	No. N.A. Bidder to supply through this contract.
	(54) During the Project period, who will maintain and manage the Back Up system?	The DSC staff

	(55) Whether the Purchaser will give the workflow of data?	Refer QAP attached
	(56) Who would be responsible for System Administration during the Project Implementation?	DSC, after training by bidder.
	(57) Whether the developed application software is to be integrated with the existing system. If yes, then we would request you to provide the details of the Softwares, files, data to be integrated?	The DSC is a separate unit, which receives data from and delivers data to the DPCs via LAN. Details are being given on the CD
	(58) Training (a) Whether the Training would be Imparted on standard Softwares like MS Office, Oracle etc.? (b) How many people would be required to be trained? (c) Whether Training would be given at all the locations or at selected, central location?	Please refer to the detailed training plan given in the modified ITB clause 14.2 (Bid Prices)
	(59) Who would be responsible for supply and installation of GIS Software and digital Maps or data?	Bidder is responsible for supply and installation of GIS software Digital maps will be made available at DPC
	(60) Who would be responsible to confirm the authenticity of Map data (Pre Digitized)?	Stored maps are already authenticated. All maps for selection are created /provided by DPC.
Data entry	(61) Who would be responsible for the Data entry (a) For the Test run of the Software (b) After the Software has installed (c) What would be the volume of data(for test run and the total volume)	(a) bidder of DSC S/W (b) After acceptance, the purchaser (c) Please refer to 4.1 of QAP for formulation of the Acceptance Test Plan; for total volume, please refer to item 18 above
	(62) Who would be responsible to make the data catalogue.	Bidder will create the first catalogue and train DSC staff for production of catalogues
	(63) What are the weightages for the evaluation of Technical and Commercial Bid.	Please refer BDS-ITB 28
	(64) What would be the various obligations of the supplier in the warranty period?	Please refer to GCC 28 – 33 and SCC 28 - 33

Clause No. 2, page 7/55	(65) All data pertaining to these departments, i.e. Hydrological, Geo-hydrological, Hydro-Meteorological etc. will be in (a) Hardcopy format (who will do data entry client or vendor, specify it, give some example file for each type of the data) (b) If Softcopy format (if yes, then what is structure and in which database, specify it)	(a) Data entry is part of the DPC's task. (b) As 1 (a) above
Clause No. 3.2, page 10/55	(66) Text data, tables, time-series, spatial data etc. (give structures)	This is part of the DPC's responsibility
	(67) As per figure no. 1, it has been defined for data collection, Entry and preliminary validation, final validation and process, Storage and dissemination, for each State, CWC, IMD and CGWB. It is required to specify here that at all levels what type of the processing is required? Also it is required to mention here that standard database software solution is to be installed at these places or not.	The data processing is an activity of the DPCs.
	(68) As per tender the type of the data is mentioned but no structure is defined to explain the same. It includes spatial (GIS data and tabular data).	The data flow, processing and storage up to the DPCs is not part of this contract. However, the products of the DPCs that are stored in the DSCs are defined in the bid document.
Clause No. 3.3, page 11/55	(69) In respect of IMD a protocol has to be evolved by a special high level Technical Group (HLTG) (What this committee will do, specify this as well) this is not required to mention here.	IMD format – proprietary will be used through SWDES.
Clause No. 5.1, page 15/55	(70) What type of software solution is required at (a) Data Processing Centre (needs more detail) (b) Data Storage Centre (needs more detail)	(a) The software of the DPC is not part of this contract. (b) The design is to be made by Bidder under application of a QAP.
Clause No. 5.1.1, page 15/55	(71) The raw data is field data (Raw data format needs to be defined clearly and fields available in the raw data)	Ref clarification to query no. 32
Clause No. 5.1.4, page 16/55	(72) The object data consists of scanned maps / toposheets, yearbooks, well logs, special time series etc. (needs to be explained data type, where to store? e.g. should it be stored as raster or vector.	The object data are stored as objects no processing or display/printing of the contents are required.

Clause No. 5.1.4, page 16/55	(73) The term metadata is to be defined properly	Data defining the stored data
Clause No. 4.1, page 13/55	(74) The compatibility with these softwares i.e. SWDES, GWDES, HYMOS, GWDOS. Explain the use of these softwares, and then what is the use of making and user's friendly software for data processing and data storage	Data processing is not part of the delivery – vide enclose CD the format of outputs of these softwares for storing in DSCs.
Clause No. 4.2, page 14/55	(75) It is written that data from DSC, which will be called as Dubbed Data Request file (DRF). It is mentioned about the format of this file as HYMOS, GWDPS, Plain ASCII, Structured CSC and others yet to be defined. The format for HYMOS, GWDPS is also not known. All these things need to be properly defined, which will help vendor as well as client to implement the required solution.	The DRF contains the results of the data search and selection. The appropriate format is to be defined by the bidder in consultation with purchaser.
Clause No. 5, page 15/55	(76) Technical aspects of the database are described in the generic terms only, as it is clearly written in the tender document, and it is to be defined by the vendor in concert with the client during design and implementation / tailoring stage. This should be defined clearly in advance, which will help the client and vendor to estimate the cost of the project.	During execution of the project precise definition has to be developed.
Clause No. 5.1.1, page 15/55	(77) Field data : Geographical and space oriented data i.e. static and semistatic data, location oriented data, time oriented data etc. are to be clearly defined e.g., there should be some map where the locations are to be defined / mapped on the paper to have proper locations of the observations stations and their geographical locations as well.	These are normal hydro geological data types.
Clause No. 5.1.2, page 16/55	(78) Authenticated data : The same is the case with this data as described in field data.	Authenticated data is data of proven quality.
Clause No. 5.1.3, page 16/55	(79) Temporary data : needs to be explained properly	Is of same type as Field, Authenticated and object data.
Clause No. 5.1.4, page 16/55	(80) Object data : This has not been explained property. It is written that the availability of the objects may be publicized via the catalogue, maps (specify the type of the maps), scan maps (what all maps), GIS layers (specify the layers) etc.	The catalogue should contain all data required to uniquely define any of the data items in the data bases. There is no need for tools to open the objects; the DPCs are provided with such tools.

	- Relationship parameters	
Clause No. 5.2.3, page 19/55	(84) As it is written under these data heads that to obtain the required capabilities, a level of customization is required e.g. TSV (Time Series Vector Incorporation, BLOBs (Binary Large Object) etc. are to be defined properly.	The primary requirement is that time series data are stored in a very efficient way: the response times of the data base to on-line requests (from owner DPCs) should be swift. The use of BLOB can largely improve performance. Oracle has a similar technology implemented.
Clause No. 5.3, page 20/55	(85) Primary Entities : Surface Water Data (Mention to be made for who will provide the data furnished below and in which form?) <ul style="list-style-type: none"> - Catchment (basin) data - Hydraulic infrastructure - Station location and site description - Station technical description - Equipment description and data - Equidistant and non-equidistant time series data for : <ul style="list-style-type: none"> • Water levels • Flow measurements • Discharges • Water quality variables • Sediment samples and sediment concentrations • Relation oriented data • Statistical and aggregated data 	The data will be provided by the DPCs (SW) in the indicated formats.
Clause No. 5.3.2, page 20/55	Ground Water Data <ul style="list-style-type: none"> - Well location and site description - Well technical description - Well assembly and performance data - Aquifer data - Well hydraulics - Equipment description and data - Equidistant and non-equidistant series data <ul style="list-style-type: none"> • Water level • Well performance • Water quality parameters 	Data will be provided by DPC (GW) in the indicated formats.

	<ul style="list-style-type: none"> - Statistical and aggregated data - Groundwater resource assessment 	
Clause No. 5.3.3, page 21/55	<p>Hydro-Meteorology Data</p> <ul style="list-style-type: none"> - Station location and site description - Station technical description - Equipment description and data - Time series data for meteorological related data as <ul style="list-style-type: none"> • Precipitation • Temperature • Atmospheric pressure • Wind • Radiation • Humidity • Evaporation • Relation oriented data - Statistical and aggregated hydro-meteorological data 	Data will be provided by DPC (GW) in the indicated formats.
Clause No. 5.3.4, page 21/55	<p>Water Quality Data</p> <ul style="list-style-type: none"> - Laboratory location and particulars - Collection procedures and guidelines - Methods of analysis - Physical Analysis - Chemical and Biological Analysis organic and inorganic (level 1, level 2, level 2+). 	Data will be provided by DPC (GW) in the indicated formats.
Clause No. 5.3.5, page 21/55	<p>Map Data</p> <ul style="list-style-type: none"> - Contour maps - Groundwater availability maps - Hydro-geological maps - Water quality maps - Other thematic maps <p>The clubbing of as mete-data, catalogue, objects is required to be furnished.</p> <p>Output data flow : what will be format of the mete-data flow to HDU's</p>	Data will be provided by DPC (GW) in the indicated formats.
Clause No. 6.7, page 26/55	<p>HIS DSC main functions :</p> <ul style="list-style-type: none"> - Database periodic updating (specify it) 	Data will be provided by DPC (GW) in the indicated formats.

	<ul style="list-style-type: none"> - House keeping modules for database maintenance and publishing - Mete-data updating and viewing - Integration of Catalogue data from all the other participation states into the system - Production of periodic reports (pre-designed, specify it) - Special queries for Information (pre-designed, specify it). - Import / Export of data files upon request - Conversion of standard files (specify it) into HIS data structure - Conversion of HIS data structure into standard ASCII and CSV data files - Basic modules for Object data retrieval - Data security module for users authentication and authorization check - Activity Log function - Accounting module (could be used for commercial purposes if so decided, when it will be specify now) - Internet connectivity function (on web with GIS data and tabular data, specify about both types of the data) - Customization by parameters (specify all parameters) - Query and Report General tools and functions - Audit module (specify the audit module, requirements) 	
Clause No. 7.1, page 27/55	(86) Data import : Data in several formats can be accepted, e.g. SWDES / GWDES native format, SWDPC / GWDPC native format and as ASCII files. Other convenient file formats may be defined during the design phase (May please be defined to have clear understanding of the project to be executed).	Refer CD attached where formats available
Clause No. 7.4, page 33/55	(87) Data transport links will be established between the various centers, i.e. State, Regional, National data storage what type of the links (Intranet, Internet etc. please specify). This intranet environment is available with the department or not?	All possible links – internet, VPN, Intranet etc.
Clause No. 9.7, page 45/55	(88) Web designing of all the data pertaining to GIS and tabular data, i.e. will require a web GIS at the server level at owner DPC and various options will be available to user's level will be there. So, web software specifications should be there to implement the whole project. If internet connections are there, then internet explorer is require at the client level. To access the data. Who is going to implement and test the results till it works properly, it should be	The Catalogue should support the (very limited) map viewing and station selection functions required for the search and selection.

	clearly defined?	
Clause No. 8.3, page 40/55	(89) The data can be selected graphically by station. So, all data, which is tabular and GIS data should reside together. So, it is required to be mentioned here that DPC owner, local DPC, other DPC national DSC and HDU will have what type of the data, GIS layers, and data attached to each station etc?	The data can be selected by single and multiple stations. The meta data should support all stored data (quantity and types)
	(90) In all software specifications for database, GIS creation and web designing and maintenance of various levels with GIS is required to be addressed properly.	Refer 3.0 of BEF
	(91) Who will be responsible for authorising changes during the contract? There are 31 implementation and changes are likely to meet local conditions. Does the World Bank funding make provision for such changes?	The purchaser through HLTG (one only) (vide QAC) programme)
	(92) Will the bid date be extended? The invitation to tender calls for bids to be submitted by 14.30 IST on May 9 th . This date seems unrealistic given that these are still matter of significant detail unresolved at the time of this pre-bid meeting in 26 th April	Bid submission date has been extended to June 29, 2001
	(93) Will the entire bidding document (ITB) be reissued to all bidders/purchasers once final details have been resolved?	The amendments to the Bid document would be issued as per ITB 11 to all purchasers/ bidders after due approval by the World Bank
	(94) What is the warranty period? Whether on-site warranty or off-site.	One year Warranty period for all 31 sites.
Page 146 (ii) item	(95) Can this 80% of the part of Contract Price be broken into several parts so that payments can be received by the vendors after completion and acceptance of every components of software development like SRS, SDD etc.?	Vide modified payment terms attached.

Grand Summary of Bid Price for all Consignees

S. No.	Name of Consignee	Total Price		
		Currency	In Figures	In words
1	State Data Centre – Hyderabad			
2	State Data Centre – Gandhinagar			
3	State GW Data Centre – Pune			
4	State SW Data Centre – Nashik			
5	State Data Centre – Bhopal			
6	State Data Centre – Bhubaneshwar			
7	State Data Centre – Trivandrum			
8	State Data Centre – Chennai			
9	State GW Data Centre – Bangalore			
10	State SW Data Centre – Bangalore			
11	CWC National Data Centre – New Delhi			
12	CWC Regional Data Centre – Coimbatore			
13	CWC Regional Data Centre – Hyderabad			
14	CWC Regional Data Centre – Vadodara			
15	CWC Regional Data Centre – Bhubaneshwar			
16	CWC Regional Data Centre – Nagpur			
17	CGWB National Data Centre – Faridabad			
18	CGWB Regional Data Centre – Bangalore			
19	CGWB Regional Data Centre – Nagpur			

S. No.	Name of Consignee	Total Price		
		Currency	In Figures	In words
20	CGWB Regional Data Centre – Bhopal			
21	CGWB Regional Data Centre – Hyderabad			
22	CGWB Regional Data Centre – Chennai			
23	CGWB Regional Data Centre – Trivandrum			
24	CGWB Regional Data Centre – Ahmedabad			
25	CGWB Regional Data Centre –Raipur			
26	CGWB Regional Data Centre – Bangalore			
27	IMD National Data Centre – Pune			
28	IMD Regional Data Centre – New Delhi			
29	IMD Regional Data Centre – Chennai			
30	IMD Regional Data Centre - Bangalore			
GRAND TOTAL OF BID PRICE				

Name of Bidder: _____

Signature of Bidder: _____

**2.1 APPLICATION SOFTWARE & ASSOCIATED GOODS SUPPLIED FROM ABROAD
(ITB 14.2 (a) AS MODIFIED IN THE BID DATA SHEET)**

<i>S. No.</i>	<i>Item</i>	<i>Country of Origin</i>	<i>Producer of the Product</i>	<i>Partner or Sub-supplier responsible for Information Systems</i>	<i>Quantity</i>	<i>Currency</i>	<i>Unit Price CIF/CIP</i>	<i>Total CIF/CIP Price²</i> <i>Column 6x8</i>	<i>Indian Agent's Name and Commission as % of CIF/CIP Price included in Column 9</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Application Software Supply of customised Data Storage Software comprising of (a) Database administration and maintenance module, (b) user interface, (c) WEB interface, (d) catalogue creation and maintenance, (e) data dissemination module, (f) data import/export module, (g) reporting module, (h) Account, Audit & Statistical module (i) Archival & Back-up module (j) development (k) documentation and (l) implementation at Data Storage Centres				31 nos.				
2	Database Standard Software Supply of standard RDBMS (Oracle/SQL Server) enterprise version software (latest version) with 5 user license				31 nos.				
3	General Application Development Software (Standard) Supply of Microsoft Visual Studio (Enterprise version) – Latest version				31 nos.				

4	WEB Development Software (Standard)								
(i)	Supply of Adobe Golife				14 no.				
(ii)	Supply of Cold fusion				14 no.				
(iii)	Supply of Macro Media Dream Weaver Def				14 no.				
(iv)	Supply of GIS software for catalogue creation				31 nos.				
5	Other Software (Standard)								
(i)	Supply of GIS viewer on WEB				14 nos.				
(ii)	Supply of GIS viewer for CD (unlimited runtime distribution licenses)				31 nos.				
(iii)	Supply of Firewall				31 nos.				
(iv)	Supply of Encryption softwares for data dissemination with no restriction on number of keys				31 nos.				
Total Price									
TO BID PRICE SUMMARY TABLE									

Name of the Bidder: _____

Signature of Bidder: _____

- Note:
- a) All software shall be properly licensed
 - b) All software shall be of the latest version
 - c) GIS software is only for catalogue and WEB interface integration
 - d) Catalogue software shall be with unlimited runtime distribution license

**2.2 APPLICATION SOFTWARE & ASSOCIATED GOODS SUPPLIED FROM PURCHASER'S COUNTRY
(ITB 14.2 (b) AS MODIFIED IN THE BID DATA SHEET)**

<i>S. No.</i>	<i>Item</i>	<i>Producer of the Product</i>	<i>Partner or Sub-supplier responsible for Information Systems</i>	<i>Quantity</i>	<i>Currency</i>	<i>Unit Price Ex-works per item</i>	<i>Total Price Ex-works per item</i> <i>Column 5x7</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Application Software Supply of customised Data Storage Software comprising of (a) Database administration and maintenance module, (b) user interface, (c) WEB interface, (d) catalogue creation and maintenance, (e) data dissemination module, (f) data import/export module, (g) reporting module, (h) Account, Audit & Statistical module (i) Archival & Back-up module (j) development (k) documentation and (l) implementation at Data Storage Centres			31 nos.			
2	Data base Standard Software Supply of standard RDBMS (Oracle/SQL Server) enterprise version software (latest version) with 5 user license			31 nos.			
3	General Application Development Software (Standard) Supply of Microsoft Visual Studio (Enterprise version) – Latest version			31 nos.			

4	WEB Development Software (Standard)						
(i)	Supply of Adobe Golife			14 no.			
(ii)	Supply of Cold fusion			14 no.			
(iii)	Supply of Macro Media Dream Weaver Def			14 no.			
(iv)	Supply of GIS software for catalogue creation			31 no			
5	Other Software (Standard)						
(i)	Supply of GIS viewer on WEB			14 nos.			
(ii)	Supply of GIS viewer for CD (unlimited runtime distribution licenses)			31 nos.			
(iii)	Supply of Firewall			31 nos.			
(iv)	Supply of Encryption softwares for data dissemination with no restriction on number of keys.			31 nos			
TOTAL PRICE							
TO BID PRICE SUMMARY TABLE							

Name of the Bidder: _____

Signature of Bidder: _____

- Note:
- a) All softwares shall be properly licensed
 - b) All softwares shall be of the latest version
 - c) GIS software is only for catalogue and WEB interface integration
 - e) Catalogue software shall be with runtime unlimited distribution

2.3 LOCAL TRANSPORTATION, INSURANCE AND OTHER INCIDENTAL (INCLUDING INSTALLATION AND COMMISSIONING) SERVICES

**PRICE SCHEDULE (PRIOR TO THE WARRANTY PERIOD)
(ITB 14.2 (c) AND (d) AS MODIFIED IN THE BID DATA SHEET)**

<i>S. No.</i>	<i>Description of Services</i>	<i>Country of Origin</i>	<i>Partner or Sub-supplier responsible for Service Delivery</i>	<i>UNIT PRICE²</i>		<i>TOTAL PRICE²</i>	
				<i>Foreign Currency Component</i>	<i>Local Currency Component</i>	<i>Foreign Currency</i>	<i>Local Currency</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Local Transportation, insurance, port clearance, port charges etc., for delivery, installation, customization, integration, testing, etc. at 31 sites (except training) as defined in clause 14.2 (c) of ITB-BDS						
2	Training as defined in clause 14.2(d) of ITB-BDS						
TOTAL PRICE							
TO BID PRICE SUMMARY TABLE							

Name of the Bidder: _____

Signature of Bidder: _____

2.5 TAXES AND DUTIES

Item	Description of Taxes/duties levies etc.	Rate of Taxes/duties/levies applicable (%)	Amount on which Taxes/duties/levies applicable	Taxes/duties/levies payable
(1)	(2)	(3)	(4)	(5)
Figures				
TOTAL				
Words				

Name of Bidder: _____

Authorized Signature of the Bidder: _____

2.7 COUNTRY OF ORIGIN

Country of Origin	Country Code	Country of Origin	Country Code	Country of Origin	Country Code

2.8 BID PRICE SUMMARY FORM

S. No.	Price	Foreign Currency A		Foreign Currency B		Foreign Currency C		Local Currency
		Amount	Currency	Amount	Currency	Amount	Currency	Amount
1	Application software and Associated Softwares supplied from abroad (total of Schedule 2.1)							
2	Application Software and Associated Softwares Supplied from Purchaser's Country (Total of Schedule 2.2)							
3.	Local transportation, Insurance and other Incidental services including installation & commissioning and training (Total of Schedule 2.3)							
4	Recurrent cost - Post Warranty period of 3 years (Total of Schedule 2.4)							
5	Total Bid Price (excluding taxes, duties & levies which are shown in attached schedule 2.5)							
6	Taxes, duties and levies (Total of Schedule 2.5)							
	FIGURES							
	TOTAL (OF 1+2+3+4+5+6)							
	WORDS							

Name of Bidder: _____

Authorised Signature of Bidder: _____

Note: Bidders shall complete the table by extracting the cost total, in different currencies applicable, from relevant Price Schedules

IMPLEMENTATION SCHEDULE

(GCC 19)

Stage	Description	Schedule (Weeks from effective Data)
I	Preparation of the Project Plan and submission for approval	2
II	a) Delivery of all application and associated software of the Data Storage Centre at 31 Project sites including the successful pilot test at one site. b) 4 weeks training as defined in clause 14.2 (d) (i) & (iii) ITB - BDS	26
III	a) Installation, Testing and Operational Acceptance Tests of complete system at balance 30 sites. b) 2 weeks training as defined in clause 14.2 (d) (ii) & (iii) ITB-BDS	40

Quality Assurance Protocol
for the delivery of
Design, Supply, Installation, Testing and Commissioning of
Software for Data Storage Centres
HYDROLOGY PROJECT

April 2001

Quality Assurance Protocol for DSC

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1 Introduction

This document is an addendum to the Bid document for delivery of Design, Supply, Installation, Testing and Commissioning of Software for Data Storage Centres. The Bid document defines, amongst others, the deliverables and conditions for the realisation and implementation of more than 30 Data Storage Centres under the Hydrology Project. In addition to the Bid document, this document defines the requirements with respect to a Quality Assurance Protocol (QAP) that should be in place during the development and implementation of the DSC Software. Further, this document defines the Acceptance Protocol that shall be executed during delivery of the DSC Software. Only after successful execution of the Acceptance Protocol with satisfactory result the delivery can be formally accepted.

The Quality Assurance Protocol defines the QA procedures and methods that will be implemented during each stage of the project for the realisation of the Data Storage Centre Software. Both the administrative and technical processes are covered by the QAP. The Pilot implementation and the execution of the Acceptance Protocol are also covered. The QAP starts at the moment of contract award and is continued upto and including the delivery and commissioning of the entire series of DSC Software. The QAP is divided in several stages. Each stage is clearly finalised with a milestone.

After successful completion of the development up to the integration, a Pilot implementation of a full-fledged DSC is realised. Subsequently, the Acceptance Protocol is executed on the DSC's hardware. For the HDU's hardware standard PCs are used.

A Hardware Acceptance Protocol will cater for the formal acceptance of the hardware components. The delivery of the hardware is covered under a separate contract.

In the next Chapters the requirements and procedures for the above mentioned activities and procedures are defined in more detail.

Chapter 2 defines the establishment of Working Groups, both with the Purchaser and the Supplier. Requirements for the pre-delivery QA procedures are formulated in Chapter 3, while Chapter 4 deals with the requirements for the Acceptance Test Protocol.

In Chapter 5 reference is made to the list of deliverables, which should be addressed during the execution of the Acceptance Protocol. The list is not conclusive and will be refined during the development of the systems.

2 Working Groups

This Chapter defines an organisational framework for the realisation of the Data Storage Centre Software, focussing on QA aspects.

During the development and realisation of the DSC Software, both Purchaser and Supplier will have several groups of experts involved with the project. At the Purchaser's end there will be two workgroups, one at project management level and one at technical level comprising technical and domain experts. Also the Supplier will establish workgroups at the same levels, which will act as counterparts to the Purchaser's workgroups.

The project management workgroups participate in the milestone events and, whenever needed, resolve policy issues between the technical workgroups. The Supplier's technical workgroup reports the progress and state-of-affairs, including change plans, to the Purchaser's technical workgroup regularly, at least on a two-weekly basis.

Each stage is finalised with a Milestone event. The results and products achieved during each of the stages are to be formally reported to the Purchaser.

Purchaser

A High Level Task Group (HLTG) represents the Purchaser at the project management level.

Tasks and powers of the HLTG are:

- Project management
- Preparation of User's Specifications
- Decision making
- Auditing
- Milestone acceptance
- Policy definition / Conflict resolution
- Final acceptance of Suppliers' deliverables

At technical level the Purchaser is represented by a Technical Working Group (TWG)

The TWG monitors the progress of the activities, the compliance with the specifications and the quality of the products. Wherever discrepancies with the specifications and requirements are detected, the TWG may render its guidance to the Supplier's Project Team.

The TWG reports all progress to the HLTG for approval, hence, it is the HLTG which has the power to accept/reject the deliverables. Issues that need to be addressed by the HLTG are also presented for resolution.

Responsibilities of the TWG are:

- technical support
- technical monitoring
- QA monitoring
- definition / addition of tests
- review of test plans, results and reports
- review of specifications
- review of intermediate products
- technical inputs at each stage including milestone acceptance

Supplier

The Supplier's Project Management (SPM) is the counterpart to the HLTG. Members of the SPM are the project manager and further the technical and the QA management.

Tasks and powers of the SPM are:

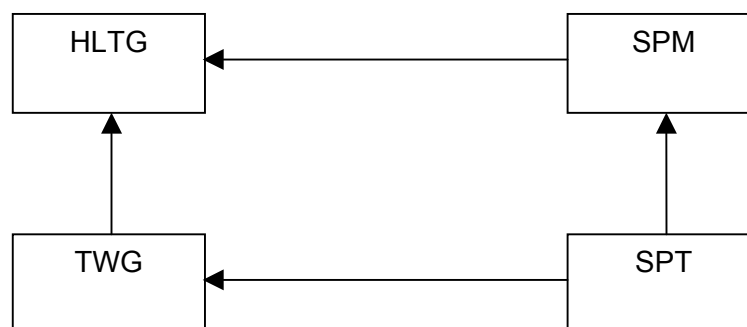
- reporting the progress to purchaser's HLTG
- smooth execution of the project
- facilitate the co-operation of the Supplier's Project Team with the TWG
- Internal audit and identification of future bottlenecks

The Supplier's Project Team (SPT) executes the project. Members of the SPT are technical and domain experts at least covering the following: hydrological/environmental application, user interface, databases, web/communication, QA, testing, implementation, training, manuals, GIS, Data warehousing, security and encryption.

Responsibilities of the SPT are:

- discovery and design process
- production (development and customisation) and QA, including testing
- scheduled communication with TWG
- technical reporting to TWG
- specifications reporting to TWG
- QA reporting to TWG
- full co-operation during review by TWG

During the meetings the progress of the activities is reported and test/QA plans/reports are assessed and discussed. For this all required information and related documents are made available to the TWG. It is the responsibility of the Supplier to implement a state-of-the-art QA system.



Organisation Chart

The arrows indicate the flow of reports.

3 QA procedures

The pre-delivery stage starts at the awarding of the contract and ends with the successful Pilot implementation. One of the first actions is to design the QAP with time schedules and formally submit it to the Purchaser.

During the pre-delivery stage the Purchaser's TWG will monitor the progress of the activities and the quality of the stage products. The Supplier will prepare a meeting schedule at the very start of the Project. At regular intervals meetings will be organised between the TWG and the SPT to monitor the activities. These meetings shall be at least once in two weeks with regular progress reports.

The following project stages are identified:

1. Preparation of the Project Plan
2. System Requirements Study
3. Preparation of the System Requirements Study document (SRS)
4. Drafting of the Design Document
5. Development stage
6. Functional Testing
7. System Integration
8. Pilot Installation
9. Deployment

Testing is part of most of the project stages. Tests are executed to detect any errors and flaws as early as possible after they are introduced. In addition to that, during Acceptance, tests are also executed to prove that the systems function according to specifications as laid down in the project documents. Tests have to be adequately prepared, executed and documented. The Test Documentation should comply with ANSI/IEEE STD 829 latest version or equivalent.

Subsequent subchapters define the QA related aspects of the project stages.

3.1 Preparation of the Project Plan

Upon awarding of the contract, the Supplier assembles a project team and the workgroups, viz.: SPM and SPT, which will interact with the Purchaser's workgroups. Other initialising activities are the planning of the logistics and the development of a Project Plan and identification of the deliverables.

The Project Plan covers all of the above mentioned project stages. It comprises a detailed time schedule featuring all major activities, events, deliveries, milestones, training schedules, etc. The Project Plan should also address the planned interactions with DSCs. The Project Plan is reported to the HLTG.

3.2 System Requirements Study

During the System Requirements Study, the general Technical Specifications of the Bid Document are translated into detailed technical specifications for modules, subsystems, tables, etc. in-line with the global technical specifications of the Bid Document and in compliance with state-of-the-art technology.

The Supplier may need to interact with the TWG to resolve interpretation doubts. For this a meeting schedule is to be prepared at the beginning of the activities, which will define

the frequency of meeting and also alternate venues in States so as to provide more exposure to the study team

The detailed technical specifications have to be approved by the HLTG with respect to functionality, input/output data flow and the required resources. A work plan for the next stage, including a meeting schedule, is prepared. Contingency planning for the entire project should be covered.

3.3 Preparation of the SRS Document

During this stage the findings of the SRS stage are consolidated into a comprehensive report.

While the preparation of the SRS document is under progress, multiple interactions between the Purchaser's and Supplier's representatives will be needed to fine-tune the technical specifications. Prototypes of the user interfaces will be part of the document for proper understanding of the requirements.

The SRS document is, next to the Technical Specifications of the Bid Document, a principal document for the design of the products. Part of the SRS is a detailed plan for the next stage (Drafting of Design Document) and a global plan for the subsequent stages.

3.4 Drafting of the Design Document

Using the SRS document the system requirements are translated into a Design Document. Provisions for testing and performance monitoring should be included in the design, in particular for use during integration and acceptance testing. The Design Document addresses all aspects related to the DSC like data, functions, interactions, communication, security, administration, maintenance and documentation. In consultation with the data owner special emphasis has to be laid on data transfer, security, encryption and integration.

In support of interactions between the technical workgroups and to enhance the proper understanding of the design, prototypes of the user interfaces shall be included, demonstrated and discussed. At relatively short intervals meetings between TWG and SPT may be organised in this regard.

The Design Document lays down the full details of the design. The above mentioned prototype(s) shall be part of the Design Document. Also the QA procedures are further detailed during this stage. A comprehensive plan for the next stage and a global plan for the subsequent stages are prepared. Further, a Deployment Plan is drafted. The Deployment Plan addresses the step by step execution of the deployment procedure, including installation, testing, training and customisation and commissioning. It also caters for the logistic implications including the required inputs from the local DSCs to give the Agencies ample time make proper preparations. The HLTG should be informed about any required interaction with or assistance by the Agencies. In particular the required availability of facilities and / or staff should be communicated earliest.

3.5 Development Stage

The design is translated into data structures, working procedures and functions, which eventually assemble into a subsystem, e.g. the Catalogue. During the development the software is drafted, written and comprehensively and repetitively tested under execution of

the QAP. Internal source code reviews and low level failure detection tests are executed by the SPT. The development status and test results are reported to the Purchaser.

In compliance with the project schedule, at regular intervals interactions between the TWG and the SPT take place. The interval may be longer, upto a month for this interaction. However, fortnightly progress reports have to be submitted.

For each subsystem defined in the Design Document the development stage terminates with the integration of the sub-components into a working subsystem. For the functional testing a plan will be prepared, for each subsystem separately.

3.6 Functional Testing

The functional tests focus on the performance of the system components / sub-systems. The tests should at least be executed with normal data, extreme data, out-of-bound data, missing data and erroneous data. An Integration Plan defining the methodology and sequence of activities for functional testing is prepared. Subsystems should be carefully tested for compliance with the specifications, proper functioning and short response times. After successful testing of all the system components, the System Integration shall be initiated and the results submitted to the TWG.

Whenever appropriate, the TWG may request to witness major tests, comment on functionalities and refine the tests.

The test data, test conditions and results should be retained, the tests properly reported and it should be possible to reproduce the tests. The Integration Plan is also proposed and submitted.

3.7 System Integration

Step by step all system components are installed and their interactions tested. Eventually each sub-system is integrated and tested. The System Integration primarily focuses on fault finding / removal and secondary on proper functioning. The accent is on 'white box' testing. The system integration may be executed at the premises of the Supplier, where all test facilities and tools are readily available. Similar to the Functional Testing, normal, extreme, out of range, missing and erroneous data and conditions should be tested. The TWG may witness the integration tests and get access to the result.

The System Integration is duly reported. After finishing the System Integration, the system is ready for the Pilot Installation. The Pilot Installation plan is finalised, in compliance with the QAP and submitted to TWG.

3.8 Pilot Installation

After successful completion of the development up to the integration, a Pilot implementation of a full-fledged DSC is executed. During the Pilot Installation flaws, inconveniences, inefficiencies, bugs, failures and the like may be detected. These will have to be rectified to the satisfaction of the Purchaser.

The Pilot Installation is a normal installation as if the system were implemented at one of the DSC's locations. The installation starts from scratch, i.e. first time installation on hardware that does not contain remains of any previous installation. As opposed to the System Integration, the Pilot Installation does not focus on fault finding and internal functioning of the systems but to prove proper installation, functioning and performance from the User's perspective instead. The test methodology is basically 'black box'. During

the same stage the design of the Acceptance Protocol and the Deployment Plan are finalised.

Close interaction between the Supplier and the Purchaser defined in a responsibility matrix shall be maintained during the entire process.

3.9 Deployment

The Deployment is executed according to the lines as formulated in the Deployment Plan. The deployment procedure includes amongst others installation, testing, training and customisation and commissioning. During deployment, which takes place at the premises of the DSCs, close interaction with the DSC's staff is required and should be planned well in advance. Part of the deployment is execution of the Acceptance Test Protocol, which implies interaction with the TWG.

The progress and status of the Deployment are reported to the HLTG on a weekly basis.

Chapter 4 addresses the Acceptance Test Protocol.

4 Acceptance Test Protocol

The Acceptance Protocol is executed after successful finalising of the Pilot Installation, including the associated tests. The Acceptance Protocol serves as a formal guidance during delivery of the DSC systems. Its primary goals are twofold:

1. Ascertain the delivery and completeness of all ordered products and related documents.
2. Check the functioning of the hardware and software in a formal way against the specifications by application of Acceptance Tests. The tests also verify the stability, performance, capacity, compatibility and correctness of the systems.

The Supplier prepares the Plans for the Acceptance Test and submits the same to the HLTG for approval. The Acceptance Protocol should be executed in close co-operation between the SPT and TWG. The findings are reported to the Purchaser in an Acceptance Report. A specially constituted Inspection Team, constituting members of the HLTG and the TWG, witnesses the tests.

The Acceptance Protocol defines the Acceptance Tests in detail and shall include a time schedule for execution thereof. The Acceptance Protocol is executed on the DSC's hardware, As with the System Integration, the hardware should not contain remains of previous installations, e.g. from the System Integration. For the HDU's hardware standard PCs are used.

The Acceptance Protocol is to be prepared meticulously. Proper test data (normal, extreme, missing and erroneous data) has to be prepared and a comprehensive test plan should be designed. The primary reference for the Acceptance Protocol is the formulation of Technical Specifications for the Data Storage Centre as included in the Bid document, and in addition the approved detailed specifications as defined during the pre-delivery stages and including the approved amendments thereof.

The aim of the Acceptance Protocol is to verify the adequate and effective implementation of each of the DSC's aspects. Aspects that are similar to each other may be clubbed together and tested as a group. However, for each item in such a group the adequate and effective implementation should be proven. The Acceptance Protocol does primarily focus on the systems as they manifest themselves to the users and operators. Hence, the approach is primarily a black-box test method. Only when needed to fully verify the functioning and speed of certain aspects of the system, the internal functioning of such aspects may need to be addressed. It should be noted in this context that most of the internal functioning is addressed during the development stages, when amongst others white-box testing methods are applied.

All deliveries should be subject to the execution of the Acceptance Protocol. At a selection of DSCs the comprehensive Acceptance Test should be executed, at the other DSCs a subset of the Acceptance Tests may be executed. The Purchaser in consultation with the TWG shall judiciously decide on the selections. The first delivery could be at the Pilot Site, on the same hardware as used for the Pilot Installation. Comprehensive Acceptance Tests should be executed at that DSC and at the National DSCs, a DCS servicing a SSWDPC, a DCS servicing SGWDPC and a DSC servicing both SSWDPC and SGWDPC. The balance of DSCs may be subject to a subset of the Acceptance Tests. That subset should address all functions but in less detail, in such a way that the proper functioning of the DSC is proven. However, when deemed appropriate the TWG / HLTG decide to have the comprehensive Acceptance Protocol executed on more, if not all, of the DSCs.

The Acceptance Tests should cover normal data, extreme data / values, out of range data / values, missing data and erroneous data / values. To assess the performance of a DSC with a larger amount of data, tests sets shall be performed with data covering about 10 years of HIS operation matching the number and type of stations as serviced by the DSC. This should also include timeseries of DWLRs on an interval of 6 hours, with test data also providing for incomplete series and time shift in the series. At least part of the data is to be simulated since DWLRs are only operational since 1997. The tests should include concurrent interaction by a variety of users, e.g. the local DPCs, internal users and external users, all in multiples. The immunity against the interference of concurrent maintenance, backup, power-outs, data loading/retrieval on the performance should also be demonstrated.

Subsystems should be accepted only if they meet the requirements and are functioning in compliance with the (detailed) technical specifications, and the related documents are complete and correct. Deviations like failing performance or malfunctioning of subsystems and any other discrepancies or bugs have to be remedied, within a pre-defined time frame. Any product that malfunctions or does not comply with the specifications should be identified and its acceptance suspended or rejected. This document does not address the formalities with respect to the handling of above mentioned deviations.

The Acceptance Report lays down the findings and observations that were made during the execution of the Acceptance Protocol and is a formal document to record the acceptance or rejection of any (sub)system. Any deviations and findings are to be reported. The forms and checklists filled in during the execution of the Acceptance Protocol are to be attached to the Acceptance Report.

4.1 Formulation of the Acceptance Test Plan

Prior to execution of the tests, a detailed Acceptance Test Plan has to be drafted and agreed upon. As per the Bid Document requirements, the drafting of the Acceptance Test Plan is executed by the Supplier.

Typically the Acceptance Test Plan should define:

- venues of the tests
- for each test site a time schedule
- list of test types and sequence of execution
- definition of each test
- the conditions and requirements for each test
- system robustness and capability of working with missing components other than the database
- list of testing tools
- person(s) responsible for conducting the tests
- handling of failures and problems
- reporting
- acceptance formalities

The List of Aspects related to execution of the Acceptance Test Plan is referenced to in the subsequent chapter.

Documents and inspection

The following documents should be made available.

1. Manuals

The manuals should meet the technical and user requirements with clarity, completeness, preciseness and detail. The Inspection Team will assess to what

extend the detail of the manuals and guidelines caters for Purchaser's requirements. Special attention will be given to the ease of use of the Catalogue and the associated manuals/help systems. Separate sections on Frequently Asked Questions, troubleshooting and a comprehensive index will be part of the manual.

The sets of manuals and guidelines for each of the subsystems include:

- System Description
- System Manuals
- Installation Guidelines
- Operation, Maintenance, Reference and Service Manuals
- Training handouts
- HDU and Catalogue related manuals and guidelines
- Guidelines / Manuals (administrator, operator, maintenance, user) as related to the systems
- Source code, documentation, conventions used

2. Detailed Specifications

The Detailed Specifications Document is one of the products of the pre-delivery stages, in particular of the Definition and Design stages.

3. Test Documents generated during the previous stages

All stages from Development Stage onwards would generate test reports. Some of the tests are:

- functional test
- stress test
- extreme values
- performance test

A comprehensive Test Method Statement describing the applied tests and verification procedures should be made available to the Inspection Team. The Test Method Statement defines the test methods applied on the software systems during and at the end of the development process.

The Test Documents shall address:

1. system under test
2. initial conditions
3. input data
4. user interference
5. output data
6. monitoring/probing functions
7. test criteria
8. performance (execution time)
9. scalability

4. Milestone reports pertaining to each development stage

The content of the various mile stone documents is defined in Chapter 3.

4.2 Dedicated tests related to the Catalogue

Below an incomplete overview is given of test aspects that would be covered while testing the Catalogue functions. This overview is not comprehensive but should be used as a starter example for the design a specific detailed Acceptance Test Plan for the Catalogue. Also for the other major sub-systems detailed Acceptance Test Plans shall be formulated and executed.

Catalogue installation and tests on a series of platforms, typical for the user environment:

- Windows 98, the primary operational environment
- Windows ME, presently the secondary user's environment
- Windows 95, the decaying but still abundantly used user's platform
- Windows NT4, used by the owner DPCs
- Windows 2000, the successor of Windows NT4 for the owner DPCs

Major functions related to the Catalogue of which the proper functioning is to be demonstrated in detail.

1. installation from scratch on a newly initialised system
2. Catalogue use: offline (CD-ROM), online via Internet/WEB server, online via LAN (local DPC, visiting HDU) / WAN
3. execution of the search and selection functions
4. generation of DRF(s) online and offline
5. submission of DRF(s) through LAN/email/FTP/web server and on CD-ROM
6. security functions (virus, firewall, encryption incl. key management)
7. authentication procedures
8. retrieval and formatting of data
9. delivery and receipt of data (LAN, e-mail, FTP, CD-ROM)
10. retrieval and update of meta-data
11. addition of support new of DSCs to the Catalogue
12. exchange meta-data between DSCs
13. preparation of Catalogue on CD-ROM
14. support of STD, ISDN, VSAT, leased line, NicNet)
15. handling of data communication errors / interruptions (a.o. resume without restart)
16. support by central web server

Additional aspects to monitor

1. response times
2. ease of use
3. intuitive windows
4. on line help
5. reliability and speed of data communication
6. ease of upgrading the Catalogue
7. required resources (memory, HDU, Display resolution, processor)

5 Deliverables

The List of Deliverables related to the Acceptance test plan is enclosed at pages 15/26 to 26/26.

SI.No	Particulars Deliverable
1	2
1.0	General Features
1.1	Hardware Platform – PC Technology : Pentium III and higher compatible
1.2	Working environment – WIN NT 4.0, WIN 2000, WIN 98 and higher compatible
1.3	Distribution : CD or other hardware compatible media : Setup on new machine with only OS installed / on system with older versions of software
1.4	Peripheral support : Standard drivers for peripherals like printers and data storage integrated in the software system. To also integrate drivers for normal communication media.
1.5	Addition of user modules – through a standard generic interface
1.6	Flexible and modular – easy to adapt to changing working environment (OS update)
1.7	Individual module failure does not cause disruption in other modules
1.8	Flexible to change in user requirements, new data types / objects
1.9	Flexible to handle changing communication services
1.10	Intuitive user interfaces – based on Windows standards, compliant with industry presentation and functionality standards and capable of being web-enabled
1.11	Easy-to-use, self explanatory and of uniform and standard format
1.12	Help – Manual, Context sensitive and Index, with key word search
1.13	Provision for selection of options from lists
1.14	Easy to customise and adjust to changing needs
1.15	Open and portable (database and hardware platform independent)
1.16	DBMS ODBC compliant
1.17	No proprietary permanent or temporary structures to be used
1.18	Scalable – to adapt to increasing storage and workloads
1.19	Definable – Option of keeping separate “Work Areas” on the same computer
1.20	Reliability, availability and integrity – performs smoothly with no “lock up”
1.21	Performance – Fast response time normally, specify degradation under stress conditions
1.22	Generation and editing tools for the data tables and structures
1.23	Data integrity checks (inherent)
1.24	Checking & monitoring function to avoid data corruption and losses
1.25	Database spatial feature – the database should have features to accommodate any data object whatsoever
1.26	Database development tools and programming languages of universally acceptance
1.27	RDBMS and tools
1.28	Catalogue based on Oracle and MS-Access (appropriately optimised)
1.29	Standard industry tools like VC++, VB, Java, 4GL tools, others...
2.0	Import / Export of Data
	Provision to import data from / export data to
2.1	SWDES (Surface Water Data Entry System)
2.2	GWDES (Ground Water Data Entry System)
2.3	HYMOS (Surface Water Data Processing System)
2.4	Dedicated Ground Water Processing Software
2.5	IMD Data from IMD Software
2.6	Other DSC Data
2.7	Transfer File (Generic) – MDB format
2.8	Transfer File (Generic) – ASCII
2.9	Structured CSV
2.10	User defined templates (with tools to define) based format
2.11	Data dissemination format
2.12	Objects
2.13	Other formats defined in the study period
	Export
2.14	Export to / in all of the above
2.15	Export in Print format
2.16	Export in ASCII dump / Excel format
2.17	Formatting procedures for export

SI.No	Particulars Deliverable
1	2
3.0	GIS Features
3.1	Start-up Map with Project Area (incl. HP States)
3.2	Define default Start-up Map
3.3	Map selection
3.4	Option of using scanned Map
3.5	North up, north and east scales identical
3.6	Map Layers (active / non-active / passive options – provided by Buyer)
3.7	Administrative (State, District, ...) Boundaries
3.8	Hydrogeological features
3.9	Location data
3.10	Station Categories, incl. Water quality Lab.
3.11	Data collection stations (per category)
3.12	Major population centre
3.13	Organisational boundaries
3.14	User made boundaries (eg. project area polygon)
3.15	Rail
3.16	Roads
3.17	Basin boundaries, watershed boundaries
3.18	Aquifer boundaries
3.19	Rivers, canals
3.20	Reservoirs
	Selection
3.21	Spatial selection
3.22	Multiple Layer selection by point/click
3.23	Selection by point-and-click
3.24	Selection by mouse drawn polygon
3.25	Select all stations in active layer
3.26	Selection refinement by select / deselect individual station
3.27	Selection Inversion (Map Layer & List)
3.28	Visualise spatial distribution of selected stations
	Features
3.29	Right click on station to show meta data
3.30	Zoom & Pan functionality
3.31	Map layers printable
4.0	Catalogue
	Generation of catalogue
4.1	Accurately reflect data availability
4.2	Meta data with all information required for locating actual data
	On-line catalogue update in owner DSC
4.3	Import of data
4.4	Change in database structure / other
4.5	Meta data reflects actual state of hydrological database
4.6	Changes to on-line meta database recorded in meta--database
4.7	Generation of additional / incremental meta data
4.8	Time stamping of the meta data
4.9	Tuning of meta data from different DSCs with own Catalogue with status of different update dates – exchange of meta data
4.10	On –line combined catalogue
4.11	Data ownership defined
4.12	Creation of CD with catalogue search engine (including map based search and selection)
4.13	Creation of Web catalogue with map based search and selection
4.14	Snapshot of data availability of a certain instant of time stored in an ordered manner
4.15	Make catalogue available to other DSC's through multiple communication channels
4.16	Access levels / controls and limitations provided for
4.17	Dissemination of meta-data

SI.No	Particulars Deliverable
1	2
4.18	Replication, synchronisation and publishing process for Catalogue
4.19	Updates and new versions of the meta-database via Internet / FTP and CD-ROM.
	Maintenance of catalogue
4.20	On-line catalogue updating and dissemination
4.21	Generation of update specific for DSC
4.22	Generation of a replacement set for a DSC
4.23	Update of meta data set pertaining to one or more DSCs
4.24	Replacement of meta data sets pertaining to one or more DSCs
4.25	Verification of meta data integrity
4.26	Tools for maintenance, exchange and integration of meta data
	Search and Selection
4.27	On-line search at a DSC on LAN / Intranet
4.28	On-line search at a DSC via Internet / Remote Login
4.29	Off-line search and selection – CD-ROM at HDUs PC
4.30	Thesaurus of search terms / items
4.31	Support of meta-data sets of multiple DSCs (31 or more)
4.32	Spatial selection (Map/GIS based)
4.33	List based selection supported
4.34	Compliance with Windows standard
4.35	Point-and-click selection
4.36	Right click for information on object
4.37	Lists – single / multiple items
4.38	Tree structure for lists
4.39	Support direct queries on meta data
4.40	Selection Template saving
4.41	Selection tuning by append / delete / shortlist
4.42	Multi-level undo / redo
4.43	Search template selection
4.44	Generation of DRF
4.45	Immediate delivery of data if data available and freely distributed
	Parameter Selection, other selections
4.46	Parameter ranges (effective during database query)
4.47	Upper and lower bound, adjustable, default min/max of data dictionary
4.48	List selection
4.49	Invert selections
4.50	Multi-select
4.51	Sort functionally and alphanumerically
4.52	Multiple undo-redo
4.53	Filters / wildcards / wildcards inversions
4.54	From-to filter support
4.55	Add to / subtract from larger set (incremental build)
4.56	Selections – active branch and lower
4.57	Tree structure navigation
4.58	Standard windows methods (like shift, alt, ctrl)
4.59	Anytime query cancel
4.60	Progress monitor
4.61	Swift response in normal conditions, specify degradation in stress conditions
4.62	Period Selection
4.63	Starting date / time, ending date / time
4.64	Accumulation of multiple periods
4.65	Special periods - calendar year, hydrological year, financial year, planning period
4.66	Sub-annual series like May, June of all years from 1955-2000
4.67	Sub-annual series as above, but defined as pre-monsoon, etc.
4.68	Date selection by typing, scrolling or by graphical means
4.69	Display of data availability by proportionate horizontal bars (with gaps)
4.70	Above graph with view options / Zoom in-out etc.

SI.No	Particulars Deliverable
1	2
4.71	Selection of static and semi-static data by time
4.72	Combination of any selection by add / remove
	Catalogue – Print medium
4.73	The catalogue should also be printable as an organised and structured hard copy – ie, with appropriate sections and indexes
4.74	formatted DRF print
4.75	Selective printing can also be done
4.76	Transfer of catalogue to Word and Excel formats
4.77	Option of printing as disk file
	Catalogue – CD
4.78	Includes web browser and front end software (installable)
4.79	Tools, data exchange support, security functions included
4.80	FTP, e-mail support included
4.81	Data formatting tools included
4.82	All tools for efficient use integrated
4.83	Entry for proper identification of data message
4.84	Autorun feature with checking for auto install to be automatically enabled / disabled
4.85	Option for data to be copied to CD and for fresh catalogue updates to be merged
4.86	Provision for tracking version of last update merged
4.87	All meta-data
4.88	map and list based search and selection
5.0	Data Availability Criterion (viewable in Catalogue)
5.1	Field data (for owner DPC)
5.2	SWDES / GWDES / Dedicated GWSW, HYMOS, IMD Data, Direct upload
5.3	Authenticated data (any HDU)
5.4	Dedicated GWSW, HYMOS, IMD
5.5	Temporary data (owner and local DPCs)
5.6	Objects (HDU, only released objects)
5.7	Owner DPCs can view all data in custody of DSC
5.8	HDU view of catalogue shows only authenticated data and a sub-set of the object data
5.9	Amount of data on-line (viewable by DSC) – at least two years
	Constituents
5.10	Meteorological Data
5.11	Surface water data
5.12	Surface water quality data
5.13	Ground water data
5.14	Ground water quality data
6.0	Types of Data
6.1	Equidistant and cyclic data for Meteorological, climatic, SW, GW and Quality
6.2	Quality flags / labels (Good data, doubtful data..)
6.3	Derived Data
6.4	Processing results
6.5	Raw data
6.6	Authenticated Data (Good data)
6.7	Interpolated Data
6.8	Doubtful Data
6.9	Processing Flags / labels
6.10	Field data, authenticated data, temporary data
6.11	Instantaneous, accumulative and average observations
6.12	Data type / variable / dimension
6.13	Time stamps
6.14	Option of storing trace data measurements (Water Quality), provision of detection levels and limits
6.15	Source (Instrumental)
6.16	Data owner
6.17	Processing Status

SI.No	Particulars Deliverable
1	2
6.18	Performance optimised handling of TSV (BLOB and/or TS option)
6.19	Time Intervals
6.20	From 1 minute upto 1 year
6.21	Fixed interval
6.22	Group Intervals
6.23	Cyclic Intervals (eg. 8:00 am and 5:30 pm daily)
6.24	Broken Series
6.25	User selectable missing value indicator
6.26	Non-equidistant data
6.27	Store with time label
	Includes
6.28	Event based observations
6.29	Threshold based observations
6.30	Constant observations
6.31	Relation oriented data
6.32	Profile measurement data
6.33	Sets of two or more quantities observed concurrently
6.34	Parameters of the relationship between two or more quantities
6.35	Relationship Parameters
6.36	Storage of the parameters of a relation
6.37	Support of at least four equations to cover the full range of the independent variable
6.38	Station name / instrument code
6.39	Validity period of relation
6.40	Type of equation, equation boundaries, parameter values and summary error statistics for each equation
6.41	Flagging of a relationship – good quality / doubtful relationship
6.42	Semi-Static relation oriented data (like river X-section)
6.43	Streamflow and sediment transport measurement data obtained by measuring a number of points in the cross section
6.44	Support of velocity area, slope area and float method
6.45	Support of suspended and bed load transport measurement data
6.46	Concurrent observation support
6.47	Records with a time label with two or more concurrently observed / computed quantities
6.48	Static and semi-static data
6.49	Geographic and space oriented
6.50	Identification name and code (also in the Catalogue)
6.51	Summary station data – on location (Latitude, longitude, altitude, river name, basin name, ht of measuring point, aquifer identification, administrative and political regions and agency structure). Facility for multi-level grouping in reports for SW, GW, WQ, hydraulic structures and met. sites
	Station description including
6.52	Site, channel and control (hydrological and morphological conditions) description
6.53	Station access, General Information
6.54	Benchmark locations and levels
6.55	Facilities and equipment in use
6.56	Record of repair, maintenance and replacement of equipment
6.57	Sampling site, method etc.
6.58	Station log – information relating to interpretation, reliability and processing of a record over specified periods of time in a structured database file
6.59	Survey records – longitudinal and cross sectional survey profiles stored under hydraulic infrastructure / space oriented data
6.60	Well logs of groundwater observations wells, all well types and piezometers should be stored allowing preparation of detailed well log reports and diagram
6.61	Information stored in a structured manner depending upon the well type

SI.No	Particulars Deliverable
1	2
6.62	List of station series – listing of the time series available at a station including a descriptor, unit, references, time interval of measurement, acceptable minimum, maximum and warning levels, acceptable rates of rise and fall, identification codes for faulty and missing data and start and end dates
6.63	Catchment and hydrogeological features
6.64	Hydraulic structure features (barrages, dams, inlet structures, outfalls, culverts, bridges etc.) in set of parameters such as location, type, geometry, discharge characteristics etc.
	Hydraulic infrastructure
6.65	Historical records of survey data on longitudinal and cross-sectional profiles
6.66	Longitudinal profiles of a fixed set of hydraulic and geomorphologic characteristics of riverbed and banks
	Object Data
6.67	Scanned Maps / toposheets
6.68	Maps
6.69	Physical maps
6.70	Geological maps
6.71	Basin descriptive data
6.72	Tables of fixed sets of parameters describing linear, areal and relief aspects of the drainage basin and / or channel network, geology, hydro-geology
6.73	Text files comprising free text on relevant basin features
6.74	GIS layers and maps, including the descriptive data required for their interpretation and importing into the related packages
6.75	Groundwater availability maps
6.76	Water quality maps
6.77	Basin and hydro-geological features
6.78	Maps and GIS layers related to land use / cover, soil, geology – lithology, geology – structure, geomorphology, administrative boundary, hydrologic boundary, settlements, drainage, transport network, contours, spot heights and others detailed above
6.79	Maps and GIS layers related to geography, topography (contours), layout of hydraulic infrastructure, catchment boundaries, measurement locations, location of structures, industries etc.
6.80	Remote sensing data, including satellite images
6.81	Maps geographically referenced
6.82	Thematic maps, GIS layers (toposheets, land use, seasonal crop etc.)
6.83	Other varieties like sections, diagrams, images, basins, DTMs, DEMs and scanned maps
6.84	Yearbooks
6.85	DWLR data (binary and text format)
6.86	AAS data
6.87	Well logs
6.88	Reports
6.89	PDF files, manuals
6.90	Document files, other files
6.91	HP documents
6.92	Other Computer files
7.0	Data Distribution / Data exchange with HDU
7.1	Definition of DRF
7.2	Retrieve as per DRF (on-line and off-line)
7.3	Retrieve as per Web query / CD query
7.4	Data encryption
7.5	Authentication
7.6	Distribution on CD / e-mail / Web / direct / report / other
7.7	Generation of DRF by HDU
7.8	Dispatch of DRF by HDU
7.9	Receipt and acknowledgement of DRF by DSC

SI.No	Particulars Deliverable
1	2
7.10	HDU authentication and authorisation procedures by DSC / HDU
7.11	DRF validity / integrity check by DSC
7.12	Forward sub-DRF files to appropriate DSCs
7.13	Receipt of acknowledgement from DSCs for sub-DRF files
7.14	Data retrieval from database by DSC
7.15	Receipt of data from other DSCs
7.16	Assembly of retrieved data into deliverable formats by DSC
7.17	Formatting and assembly tools for HDU
7.18	Establish Encryption key by DSC / HDU
7.19	Encryption of data by DSC
7.20	Dispatch of data to HUD by DSC
7.21	Receipt of data by HDU (confirmation)
7.22	Decryption of data by HDU
7.23	Close Request
7.24	Provision for scheduled request (at HDU and DSC level)
7.25	Authentication procedures
7.26	Communication functions
7.27	Scheduling functions
7.28	Reminder system
7.29	Partial unavailability statement
7.30	Feedback on availability expected
7.31	Provision for partial dispatch (and billing)
8.0	MIS
8.1	Collection and generation of MIS data
8.2	Dissemination of MIS to authorised users (Web / CD / Report)
8.3	Statistics
8.4	Key performance indicators
8.5	User's interaction indicators
8.6	Target amounts and time frame
8.7	Received data (amounts, owner, types, security levels, source, date of receipt)
8.8	Stored data (amounts, owner, types, security levels)
8.9	Delivered data (amounts, owner, types, security levels, destination, date of delivery)
8.10	Exception data
8.11	Data growth – actual vs expected vs maximum possible
8.12	Consolidation of MIS
8.13	Graphical representation
9.0	Security
	Program usage
9.1	Provision of user access levels
9.2	Super user : option to add modules
9.3	Administrator – Database
9.4	Administrator – System
9.5	Developer, IT Expert
9.6	User – Add
9.7	User – Edit
9.8	User – Retrieve
9.9	User – View
9.10	Customisable access features (by module)
9.11	Customisable operational rights
9.12	Owner DPC
9.13	Local DPC
9.14	Data Supplier
9.15	Various levels of HDU
	Data dissemination & encryption
9.16	Encryption keys & levels
9.17	User log-in and authentication

SI.No	Particulars Deliverable
1	2
9.18	Dynamic user rights maintenance
9.19	Storage of soft key information in secure manner
9.20	Provision for Integration of hardware keys / software keys into software
9.21	Provision for on-line delivery with / without encryption
9.22	Checksum and security against tampering
9.23	Encryption on data delivery : SSL, DES, IPsec, ...
9.24	File signature to check change during file transport
9.25	Prevention of hacking
9.26	Provision for unauthorised use of the program
9.27	Provision for recovery from data corruption
9.28	Provision for automatic shutdown / logout on no activity for pre-defined period
9.29	User registration process, user privileges
10.0	Archival
	Archival System
10.1	By month, year or groups
10.2	By region
10.3	By Type
10.4	Incremental data
10.5	Complete Archive
10.6	Generic Archival Structure
10.7	Selection and deselection
10.8	Open databases / files also archived
10.9	Archival administration tool with scheduling
10.10	Provision for storing of templates for archival
10.11	Restoring of data from archive by selection
10.12	Off-line and on-line archives
10.13	Option to archive using a standard database format
10.14	Archive time-stamp and user information
10.15	Provision for keeping additional information to ensure sanctity of data
11.0	Backup System
11.1	By time
11.2	By region
11.3	By Type
11.4	Incremental data
11.5	Complete Backup
11.6	Compression
11.7	Selection and deselection supported
11.8	Backup files / databases that are open during backup
11.9	Support all systems on LAN, including other servers and computers
11.10	Backup scheduling
11.11	Backup should not disturb normal DSC operation
11.12	Backup administration tool
11.13	Multi media support
11.14	Restore Features
11.15	On-line and off-line backup support
12.0	Help Desk for HDU
12.1	FAQs – CD and web usage
12.2	Data retrieval systems
12.3	Data organisation information
12.4	HP documents
12.5	Swift access to manuals, guidelines and similar information
12.6	Data conversion utilities
12.7	Data formatting tools
13.0	Utilities
13.1	Audit trail
13.2	Logging of user options used

SI.No	Particulars Deliverable
1	2
13.3	Logging of data views / updates etc.
13.4	Logging of all activities
13.5	Logging of imports
13.6	Catalogue creation
13.7	Requests
13.8	Dissemination
13.9	Archival & restore
13.10	Backup & Restore
13.11	Selective printing of audit report – by time, activity, person etc.
13.12	Addition of user modules
13.13	Report Generator
13.14	Query Generator
13.15	Graph Creator
13.16	Form Wizard
13.17	Scheduled backup
13.18	Internal and web messaging system
13.19	E-mail integration (out and in)
14.0	Accounting
14.1	Billing for data extracted – volume, time, type based
14.2	Provision for entering multiple costing tables
14.3	Recording of Statement of Account
14.4	Provision for special services
14.5	Billing to incorporate cost of communication media
14.6	Sale of CD Catalogue
15.0	Data handling features and tools
	Hydrological data
15.1	Correct storage (no change of value)
15.2	All HIS data types supported
15.3	Error detection / handling in input
15.4	Handling of missing data
15.5	Storage in correct format with unique link labels
15.6	Integrity checks on all data
15.7	Communication of inconsistencies and errors to data owner
15.8	Only complete, properly formatted and consistently identified data to be accepted.
15.9	Report of acceptance, replacement and rejection to be generated
15.10	Data Import
15.11	Tools to design new formats / templates for import of data
15.12	Tailoring option for the fields at run-time through supervisor option
15.13	Adequate formatting procedures for import services
15.14	All options as defined earlier, from all the software specified
15.15	Objects
15.16	Proper characterisation of the various objects
15.17	Proper identification
15.18	Addition of time label
15.19	Storage in adequate place
15.20	Addition in meta data
15.21	Temporary data
15.22	Collecting / receiving data from other DSCs / DPCs for storage
15.23	Data delivered in the same format as field data, authenticated data and objects
15.24	Standard formats, MDB transfer files, ASCII files (as defined)
15.25	Separate repository for this service
15.26	Meta Data
15.27	Receipt of meta data from other DSCs
15.28	Integrity checks on meta data
15.29	Inconsistence and errors communicated with the data owner
15.30	Generation of meta-data from stored data

SI.No	Particulars Deliverable
1	2
15.31	Updating of meta data
15.32	Distribution of meta data
15.33	Generating update file of meta data for DSC / Web / CD
15.34	File export
15.35	Forward error control on all file deliveries
15.36	Support for all file types associated with HIS import and export
15.37	Thorough integrity control on all data I/O
15.38	Encryption
15.39	CD creation tools
15.40	Format conversion tools
15.41	User administration
15.42	Admission of new users to database, rights definition, encryption key allocation
15.43	Maintenance of an authorised user list
16.0	Maintenance and reporting functions (including graphical)
	Monthly, annual, as-and-when
16.1	User friendly reports
16.2	Comprehensive, flexible and definable (additions or adaptations)
16.3	Multiple levels of grouping and sorting
16.4	Graphical reporting where applicable
16.5	Reports
16.6	Catalogue contents report
16.7	Periodic database reports (scheduled)
16.8	Event reports
16.9	Data reception reports
16.10	Data availability reports
16.11	Information request report
16.12	Data delivery report
16.13	Database related reporting – regular
16.14	Database maintenance reporting
16.15	Report writer for other queries
16.16	Reports – Annual
16.17	Database contents
16.18	Last year updates information
16.19	Aggregated information by domain (SW, GW, Met., WQ)
16.20	Report writer
16.21	Exception reports
16.22	Data not available
16.23	Data delayed, inconsistent, not received report
16.24	Transfer corruption detected
16.25	Transfer delay pattern report
16.26	Dissemination delay transfer report
16.27	Report writer for other queries
16.28	Administrative reports
16.29	Activity log – user login / logout / updating / deletions / requests
16.30	User Billing report
16.31	User Statements
16.32	Audit file reporting – selectively by time, activity, others...
16.33	Backup and restore logs
16.34	Archival logs
16.35	Database maintenance logs
16.36	Database Management and Administration functions
16.37	Error detection / handling in stored data
16.38	Error detection in transfer process
16.39	Performance monitoring
16.40	Detection / handling of data corruption
16.41	Handling / recovery from crashes

SI.No	Particulars Deliverable
1	2
16.42	Database administration
16.43	On-line access for owner DPCs
16.44	Error detection / handling in output
16.45	Catalogue support (on-line and off-line)
17.0	Scalability, Expandability and features
17.1	Addition of new DSCs
17.2	Data structure modification features
17.3	Addition of new tables and entities
17.4	Data increase – cumulative data and additional data per year
17.5	Absorption of new technologies
17.6	Efficient and generic storage
17.7	Efficient extraction of data
17.8	Database service menu for on-line and batch services
17.9	DBA procedures
17.10	DRF batch and on-line services
17.11	On-line and off-line catalogue support
17.12	Web based DRF and catalogue support
17.13	On-line link with owner DPC
18.0	Disaster recovery
18.1	Detection of data corruption
18.2	Automatic and manual disaster recovery
18.3	General power interruption
18.4	Table corruption
18.5	Data corruption
18.6	HDU failure
18.7	Roll back – Database roll back to a controlled state
18.8	Security
18.9	Regenerate lost index tables
18.10	Disaster recovery tool should support restoring of an entire (sub)system or a single file and all graduations between these extremes
18.11	Recovery control from a central console, over the LAN
18.12	All recovery tools to be properly documented
18.13	User alerts on all potentially hazardous situations
19.0	Web Features
19.1	Support of a central gateway
19.2	Support of multiple hyperlinks
19.3	Firewall at IP, TCP level address verification, and at application level restricting access to limited services
19.4	Encryption on data delivery
19.5	Catalogue support
19.6	Option of getting data directly from DSC server if required, with appropriate firewall, check etc.
19.7	User Interface similar on-line and off-line
19.8	UIs support of GIS and database technology
19.9	UIs support of data communication technology
19.10	UI tools as specified in the requirement
19.11	Internet and Intranet services to the DPCs and HDUs
19.12	Option of local web server, shared web server and outsourced web server
19.13	Maintenance and development tools to be included
19.14	Support of POP3 email, FTP
19.15	Option of downloading / printing organised hard copy of catalogue (partial / all)
19.16	Web server setup to support the catalogue services and data exchange with the DPCs, DSCs and HDUs
19.17	Implementation of a data pricing system supporting cost differentiation based on data type, amount, specific HAU and contracts
19.18	Shopping Cart concept to store the selected options

SI.No	Particulars Deliverable
1	2
19.19	Catalogue updates possible
19.20	Information Pages on Project and details
19.21	Support of WEB protocols
19.22	Software downloads
20.0	Documentation
20.1	Each deliverable at each DSC should be accompanied with all the related manuals and documentation.
20.2	Frequently required documents to be delivered as multiple copies for each data centre
20.3	At least one copy of each manual for each data centre
	Manuals and documentation associated with all tools and software
20.4	All manuals and user guides for effectively maintaining DBMS, catalogue and tools
20.5	All software manuals and user guides for the databases and tools used by software system
20.6	Software manuals and user guides for GIS tools used
20.7	Software manuals and user guides for development tools, environment and programming languages for DSC
20.8	Software manuals and user guides for development tools, environment and programming languages for WEB
20.9	Messages, error messages, codes and error handling manuals for all above aspects
	Manuals and documentation associated with the implementation aspects
20.10	All documents, manuals and user guides required to operate, maintain and configure all system components at the user's specific environment. The system components comprise the database system and the catalogue systems, also including at the HDU's end (on-line and off-line)
20.11	Software system general descriptions and diagrams
20.12	List of modules included, short descriptions
20.13	User's guide
20.14	System description
20.15	All screens and menus
20.16	Each fields function and use
20.17	In hypertext with printer support
20.18	Error handling
20.19	All codes
20.20	Message codes and list
20.21	System maintenance guide
20.22	System upgradation guide
20.23	System compatibility guide
20.24	On-line help as specified under Utilities
20.25	Help in the catalogue
20.26	FAQ list – catalogue / manual
20.27	Database maintenance guide
20.28	Contact points for vendor
20.29	Detail of all procedures to be followed with troubleshooting guide

**IMPLEMENTATION SCHEDULE
(GCC 19)**

Stage	Description	Schedule (Week from effective Date)
I	Preparation of Project Plan and submission for approval	2
II	a) Delivery of all application and associated software of the Data Storage Centre at 31 Project sites including the successful pilot test at one site b) 4 weeks training as defined in clause 14.2 (d) (i) & (iii) ITB - BDS	20
III	a) Installation, Testing and Operational Acceptance Tests of complete system at balance 30 sites b) 2 weeks training as defined in clause 14.2 (d) (ii) & (iii) ITB-BDS	24