

**Public Health Engineering Organisation (PHEO)  
Housing and Urban Development Department (HUDD),  
Govt. of Odisha**

**TENDER NOTICE NO. CEPH-15/2015-16**

## **Request for Proposal**

**Volume 2 – Draft Concession Agreement**

**RfP for Establishment and Operation of Public Health  
Engineering Laboratories for Testing and Quality  
Monitoring of Water & Waste Water under**

**PACKAGE-1— State Laboratory at Bhubaneswar and divisional  
laboratories at i) Berhampur ii) Bhubaneswar iii) Cuttack iv) Puri**

**PACKAGE-2—Divisional laboratories at i) Balasore ii) Baripada; iii)  
Rourkela; iv) Sambalpur**

**OFFICE OF THE ENGINEER-IN-CHIEF,  
PUBLIC HEALTH ODISHA, BHUBANESWAR  
Heads of Department Building, 1st Floor, Unit – V,  
Bhubaneswar-751001**

**Phone No.0674-2393909, Fax No.0674-2396935**

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**THIS CONCESSION AGREEMENT** (herein after also referred to as the ‘**Agreement**’) is entered into on this the \_\_\_\_ day of \_\_\_\_\_, 2016 at Bhubaneswar, Odisha.

**BY & BETWEEN:**

1. **The Governor, State of Odisha** represented by the Engineer in Chief (EIC), Public Health (PHEO) and having its **principal** office at....., Bhubaneswar duly authorized by G.O. No. ....dated ..... issued for the purpose (hereinafter referred to as the “**Concessioneing Authority**” or “**PHEO**”, which expression shall, unless it be repugnant to the context or meaning thereof, include its successors and permitted assigns), of the **FIRST PART**;

**AND**

2. **\*\*[M/s** \_\_\_\_\_, a [company/ partnership firm/ society/ pre-existing Joint Venture] registered under [the Companies Act, 1956/ insert relevant statute depending upon legal constitution of the Selected Bidder] having its [registered office/ head office] at \_\_\_\_\_, in its capacity as the **Concessionaire** to this Agreement (hereinafter referred to as the “**Selected Bidder**” which expression shall, unless the context otherwise requires, include its successors and permitted assigns) [represented herein through Mr. \_\_\_\_\_, the Authorised Person, authorised vide Power of Attorney /Board Resolution dated \_\_\_\_\_ **SECOND PART**];

*[\*\*Note: The above clause 2 shall be modified depending upon the identity/ legal constitution of the Selected Bidder. In case the Selected Bidder is a foreign company, then the name of the company, the name of the legislation under which it has been incorporated, year of incorporation, registered office address and other constitution details etc. shall be inserted.]*

(Each of the parties of the First, and Second Parts are hereinafter, as the context may admit or require, individually referred to as a “**Party**” and collectively as the “**Parties**”, as the case may be).

**WHEREAS:**

A. PHEO is desirous of setting up the Laboratory Facilities at <<Insert the name of laboratory >> PH Division in Odisha on Public Private Partnership (“PPP”) basis, and decided to carry out a competitive bidding process for selection of the interested party/ bidder to whom the said project may be awarded (“**Project**”).

B. PHEO, in pursuance of the proposed development of the Project and conducting a single-stage (two-Envelope) competitive and transparent bidding process, and invited competitive proposals (the ‘**Bids**’) by its Request for Proposal document dated \_\_\_\_\_, 2016 (herein the ‘**RFP**’) for selection of a successful bidder, *inter alia*, for design, construction, development, finance, management, operation and maintenance of the Project on Public Private Partnership basis subject to and on the terms and conditions contained therein.

C. After evaluating the received Bids, the Concessioneing Authority accepted the proposal submitted by the Selected Bidder and accordingly issued the Letter of Award No. \_\_\_\_ dated \_\_\_\_\_,

2016 (the “LoA”) to the Selected Bidder for the Project, requiring, *inter alia*, the execution of this Concession Agreement, and furnishing of the Performance Security for the performance of its obligations under this Concession Agreement.

D. The Selected Bidder has, in accordance with the RFP and the LoA, enter into this Concession Agreement for undertaking, *inter alia*, the design, engineering, procurement, construction, management, operation and maintenance of the Project as per applicable laws and applicable standards and to fulfill other obligations of the Concessionaire pursuant to the LOA and has requested the Concessions Authority to accept the Concessionaire as the entity which shall undertake and perform the obligations of the Selected Bidder including the obligation to enter into this Concession Agreement for implementing the Project during the Concession Period.

E. The Selected Bidder has, in compliance with the terms of the LOA and as per the RFP, made the following payments on behalf of the Concessionaire to the Concessions Authority:

- (i) an irrevocable, unconditional, bank guarantee, in the name of the Concessions Authority, issued by \_\_\_\_\_, \_\_\_\_\_, [name & address of the issuing bank (a scheduled/nationalized bank having a local branch in Bhubaneswar)] for an amount equal to **Rs. XXX (Rupees XXX)**, as a guarantee for the performance of its obligation under this Concession Agreement by the Concessionaire in relation to the Project (herein the ‘Performance Security’). This Performance Security shall be released in line with Article 9 of this agreement.

F. In response to Selected Bidder/Concessionaire complying with the afore-stated conditions of the LOA, the Concessions Authority has agreed to the said request of the Selected Bidder and has accordingly agreed to enter into this Concession Agreement with the Concessionaire pursuant to the LOA for, *inter alia*, the design, engineering, procurement, construction, operation and maintenance of the Project.

H. It is deemed necessary and expedient to enter into this Concession Agreement being these presents to record the terms, conditions and covenants of the said agreement between the Parties.

**NOW THEREFORE IN CONSIDERATION OF THE PREMISES AND THE MUTUAL COVENANTS HEREINAFTER CONTAINED, THE PARTIES HERETO HEREBY AGREE AND THIS AGREEMENT WITNESSETH AS FOLLOWS:**

## ARTICLE 1

### DEFINITIONS AND INTERPRETATION

#### 1.1 Definitions

In this Agreement, the following words and expressions shall, unless repugnant to the context or meaning thereof, have the meaning hereinafter respectively assigned to them:

**"Accounting Year"** means the financial year commencing from the first day of April of any calendar year and ending on the thirty-first day of March of the next calendar year; provided however that the first Accounting Year shall be deemed to mean the period commencing from Appointed Date until thirty-first day of March of the immediately succeeding calendar year; and the last Accounting Year shall be deemed to mean the period commencing from first day of April of relevant calendar year until Transfer Date.

**"Affected Party"** shall have the meaning set forth in Clause 25.1;

**"Agreement"** or **"Concession Agreement"** means this Agreement, its Recitals, Annexures and the Schedules hereto and any amendments thereto made in accordance with the provisions contained in this Agreement;

**"Applicable Laws"** means all laws, brought into force and effect by GOI or the State Government including rules, regulations and notifications made there under, circulars, orders, directions, bye-law, guidelines and policy of any Government Instrumentality, ordinances and judgements, decrees, injunctions, writs and orders of any court of record, or any determination by, or any interpretation or administration having the force of law and applicable to this Agreement and the exercise, performance and discharge of the respective rights and obligations of the Parties hereunder, as may be in force and effect during the subsistence of this Agreement;

**"Applicable Permits"** means all clearances, licenses, permits, authorisations, no objection certificates, consents, approvals and exemptions required to be obtained or maintained under Applicable Laws in connection with the construction, operation and maintenance of the Project Facilities during the subsistence of this Agreement;

**"Appointed Date"** means the date on which every Condition Precedent shall have been satisfied or waived in terms of the Agreement and shall be deemed to be the date of commencement of the Concession Period; provided however that if the Conditions Precedent are satisfied on different dates, the date on which the last of the Conditions Precedent have been satisfied/waived shall constitute the Appointed Date;

**"Arbitration Act"** means the Arbitration and Conciliation Act, 1996 and shall include modifications to or any re-enactment thereof, as in force from time to time;

**"Affiliate"** means, in relation to either Party, a person who controls, is controlled by, or is under the common control with such Party. The expression "control" shall mean, with respect to a person which is a company or corporation, the ownership, directly or indirectly, of more than 50% (fifty per cent) of

the voting shares of such person, or the power to direct the management and policies of such person, whether by operation of law or by contract or otherwise;

**"Authority Default"** shall have the meaning set forth in Clause 27.2.1;

**"Authorised Representative"** means such person or persons as may be authorised in writing by the relevant Party to act on its behalf under this Agreement and shall include any person or persons having authority to exercise any rights or perform and fulfil any obligations of such Party under this Agreement;

**"Bank"** means a bank incorporated in India and having a minimum net worth of Rs. 1,000 crore (Rupees one thousand crore) or any other bank acceptable to the Authority;

**"Bid"** means the documents in their entirety comprised in the bid submitted by the Selected Bidder in response to the RFP in accordance with the provisions thereof;

**"Bid Security"** means the security provided by the Selected Bidder to the Authority along with the Bid in accordance with the RFP, and which is to remain in force until substituted by the Performance Security;

**"Clause"** means a clause in this Agreement;

**"COD"** or **"Commercial Operation Date"** shall have the meaning set forth in Clause 15.1;

**"Change in Law"** means the occurrence of any of the following after the date of this Agreement (other than in case of any Tax laws) having direct bearing on the implementation of the Project:

- (a) the enactment of any new Indian law;
- (b) the repeal, modification or re-enactment of any existing Indian law;
- (c) the commencement of any Indian law which has not entered into effect until the date of this Agreement;
- (d) a change in the interpretation or application of any Indian law by judgment of a court of record which has become final conclusive and binding, as compared to such interpretation or application by a court of record prior to the date of this Agreement.

**"Change of Scope"** shall have the meaning set forth in Article 16;

**"Completion Certificate"** shall have the meaning set forth in Clause 14.2;

**"Concession"** shall have the meaning set forth in Clause 3.1.1;

**"Concessionaire"** shall have the meaning attributed thereto in the array of Parties hereinabove as set forth in the Recitals;

**"Concession Period"** means the period starting on and from the Appointed Date and ending on the Transfer Date;

**"Concessionaire Default"** shall have the meaning set forth in Clause 27.1.1;

**"Conditions Precedent"** shall have the meaning set forth in Clause 4.1.1;

**"Construction Period"** means the period beginning from the Appointed Date and ending on the COD;

**"Construction Works"** means all works and things necessary to complete the Project in accordance with this Agreement and shall include all the work required to be done by the Concessionaire in terms of paragraph 1.4 of Schedule I: Terms of Reference to this Agreement;

**"Contractor"** means the person or persons, as the case may be, with whom the Concessionaire has entered into for any of the contract for construction, operation and/or maintenance of the Project and/or Project Facilities or matters incidental thereto, but does not include a person who has entered into an agreement for providing financial assistance to the Concessionaire;

**"Cure Period"** means the period specified in this Agreement for curing any breach or default of any provision of this Agreement by the Party responsible for such breach or default and shall:

- (a) commence from the date on which a notice is delivered by one Party to the other Party asking the latter to cure the breach or default specified in such notice;
- (b) not relieve any Party from liability to pay Damages or compensation under the provisions of this Agreement; and
- (c) not in any way be extended by any period of Suspension under this Agreement; provided that if the cure of any breach by the Concessionaire requires any reasonable action by the Concessionaire that must be approved by the Authority hereunder, the applicable Cure Period shall be extended by the period taken by the Authority to accord their approval;

**"Damages"** shall have the meaning set forth in Sub-clause (w) of Clause 1.2.1;

**"Compliance Period"** means the period from the date of this Agreement until the Appointed Date;

**"Construction Contract"** means any agreement entered into by the Concessionaire with any Contractor for construction of the Construction Works which has been approved by the Authority in terms of this Agreement;

**"Dispute"** shall have the meaning set forth in Clause 34.1;

**"Dispute Resolution Procedure"** means the procedure for resolution of Disputes set forth in Article 34;

**"Document" or "Documentation"** means documentation in printed or written form, or in tapes, discs, drawings, computer programmes, writings, reports, photographs, films, cassettes, or expressed in any other written, electronic, audio or visual form;

**"Design Approval Committee" or "DAC"** means the committee as constituted by the Authority for approving the design of the Project, consisting of officials as stipulated in Schedule 3 of the Concession Agreement.

**"Drawings"** means all of the drawings, calculations and documents pertaining to the Project and Project Facilities and shall include 'as built' drawings of the Project and Project Facilities;

**"Effective Date"** shall mean the date on which the Concession Agreement has been executed by the Parties;

**"Easement"** means all easements, reservations, rights-of-way, utilities and other similar rights as to the use of real property, which are necessary or appropriate for the conduct of activities of the Concessionaire related to the Project;

**"Emergency"** means a condition or situation that is likely to endanger the security of the individuals on or about the Project, including Users thereof, or which poses an immediate threat of material damage to any of the Project Assets or any property at the Site;

**"Encumbrance(s)"** means, in relation to the Project and Project Facilities, any encumbrance such as mortgage, charge, pledge, lien, hypothecation, Security Interest, assignment, privilege or priority of any kind having the effect of security or other such obligations, and shall include any designation of loss payees or beneficiaries or any similar arrangement under any insurance policy pertaining to the Project and Project Facilities, where applicable herein but excluding utilities referred to in Clause 11.1;

**"Expert"** means any person, body or organization of repute with recognized technical/professional expertise in respect of any field, matter or subject relevant for the purpose of this Agreement, appointed by the Authority.

**"Fee"** means all charges, tariff, fees, deposits and amounts received by or paid to the Concessionaire with respect to the Project from the PHEO and other Users ;

**"First Operation Year"** means a period from the date which is the commercial Operations Date till the immediately following March 31.

**"Force Majeure"** or **"Force Majeure Event"** shall have the meaning ascribed to it in Clause 34.1;

**"GOI"** means the Government of India;

**"Good Industry Practice"** means the practices, methods, techniques, designs, standards, skills, diligence, efficiency, reliability and prudence which are generally and reasonably expected from a reasonably skilled and experienced operator engaged in the same type of undertaking as envisaged under this Agreement and which would be expected to result in the performance of its obligations by the Concessionaire in accordance with this Agreement, Applicable Laws and Applicable Permits in reliable, safe, economical and efficient manner;

**"Government Instrumentality"** means any department, division or sub-division of the Government or the State Government and includes any commission, board, authority, agency or municipal and other local authority or statutory body including Panchayat under the control of the Government or the State Government, as the case may be, and having jurisdiction over all or any part of the Project or the performance of all or any of the services or obligations of the Concessionaire under or pursuant to this Agreement;



**"Indemnified Party"** means the Party entitled to the benefit of an indemnity pursuant to Article 32;

**"Indemnifying Party"** means the Party obligated to indemnify the other Party pursuant to Article 32;

**"Engineer" / "Independent Engineer"** shall have the meaning set forth in Clause 19.1;

**"Indirect Political Event"** shall have the meaning set forth in Clause 25.3;

**"Insurance Cover"** means the aggregate of the maximum sums insured under the insurances taken out by the Concessionaire pursuant to Article 23, and when used in the context of any act or event, it shall mean the aggregate of the maximum sums insured and payable in relation to such act or event;

**"Last Operation Year"** means a period calculated from the date of expiry or early termination of the Concessionaire Agreement till the immediately preceding April 1.

**"License Fee"** means the non-refundable fixed amount to be paid by the Concessionaire equivalent to 10% as per the Article 11.

**"Mandatory Project Components/ Mandatory Development Obligations"** shall mean and include the ascribed thereto in **Schedule 1** hereof.

**"Maintenance Manual"** shall have the meaning ascribed to it in Clause 17.3;

**"Maintenance Program"** shall have the meaning ascribed to it in Clause 17.4.1;

**"Maintenance Requirements"** shall have the meaning set forth in Clause 17.2;

**"Material Adverse Effect"** means any act, omission or event which has a material adverse effect on the ability of either Party to perform any of its obligations under and in accordance with the provisions of this Agreement and which act or event causes a material financial burden or loss to either Party;

**"Non-Political Event"** shall have the meaning set forth in Clause 25.2;

**"O&M"** means the operation and maintenance of the Project and Project Facilities and includes all matters connected with or incidental to such operation and maintenance, provision of services and facilities, and collection of Fee in accordance with the provisions of this Agreement;

**"O&M Expenses"** means expenses incurred by or on behalf of the Concessionaire or by the Authority, as the case may be, for all O&M including (a) cost of salaries and other compensation to employees, (b) cost of materials, supplies, utilities and other services, (c) premia for insurance, (d) all taxes, duties, cess and fees due and payable for O&M, (e) all repair, replacement, reconstruction, reinstatement, improvement and maintenance costs, (f) payments required to be made under the O&M

Contract, or any other contract in connection with or incidental to O&M, and (g) all other expenditure required to be incurred under Applicable Laws, Applicable Permits or this Agreement;

"**O&M Inspection Report**" shall have the meaning set forth in Clause 18.2;

"**Operation Period**" means the period commencing from COD and ending on the Transfer Date;

"**Operation Year**" means a year (period of 365 days) starting from April 1 of a year to March 31 of the following year.

"**Panel of Chartered Accountants**" shall have the meaning set forth in Clause 24.2.1;

"**Parties**" means the parties to this Agreement collectively and "Party" shall mean any of the parties to this Agreement individually;

"**Performance Security**" shall have the meaning ascribed to it in clause 9 hereof.

"**Political Event**" shall have the meaning set forth in Clause 25.4;

"**Project**" shall mean and refer to the design, construction, equipping, operation, maintenance of the Laboratory Facilities as described in **Schedule 1** in accordance with the provisions of this Agreement, and includes all works, services required to be provided in terms of the Agreement including Schedule I: Scope of Work;

"**Project Agreements**" means this Agreement, and any other agreements or contracts that may be entered into by the Concessionaire with any person in connection with matters relating to, arising out of or incidental to the Project.;

"**Project Assets**" means all physical and other assets relating to and forming part of the Site including (a) tangible assets such as civil works and equipment including but not limited to foundations, embankments, drainage works, sign boards, electrical systems, communication systems, rest areas, maintenance depots and administrative offices; (c) Project Facilities situated on the Site; (d) all rights of the Concessionaire under the Project Agreements; (e) insurance proceeds; and (g) Applicable Permits and authorisations relating to or in respect of the Project;

"**Project Completion Date**" means the date on which the Completion Certificate or the Provisional Certificate, as the case may be, is issued under the provisions of Article 14;

"**Project Completion Schedule**" means the schedule for completion of the Mandatory Project Components and Project Facilities on or before the Scheduled Completion Date;

"**Project Facility(ies)/Facility**" means the Mandatory Project Components/ Mandatory Development Obligations [including all the amenities and facilities required as basic and support infrastructure for the Project, for the optimal functioning thereof, including but not limited to sewage and sanitation system, water supply, electricity distribution and supply, situated on the Site, as described in **Schedule 1**] to be developed, operated and maintained by the Concessionaire on the Project Site in terms of the Agreement and shall also include all the materials and equipments at the Site;

"**Provisional Certificate**" shall have the meaning set forth in Clause 14.3;

"**Punch List**" shall have the meaning ascribed to it in Clause 14.3;

"**Quality Manager**" means the person appointed as quality manager by the Authority in relation to the Project and includes his substitute/replacement from time to time;

"**Re.**", "**Rs.**" or "**Rupees**" or "**Indian Rupees**" means the lawful currency of the Republic of India;

"**RFP**" shall have the meaning set forth in Recital (B);

"**Right of Way**" means the constructive possession of the Site, together with all way leaves, Easements, unrestricted access and other rights of way, howsoever described, necessary for construction, operation and maintenance of the Project in accordance with this Agreement;

"**Safety Requirement**" shall mean development, implementation and administration of a surveillance and safety programme by the Concessionaire in conformity with Applicable Laws and Good Industry Practice so as to provide safe environment on or about the Project Facilities.

"**Scheduled Completion Date**" shall have the meaning set forth in Clause 12.4.1;

"**Scope of Work**" shall mean the Concessionaire's scope of work relating to the Project provided in the Agreement including Schedule I ;

"**Security Interest**" means any mortgage, charge (whether fixed or floating), pledge, lien, hypothecation, assignment, security interest or other encumbrances of any kind securing or conferring any priority of payment in respect of any obligation of any Person and includes without limitation any right granted by a transaction which, in legal terms, is not the granting of security but which has an economic or financial effect similar to the granting of security in each case under Applicable Laws;

"**Selected Bidder**" means the bidder who has been awarded the Project;

"**Site**" shall have the meaning set forth in Clause 10.1;

"**Specifications and Standards**" means the specifications and standards relating to the quality, quantity, capacity and other requirements for the Project Facility, as set forth in Schedule I and in Annexure 2 - **Schedule 1**, and any modifications thereof, or additions thereto, as submitted by the Concessionaire to and expressly approved by, the Authority;

"**State**" means the State of Odisha and "**State Government**" means the government of that State;

"**Statutory Auditors**" means a reputable firm of chartered accountants acting as the statutory auditors of the Concessionaire under the provisions of the Companies Act, 1956/ 2013 including any modification or re-enactment thereof, for the time being in force, and appointed in accordance with Clause 24.2.1;

"**Suspension**" shall have the meaning set forth in Clause 26.1;

**"Tax(es)"** means any Indian taxes including excise duties, customs duties, value added tax, sales tax, local taxes, cess and any impost or surcharge of like nature (whether Central, State or local) on the goods, materials, equipment and services incorporated in and forming a part of the Project charged, levied or imposed by any Government Instrumentality, and any interest, penalties and other sums in relation thereto imposed on any account whatsoever.;

**"Termination"** means the expiry or earlier termination [for any reason whatsoever], as the case may be, of this Agreement and the Concession hereunder in terms hereof;

**"Termination Notice"** means the communication issued in accordance with this Agreement by one Party to the other Party terminating this Agreement;

**"Termination Payment"** means the amount payable, under and in accordance with this Agreement, by the Authority to the Concessionaire upon Termination.

**"Tests"** means the tests to determine the completion of Project in accordance with the provisions of this Agreement.

**"Transfer Date"** means the date on which this Agreement and the Concession hereunder expires pursuant to the provisions of this Agreement or is terminated by a Termination Notice;

**"Users"** means person whose water/ waste water is tested in accordance with the provisions of the Agreement in addition to PHEO;

**"Valuer"** means an independent expert valuer/accountant appointed jointly by the Authority and the Selected Bidder.

## **1.2 Interpretation**

1.2.1 In this Agreement, unless the context otherwise requires,

- (a) references to any legislation or any provision thereof shall include amendment or re-enactment or consolidation of such legislation or any provision thereof so far as such amendment or re-enactment or consolidation applies or is capable of applying to any transaction entered into hereunder;
- (b) references to laws of Government of Odisha, laws of India or Indian law or regulation having the force of law shall include the laws, acts, ordinances, rules, regulations, bye laws or notifications which have the force of law in the territory of Odisha or India, as the context may require, and as from time to time may be amended, modified, supplemented, extended or re-enacted;
- (c) references to a "**person**" and words denoting a natural person shall be construed as a reference to any individual, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and shall include successors and assigns;
- (d) the table of contents, headings or sub-headings in this Agreement are for convenience of reference only and shall not be used in, and shall not affect, the construction or interpretation of this Agreement;

- (e) the words “include” and “including” are to be construed without limitation and shall be deemed to be followed by “without limitation” or “but not limited to” whether or not they are followed by such phrases;
- (f) references to "**construction**" or "**building**" include, unless the context otherwise requires, investigation, design, developing, engineering, procurement, delivery, transportation, installation, processing, fabrication, testing, commissioning and other activities incidental to the construction, and "**construct**" or "**build**" shall be construed accordingly;
- (g) references to "**development**" include, unless the context otherwise requires, construction, installation, renovation, refurbishment, augmentation, upgradation and other activities incidental thereto, and "**develop**" shall be construed accordingly;
- (h) any reference to any period of time shall mean a reference to that according to Indian Standard Time;
- (i) any reference to day shall mean a reference to a calendar day;
- (j) references to a "business day" shall be construed as a reference to a day (other than a Sunday) on which banks in Bhubaneswar are generally open for business;
- (k) any reference to month shall mean a reference to a calendar month as per the Gregorian calendar;
- (l) references to any date, period or Project Milestone shall mean and include such date, period or Project Milestone as may be extended pursuant to this Agreement;
- (m) any reference to any period commencing "from" a specified day or date and "till" or "until" a specified day or date shall include both such days or dates provided that if the last day of any period computed under this Agreement is not a business day, then the period shall run until the end of the next business day;
- (n) the words importing singular shall include plural and vice versa;
- (o) references to any gender shall include the other and the neutral gender;
- (p) "lakh" means a hundred thousand (100,000) and "crore" means ten million (10,000,000);
- (q) "**indebtedness**" shall be construed so as to include any obligation (whether incurred as principal or surety) for the payment or repayment of money, whether present or future, actual or contingent;
- (r) references to the “winding-up”, “dissolution”, “insolvency”, or “reorganization” of a company or corporation shall be construed so as to include any equivalent or analogous proceedings under the law of the jurisdiction in which such company or corporation is incorporated or any jurisdiction in which such company or corporation carries on business including the seeking of liquidation, winding-up, reorganisation, dissolution, arrangement, protection or relief of debtors;
- (s) any reference, at any time, to any agreement, deed, instrument, lease or document of any description shall be construed as reference to that agreement, deed, instrument, lease or other document as amended, varied, supplemented, modified or suspended at the time of such reference; provided that this Sub-clause shall not operate so as to increase liabilities or obligations of the Authority hereunder or pursuant hereto in any manner whatsoever;
- (t) any agreement, consent, approval, authorisation, notice, communication, information or report required under or pursuant to this Agreement from or by any Party or the Engineer shall be valid and effective only if it is in writing under the hand of a duly Authorised Representative of such Party or the Engineer, as the case may be, in this behalf and not otherwise;

- (u) the Schedules and Recitals to this Agreement form an integral part of this Agreement and will be in full force and effect as though they were expressly set out in the body of this Agreement;
- (v) references to Recitals, Articles, Clauses, Sub-clauses or Schedules in this Agreement shall, except where the context otherwise requires, mean references to Recitals, Articles, Clauses, Sub-clauses and Schedules of or to this Agreement, and references to a Paragraph shall, subject to any contrary indication, be construed as a reference to a Paragraph of this Agreement or of the Schedule in which such reference appears; and
- (w) the damages payable by either Party to the other of them, as set forth in this Agreement, whether on per diem basis or otherwise, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Party entitled to receive the same and are not by way of penalty (the "**Damages**").

1.2.2 Unless expressly provided otherwise in this Agreement, any Documentation required to be provided or furnished by the Concessionaire to the Authority and/or the Independent Engineer shall be provided free of cost and in three copies, and if the Authority and/or the Independent Engineer is required to return any such Documentation with their comments and/or approval, they shall be entitled to retain two copies thereof.

1.2.3 The rule of construction, if any, that a contract should be interpreted against the parties responsible for the drafting and preparation thereof, shall not apply.

1.2.4 Any word or expression used in this Agreement shall, unless otherwise defined or construed in this Agreement, bear its ordinary English meaning and, for these purposes, the General Clauses Act 1897 shall not apply.

### 1.3 Measurements and arithmetic conventions

All measurements and calculations shall be in the metric system and calculations done to 2 (two) decimal places, with the third digit of 5 (five) or above being rounded up and below 5 (five) being rounded down.

### 1.4 Priority of agreements and errors/discrepancies

1.4.1 This Agreement, and all other agreements and documents forming part of this agreement are to be taken as mutually explanatory and, unless otherwise expressly provided elsewhere in this agreement, the priority of this agreement and other documents and agreements forming part hereof shall, in the event of any conflict between them, be in the following order:

- (a) this signed Concession Agreement (including its Schedules along with any Addendums issued to the RFP Document dated \_\_\_\_; and
- (b) all other agreements [including RFP and LOA] and documents forming part hereof; i.e. the Agreement at (a) above shall prevail over the Agreements and documents at (b) above.

1.4.2 Subject to Clause 1.4.1, in case of ambiguities or discrepancies within this Agreement, the following shall apply:

- (a) between two or more Clauses of this Agreement, the provisions of a specific Clause relevant to the issue under consideration shall prevail over those in other Clauses;

- (b) between the Clauses of this agreement and the Schedules, the Clauses shall prevail and between Schedules and Annexes, the Schedules shall prevail;
- (c) between any value written in numerals and that in words, the latter shall prevail.

**ARTICLE 2**

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## ARTICLE 3

### GRANT OF CONCESSION

#### 3.1 The Concession

3.1.1 Subject to and in accordance with the terms and conditions set forth in this Agreement, the Concessions Authority hereby grants to the Concessionaire and the Concessionaire hereby accepts the Concession for a period of 10 (Ten) years, commencing from the Appointed Date, including the exclusive right, authority and authorisation during the subsistence of this Agreement, including extension thereof, to plan, design, construct, develop, equip, operate, maintain, modernize and manage the Project and enjoy its commercial benefits for the Concession Period.

3.1.2 Subject to and in accordance with the terms and conditions set forth in this Agreement, the Concession hereby granted shall entitle the Concessionaire, the exclusive right and authority to enjoy and undertake the following in accordance with the provisions of this Agreement, the Applicable Laws and the Applicable Permits:

- (a) To develop and implement the Project as per the Scope of Work of the Project more specifically mentioned in the Schedule 1 of the Concession Agreement;
- (b) To develop, construct, equip, operate, maintain and regulate the use by Third Parties of the Project (which should be clearly and unambiguously defined) during the Concession Period;
- (c) To enjoy complete and uninterrupted possession of and control over the Project Site for a period that shall be co-terminus with the Concession Agreement.
- (d) To have access and liberty to plan, design, construct, equip, maintain and operate the proposed Laboratory Facilities with associated facilities and services at the Project Site during the Concession Period in accordance with the provisions of this Concession Agreement & Schedules thereof. Any construction or development made by the Concessionaire on the specified Project Site in respect of the Project at its cost and expense, shall be deemed to be the property of the Concessions Authority and the Concessionaire relinquishes all his rights in such assets/property in favour of Concessions Authority;
- (e) Exclusive right and authority, during the Concession Period, to carry out the specified activities in relation to the Project;
- (f) Manage, operate and execute rights over all or any part of the Project Assets without any limitation or restriction other than those expressly set out in this Concession Agreement;
- (g) Demand and collect Fees etc, from the PHEO and other Users availing the services at the Laboratory Facilities, as per the laid down provisions of the Concession Agreement and the Schedules hereof;
- (h) To fulfil its obligations under this Agreement, undertake activities either by itself or through subcontracting/ franchise arrangements and to appoint contractors, sub-contractors, architects, agents, advisors and consultants without in any way relieving the Concessionaire of its obligations as set out in this Agreement;

- (i) Arrange for all the clearances from the Competent Authority for the development of the Project and the Concessioning Authority is in no way liable for the same. Responsibility of taking all necessary approvals of any construction, demolition and reconstruction, if required, lies with the Concessionaire. Nevertheless Concessioning Authority without any binding obligation may provide any assistance upon written request from the Concessionaire.
- (j) Exercise such other rights as the Concessioning Authority may determine as being necessary or desirable for the purposes incidental and necessary for developing, implementing, upgrading, managing, operating, running & maintaining the Project.
- (k) Bear and pay all expenses, costs and charges incurred in the fulfilment of all the Concessionaire's obligations under this Agreement; and
- (l) Nothing contained herein, including the act of granting permission to develop the Project at the designated area shall vest or create any proprietary interest in the Project or any part thereof including any permanent fixtures, fittings etc. installed in the structure of the Project in favour of the Concessionaire or any person claiming through or under the Concessionaire. The Concessionaire shall not in any manner sell, transfer, assign, mortgage, charge, create lien or otherwise encumber or deal with the Project in any manner. The Concessionaire acknowledges, accepts and confirms that the covenant contained herein is an essence of this Agreement.

## ARTICLE 4

### CONDITIONS PRECEDENT

#### 4.1 Conditions Precedent

4.1.1 Save and except the provision relating to Performance Security as contained in **Article 9**, the respective rights and obligations of the Parties under this Agreement shall be subject to the satisfaction in full of the conditions precedent specified in this Clause 4.1 (the "**Conditions Precedent**").

4.1.2 The Authority shall fulfil the following conditions precedent:

- (a) hand over the vacant possession of the land and the laboratory building at the Project Site <<Insert the name of laboratory >> to the Concessionaire within 30 days of the Effective Date on 'as is where is' basis free from all Encumbrances in terms hereof through a Site handover letter according to terms and conditions of this Agreement;
- (b) constitute a Design Approval Committee (DAC) within 30 days of Effective Date in accordance with the provisions of **Schedule 3** to review the concept design for the Project Facilities submitted by the Concessionaire, and subject to satisfaction, approve the same;
- (c) appoint a Quality Manager as per the clause no. 6.1 pt. no. 10 of this Agreement within 60 (sixty) days from the Effective Date;
- (d) appoint an Independent Engineer as per the provisions of this Agreement within 60 (sixty) days from the Effective Date.

4.1.3 The Concessionaire shall be required to fulfill the following Conditions Precedent:

- (a) procure all clearances, approvals and Applicable Permits for implementing the Project, unconditionally or if subject to conditions then all such conditions shall have been satisfied in full and such Applicable Permits are in full force and effect within a period of 90 days from the Effective Date;
- (b) deliver to the Authority the confirmation, in original, of the correctness of its representations and warranties set forth in clause 7.1 of this Agreement within a period of 90 days from the Effective Date; and
- (c) Prepare and submit the detailed design methodology, quality assurance procedures, procurement and construction (furnishing & installation) time schedule for completion of the Project to DAC within 30 days of land handover date for their approval, as per the Applicable Laws including the local building byelaws, norms etc. of the Project Facility for execution of the Project;

Provided that upon request in writing by the Concessionaire, the Authority may, in its discretion, waive any of the Conditions Precedent set forth in this Clause 4.1.3.

4.1.4 Each Party shall make all reasonable endeavors to satisfy the Conditions Precedent within the time stipulated and shall provide the other Party with such reasonable cooperation as may be required to assist that Party in satisfying the Conditions Precedent for which that Party is responsible.

#### 4.2 Consequences for Delay by the Authority in fulfillment of Conditions Precedent

In the event of delay by the Authority in the fulfilment of any or all of the Conditions Precedent set forth in Clause 4.1.2, save and except for reasons attributable to the Selected Bidder/Concessionaire or Force Majeure or those which have been waived by mutual agreement of the Parties hereto, beyond a period of 120 (One hundred Twenty) days from the date of this Agreement or such later date as mutually agreed between the Parties, would entitle the Concessionaire to terminate this Agreement as per the provisions hereof.

In the event of such termination, the Authority shall

- release the Performance Security, subject to any outstanding dues payable to the Authority by the Concessionaire in terms hereof; provided however that in the event the Authority's failure to fulfill its Conditions Precedent is attributable to the Concessionaire's default, the Authority shall forfeit the Performance Security as damages; and
- In the event the access/ possession/ lease in respect of the Project Site shall have been granted to the Concessionaire in terms hereof on or before such date of Termination; then the Project Site shall immediately revert to the Authority, free and clear from any Encumbrances and along with all associated Easement rights, irrespective of any outstanding mutual claims between the Parties or any third party claims.

#### **4.3 Consequences for delay by the Concessionaire in fulfilment of Conditions Precedent**

- (a) In the event that (i) the Concessionaire does not procure fulfilment of any or all of the Conditions Precedent set forth in Clause 4.1.3 within a period of 90 (Ninety) days from the date of this Agreement, and (ii) the delay has not occurred as a result of Authority's failure to fulfil the obligations under Clause 4.1.2 or due to Force Majeure or fulfilment of such Condition Precedent has not been waived off by the Authority, the Concessionaire shall pay to the Authority, Damages in an amount calculated at the rate of 0.1% (zero point One percent) of the Performance Security for each day's delay subject to the maximum of 10% of Performance Security; without prejudice to any other rights and remedies available to the Authority in terms hereof or under law or otherwise.
- (b) Notwithstanding anything to the contrary in the event delay referred to in aforesaid Clause 4.3 (a) above, exceeds a period of 180 (one hundred and ty) days from the date of this Agreement for any reason including by reason of Force Majeure (save and except any delay due to the fault of the Authority) or goes beyond such later date as may be mutually agreed between the Parties for fulfilment of Conditions Precedent, then the Authority shall be entitled to terminate this Agreement in accordance with the provisions hereto.

In such an event, notwithstanding anything to the contrary contained in the Agreement, the Authority shall, without prejudice to any other right or remedy that may be available to the Authority under this Agreement, be entitled to:

- (i) forfeit/ invoke and appropriate the Performance Security;
- (ii) appropriate the payments [if any] made by the Concessionaire in terms of the RFP and/or LOA and/or hereof until such date of termination as damages; and
- (iii) in the event the access / possession/lease in respect of the Project Site have been granted to the Concessionaire in terms hereof on or before such date of termination; then

the Project Site shall immediately revert to the Authority, free and clear of any Encumbrances and along with all associated Easement rights, irrespective of any outstanding mutual claims between the parties or any third party claims.

#### **4.4 Extension of period for fulfilment of Conditions Precedent**

Without prejudice to and notwithstanding anything to the contrary set out in the foregoing, the Parties instead of terminating the Agreement may by mutual consent decide to extend the time for fulfilling the Conditions Precedent.

## ARTICLE 5

### OBLIGATIONS OF THE CONCESSIONAIRE

#### 5.1 Obligations of the Concessionaire

5.1.1 Subject to and on the terms and conditions of this Agreement, the Concessionaire shall at its cost and expense procure finance for and undertake the design, engineering, furnishing, installation, operation and maintenance of the Project and Project Facilities including laboratory facilities and observe, fulfill, comply with and perform all its obligations set out in this Agreement or arising hereunder. The Concessionaire has to perform all the activities as per the Schedule 1 of this agreement.

5.1.2 The Concessionaire shall comply with all Applicable Laws and Applicable Permits (including renewals as required) in the performance of its obligations under this Agreement.

5.1.3 Subject to Clauses 5.1.1 and 5.1.2, the Concessionaire shall discharge its obligations in accordance with Good Industry Practice and as a reasonable and prudent person.

5.1.4 The Concessionaire shall, at its own cost and expense, in addition to and not in derogation of its obligations elsewhere set out in this Agreement during the Concession Period:

- (a) make, or cause to be made, necessary applications to the relevant Government Instrumentalities with such particulars and details, as may be required for obtaining all Applicable Permits and obtain and keep in force and effect such Applicable Permits in conformity with the Applicable Laws;
- (b) procure, as required, the appropriate proprietary rights, licenses, lease, agreements and permissions for materials, methods, processes and systems used or incorporated into the Project Facilities;
- (c) design, build and construct in accordance with the provisions of the Agreement, the Specifications and Standards and Good Industry Practices and also establish the Mandatory Project Components;
- (d) make reasonable efforts to maintain harmony and good industrial relations among the personnel employed by it or its Contractors in connection with the performance of its obligations under this Agreement;
- (e) ensure and procure that its Contractors, agents and franchisees comply with all Applicable Permits and Applicable Laws in the performance by them of any of the Concessionaire's obligations under this Agreement;
- (f) not do or omit to do any act, deed or thing which may in any manner be violates any of the provisions of this Agreement or Applicable Law or Applicable Permit;
- (g) support, cooperate with and facilitate the Authority in the implementation and operation of the Project and Project Facilities in accordance with the provisions of this Agreement; and
- (h) Physical transfer of the Project and Project Facilities to the Authority upon Termination, of this Agreement, in accordance with the provisions thereof.

#### 5.2 Obligations relating to Project Agreements

5.2.1 It is expressly agreed that the Concessionaire shall, at all times, be responsible and liable for all its obligations under this Agreement notwithstanding anything contained in the Project Agreements or any other agreement, and no default under any Project Agreement or agreement shall excuse the Concessionaire from its obligations or liability hereunder.

5.2.2 The Concessionaire shall submit to the Authority the drafts of all Project Agreements or any amendments or replacements thereto for its review and comments, and the Authority shall have the right but not the obligation to undertake such review and provide its comments, if any, to the Concessionaire within 15 (fifteen) days of the receipt of such drafts. Within 7 (seven) days of execution of any Project Agreement or amendment thereto, the Concessionaire shall submit to the Authority a true copy thereof, duly attested by a Director of the Concessionaire, for its record. For the avoidance of doubt, it is agreed that the review and comments hereunder shall be limited to ensuring compliance with the terms of this Agreement. It is further agreed that no review and/or observation of the Authority and/or its failure to review and/or convey its observations on any document shall relieve the Concessionaire of its obligations and liabilities under this Agreement in any manner nor shall the Authority be liable for the same in any manner whatsoever.

5.2.3 The Concessionaire shall not make any replacement or amendments to any of the Agreements without the prior written consent of the Authority if such replacement or amendment has, or may have, the effect of imposing or increasing any financial liability or obligation on the Authority, and in the event that any replacement or amendment is made without such consent, the Concessionaire shall not enforce such replacement or amendment nor permit enforcement thereof against the Authority. \

5.2.4 The Concessionaire shall procure that each of the Project Agreements contains provisions that entitle the Authority to step into such Agreement, in its sole discretion, in the event of Termination or suspension.

### **5.3 Employment of trained personnel/ technicians**

The Concessionaire shall ensure that the personnel/ technicians engaged by it in the performance of its obligations under this Agreement are at all times properly trained for their respective functions. The Concessionaire shall deploy professionals and experts with required qualifications as specified in Schedule 1.

### **5.4 Sole purpose of the Concessionaire**

The Concessionaire having been set up for the sole purpose of exercising the rights and observing and performing its obligations and liabilities under this Agreement.

## ARTICLE 6

### OBLIGATION OF THE AUTHORITY

#### 6.1 Obligation of the Authority

6.1.1 The Authority shall provide support to the Concessionaire and undertakes to observe, comply with and perform, subject to and in accordance with the provisions of this Agreement and the Applicable Laws, the following:

1. upon written request from the Concessionaire, and subject to the Concessionaire complying with Applicable Laws, provide all reasonable support and assistance to the Concessionaire in procuring Applicable Permits required from any Government Instrumentality for implementation and operation of the Project;
2. ensure that no barriers are erected or placed on the Project Site(s) by any Government Instrumentality or persons claiming through or under it, except for reasons of Emergency, national security, law and order or collection of inter-state taxes;
3. subject to and in accordance with the Applicable Laws, grant to the Concessionaire the authority to regulate trespass on the Project Site(s);
4. in accordance with the Applicable Laws and this Agreement, the Authority shall, if required, assist the Concessionaire in procuring police assistance from the State Police Department or a substitute thereof.
5. not do or omit to do any act, deed or thing which may in any manner be violative of any of the provisions of this Agreement;
6. support, cooperate with and facilitate the Concessionaire in the implementation and operation of the Project in accordance with the provisions of this Agreement;
7. upon written request from the Concessionaire and subject to the provisions of Clause 5.4, provide reasonable assistance to the Concessionaire and any expatriate personnel of the Concessionaire or its Contractors to obtain applicable visas and work permits for the purposes of discharge by the Concessionaire or its Contractors their obligations under this Agreement and the Project Agreements.
8. Access rights to laboratory buildings: The Authority either of its own or through its nominated agency shall undertake the construction of the Laboratory Building(s) along with electrification and water supply at the Project Site(s) prior to the Appointed Date and shall handover the building in the manner provided in Clause 4.1.2(a). The Authority shall be responsible for carrying out any major repairs or correcting any major default in the buildings so provided to the Concessionaire.
9. **Formation and Constitution of a Design Approval Committee:** The Authority shall prior to the Appointed Date constitute a Design Approval Committee within 30 days of the Effective Date for the purpose of undertaking a review and approval of the Designs and Drawings for the Laboratory Facilities.
10. Authority shall also appoint a **senior officer as Quality manager** to ensure the proper functioning of each laboratory. The responsibility of this person shall include:
  - Supervision of the internal quality control measures including the testing and/or calibration in the State/ Divisional level laboratories,



- Ensure regular provision of spiked samples which are unknown for the analyst before the evaluation of the results,
- shall periodically, and in accordance with a predetermined schedule and procedure, conduct internal audits of activities of different laboratories
- undertake inter laboratory comparisons or proficiency tests;

11. **Appointment of Independent Engineer:** Authority shall appoint an independent engineer within 60 days of the Effective Date to monitor and supervise the construction work of concessionaire towards establishment of laboratory.

12. **Formation of Maintenance Boards for each laboratory:**

I. On the Operations Date of Laboratory Facilities, the Authority shall appoint Maintenance Board in respect of the <<Insert the name of laboratory >> located at PH division covered under this Agreement. The Maintenance Board constituted for each location, shall consist of the following representatives and any other member duly nominated by the Authority:

- a) Executive Engineer, PH division.
- b) Representative as nominated by the Concessionaire
- c) Quality Manager (appointed by PHEO)

The representative of the Authority shall act as the Chairman of the Maintenance Board and the Quality Manager shall be the Convenor. Wherever possible, the Maintenance Boards shall act by consensus. If consensus is not reached, it shall take vote, and if there is a tie in such vote, the representative of the Concessioning Authority shall have the casting vote.

II. **Powers and Duties of Maintenance Boards**

- (i) The Maintenance Boards shall have the powers and perform the duties set out in this Concession Agreement or any other powers required for the proper development implementation of the Project by the Concessionaire, its personnel, including, (without limitation):
  - a) Compliance to the O & M Manual;
  - b) Review the Concessionaires periodic reports;
  - c) Review and verify the implementation of Variations;
  - d) Approve any improvements or modifications (that are not Variations) proposed by any of the members of the Maintenance Board;
  - e) Review Performance Security validity requirements to ensure that the Performance Security is duly kept in force by the Concessionaire at all times during the Concession Period;
  - f) Any other matter which it deems necessary for the development, operation or maintenance of the Project Site/ Project/ Project Facilities;
  - g) Review and take actions on matters arising out of the Complaints Register;
  - h) Impose penalties on the Concessionaire as stipulated in this Agreement.

- (ii) The Authority/ Maintenance Board shall have the authority to appoint an Expert or Specialist Person in any area required, for the review of the operation and maintenance of the laboratory. It can get parallel samples checked with standard laboratories like IMMT, Bhubaneswar, State Pollution Control Board, Bhubaneswar, NEERI, Nagpur or AIIPH &H Calcutta etc. at any point in time to confirm the efficacy of laboratories. This cross checks shall consist of periodic (Quarterly) analysis with reference samples (approx. 1% of samples). These reference samples shall be the same as the control samples which the laboratory has been preparing for its own.
- (iii) The Concessionaire and the Concessions Authority shall extend full co-operation to the Maintenance Board and to any Expert appointed by the Maintenance Board. All the expenses of the Maintenance Board shall be borne by the Concessions Authority.
- (iv) The Maintenance Board shall meet at least once every quarter of the calendar year at such time & venue as may be indicated by the Convenor and notified to all the members of the Maintenance Board at least 14 (fourteen) days before the date of the meeting or such other shorter period as may be agreed mutually by the members.

## ARTICLE 7

### REPRESENTATIONS AND WARRANTIES

#### 7.1 Representations and Warranties of the Concessionaire

The Concessionaire represents and warrants to the Authority that:

- (a) it is duly organised and validly existing under the laws of India, and has full power and authority to execute and perform its obligations under this Agreement and to carry out the transactions contemplated hereby;
- (b) it has taken all necessary corporate and other actions under Applicable Laws to authorise the execution and delivery of this Agreement and to validly exercise its rights and perform its obligations under this Agreement;
- (c) it has the financial standing and capacity to undertake the Project in accordance with the terms of this Agreement;
- (d) this Agreement constitutes its legal, valid and binding obligation, enforceable against it in accordance with the terms hereof, and its obligations under this Agreement will be legally valid, binding and enforceable obligations against it in accordance with the terms hereof;
- (e) it is subject to the laws of India, and hereby expressly and irrevocably waives any immunity in any jurisdiction in respect of this Agreement or matters arising thereunder including any obligation, liability or responsibility hereunder;
- (f) the information furnished in the Bid and as updated on or before the date of this Agreement is true and accurate in all respects as on the date of this Agreement;
- (g) the execution, delivery and performance of this Agreement will not conflict with, result in the breach of, constitute a default under, or accelerate performance required by any of the terms of its memorandum and articles of association or any Applicable Laws or any covenant, contract, agreement, arrangement, understanding, decree or order to which it is a party or by which it or any of its properties or assets is bound or affected;
- (h) there are no actions, suits, proceedings, or investigations pending or, to its knowledge, threatened against it at law or in equity before any court or before any other judicial, quasi-judicial or other authority, the outcome of which may result in the breach of this Agreement or which individually or in the aggregate may result in any material impairment of its ability to perform any of its obligations under this Agreement;
- (i) it has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or any legally binding order of any Government Instrumentality which may result in any material adverse effect on its ability to perform its obligations under this Agreement and, no fact or circumstance exists which may give rise to such proceedings that would adversely affect the performance of its obligations under this Agreement;
- (j) it has complied with Applicable Laws in all material respects and has not been subject to any fines, penalties, injunctive relief or any other civil or criminal liabilities which in the aggregate have or may have a material adverse effect on its ability to perform its obligations under this Agreement;

- (k) all its rights and interests in the Project excluding moveable assets which the Concessionaire is allowed to take, shall pass to and vest in the Authority on the Transfer Date free and clear of all liens, claims and Encumbrances, without any further act or deed on its part or that of the Authority, and that the movable Project Assets shall save and except as expressly provided otherwise in this Agreement, be acquired by it, subject to any agreement under which a Security Interest or other lien or Encumbrance is retained by any person,;
- (l) no representation or warranty by it contained herein or in any other document furnished by it to the Authority or to any Government Instrumentality in relation to Applicable Permits contains or will contain any untrue or misleading statement of material fact or omits or will omit to state a material fact necessary to make such representation or warranty not misleading; and
- (m) no sums, in cash or kind, have been paid or will be paid, by it or on its behalf, to any person by way of fees, commission or otherwise for securing the Concession or entering into this Agreement or for influencing or attempting to influence any officer or employee of the Authority in connection therewith.

## **7.2 Representations and Warranties of the Authority**

The Authority represents and warrants to the Concessionaire that:

- (a) it has full power and authority to execute, deliver and perform its obligations under this Agreement and to carry out the transactions contemplated herein and that it has taken all actions necessary to execute this Agreement, exercise its rights and perform its obligations, under this Agreement;
- (b) it has taken all necessary actions under the Applicable Laws to authorise the execution and delivery of this Agreement;
- (c) upon the Concessionaire performing the covenants herein, it shall not at any time during the term hereof, interfere with peaceful exercise of the rights and discharge of the obligations by the Concessionaire, in accordance with this Agreement.

## **7.3 Disclosure**

In the event that any occurrence or circumstance comes to the attention of either Party that renders any of its aforesaid representations or warranties untrue or incorrect, such Party shall immediately notify the other Party of the same. Such notification shall not have the effect of remedying any breach of the representation or warranty that has been found to be untrue or incorrect nor shall it adversely affect or waive any obligation of either Party under this Agreement.

## ARTICLE 8

### DISCLAIMER

#### 8.1 Disclaimer

8.1.1 The Concessionaire affirms, acknowledges and agrees that assumptions, assessments, statements, data and information furnished in the bidding document [including this Agreement] by the Authority, as the case may be, are only indicative and for the sole purpose of facilitating the formulation of the bid. The Concessionaire further agrees, acknowledges and affirms that, it has, before placing reliance on the same, conducted its own investigations and analysis and checked the accuracy, adequacy, correctness, reliability and completeness thereof; and the Concessionaire shall have no claim against the Authority, to indemnify the Concessionaire in respect of any loss/damage/costs whatsoever arising out of or in connection with such reliance placed by the Concessionaire on the aforesaid assumptions, assessments, statements, data and information furnished in the bidding document [including this Agreement] by the Authority and/or by any consultant appointed by Authority, as the case may be. The Concessionaire acknowledges that prior to the execution of this Agreement, the Concessionaire has, after a complete and careful examination, made an independent evaluation of the RFP, Scope of the Project, Specifications and Standards, Site, local conditions, and all information provided by the Authority or obtained procured or gathered otherwise, and has determined to its satisfaction the accuracy or otherwise thereof and the nature and extent of difficulties, risks and hazards as are likely to arise or may be faced by it in the course of performance of its obligations hereunder. The Authority and/or its consultant makes no representation whatsoever, express, implicit or otherwise, regarding the accuracy and/or completeness of the information provided by it and the Concessionaire confirms that it shall have no claim whatsoever against the Authority in this regard.

8.1.2 The Concessionaire has obtained for itself all necessary information as to the risks, contingencies and all other circumstances which may influence or affect the Concessionaire and its rights and obligations under this Agreement.

8.1.3 The Concessionaire acknowledges and hereby accepts the risk of inadequacy, mistake or error in or relating to any of the matters set forth in Clause 8.1.1 above and hereby acknowledges and agrees that the Authority and/or its consultant shall not be liable for the same in any manner whatsoever to the Concessionaire or the Selected Bidder or any person claiming through or under any of them.

8.1.4 The Parties agree that any mistake or error in or relating to any of the matters set forth in Clause 8.1.1 above shall not vitiate this Agreement or render it voidable.

8.1.5 In the event that either Party becomes aware of any mistake or error relating to any of the matters set forth in Clause 8.1.1 above, that Party shall immediately notify the other Party, specifying the mistake or error; provided, however, that a failure on part of the Authority and/or its consultant to give any notice pursuant to this Clause 8.1.5 shall not prejudice the disclaimer of the Authority and/or its consultant contained in Clause 8.1.1 and shall not in any manner shift to the Authority any risks assumed by the Concessionaire/Selected Bidder pursuant to this Agreement or the Project Agreements.

Except as otherwise provided in this Agreement, all risks relating to the Project shall be borne by the Concessionaire/Selected Bidder and the Authority and/or its consultant shall not be liable in any manner for such risks or the consequences thereof to the Concessionaire or any person claiming under or through the Concessionaire/Selected Bidder.

## ARTICLE 9

### PERFORMANCE SECURITY

#### 9.1 Performance Security

9.1.1 The Concessionaire shall, for the performance of its obligations hereunder during the Construction Period and Operation Period, provide to the Authority within 30 (Thirty) days from the receipt of LOA, **an irrevocable and unconditional guarantee from a Bank for a sum equivalent to 10%** of total contract value of the Project being **Rs. XXX (Rupees XXX only)** in the form set forth in **Schedule 2** (the “**Performance Security**”) in favour of the Engineer In Chief, Public Health, Govt. of Odisha from a scheduled/nationalized bank countersigned, enforceable and payable by its local branch at Bhubaneswar. Until such time the Performance Security is provided by the Concessionaire pursuant hereto and the same comes into effect, the Bid Security shall remain in force and effect, and upon such provision of the Performance Security pursuant hereto, the Authority shall release the Bid Security to the Concessionaire.

9.1.2 Notwithstanding anything to the contrary contained in this Agreement, in the event Performance Security is not provided by the Concessionaire within the stipulated time period, the Authority may encash the Bid Security and other payments made by the Concessionaire till that time as Damages and the LOA shall be cancelled by Authority.

9.1.3 The Performance Security shall remain valid and in full force and effect until expiry of 6 (six) months period of the contract period.

#### 9.2 Appropriation of Performance Security

9.2.1 Upon occurrence of a Concessionaire Default or failure to meet Conditions Precedent the Authority shall, without prejudice to its other rights and remedies hereunder or in law, be entitled to encash and appropriate the relevant amounts from the Performance Security as Damages for such Concessionaire Default. Upon such encashment and appropriation from the Performance Security, the Concessionaire shall, within 30 (thirty) days thereof, replenish, in case of partial appropriation, to its original level the Performance Security, and in case of appropriation of the entire Performance Security provide a fresh Performance Security, as the case may be, and the Concessionaire shall, within the time so granted, replenish or furnish fresh Performance Security as aforesaid failing which the Authority shall be entitled to terminate this Agreement in accordance with Article 27. Upon replenishment or furnishing of a fresh Performance Security, as the case may be, as aforesaid, the Concessionaire shall be entitled to an additional Cure Period of 90 (ninety) days for remedying the Concessionaire Default, and in the event of the Concessionaire not curing its default within such Cure Period, the Authority shall be entitled to encash and appropriate such Performance Security as Damages, and to terminate this Agreement in accordance with Article 27.

#### 9.3 Release of Performance Security

9.3.1 The Authority shall release the Performance Security forthwith upon expiry of 6 (six) months period from the Transfer Date or any extension thereof in terms of this Agreement, however subject to deductions towards any outstanding amount payable to Authority by the Concessionaire in terms hereof.

## ARTICLE 10

### RIGHT TO USE

#### 10.1 The Site

The site of the Project shall comprise of the building space provided by the Authority at each of the laboratory location/ PH Division, in respect of which the Authority shall towards fulfilment of its Conditions Precedent set out herein grant to Concessionaire rights to use in accordance with terms hereof. For the avoidance of doubt, it is hereby acknowledged and agreed that references to the Site shall be construed as references to the area required for the Project and the buildings constructed thereon by the Authority for housing the Project Facilities, as set forth in **Schedule 1**.

#### 10.2 Access and Right of Way

10.2.1 In consideration of the covenants and warranties of the Concessionaire set out herein and particularly therein, the Authority shall grant rights to use to the Concessionaire in respect of the building space (along with constructions or immovable assets, if any, thereon) on the Project Site on an "as is where is" basis, free of any Encumbrances, together with all rights, liberties, privileges, Easements and appurtenances, hereditaments thereto for the duration of the Concession Period and, for the purposes permitted under this Agreement and for no other purpose whatsoever.

10.2.3 It is expressly agreed that the right to use granted in terms of this Agreement, shall be co-terminus with the term of the Agreement and shall accordingly be terminable by the Authority, upon the Termination of this Agreement for any reason whatsoever.

#### 10.3 Procurement of the Site

10.3.1 The Authority shall in accordance with Clause 4.1.2(a) of the Agreement handover the Project Site to the Concessionaire within 30 days of the Effective Date through a letter ("**Site Hand Over Letter**") . The Site Handover Letter shall contain a details of the land and the and the buildings, structures and any other immovable property on the Site over which the Concessionaire shall have a right to use. Pursuant to the issuance of Site Handover Letter, the Concessionaire shall, inspect the Site and submit their acceptance letter within the seven (7) days of the issuance of the Site Handover Letter by the Authority.

The Site Handover Letter shall be deemed to constitute grant of the right to the Concessionaire for free and unrestricted use and development of the vacant and unencumbered Site during the Concession Period under and in accordance with the provisions of this Agreement and for no other purpose whatsoever. For the avoidance of doubt, it is agreed that this right to use with respect to the parts of the Site shall be deemed to have been granted to the Concessionaire upon vacant access thereto being provided by the Authority to the Concessionaire.

10.3.3 Upon receiving access in respect of any building space included in the Site, the Concessionaire shall complete the construction of the Project Facilities in accordance with the Project Completion Schedule and in accordance with Good Industry Practice; provided that the issue of Provisional Certificate shall not be affected or delayed on account of vacant access to any part of the Site not



being granted to the Concessionaire or any construction on such part of the Site remaining incomplete on the date of Tests on account of the delay or denial of such access thereto. For the avoidance of doubt, it is expressly agreed that Construction Works on Project Site for which access is granted shall be completed before the Project Completion Date. It is also expressly agreed that completion of the respective Construction Works within the time determined by the Independent Engineer hereunder shall be deemed to be Project Milestones for the purposes of levy and recovery of Damages under and in accordance with the provisions of Clause 12.4.2.

#### **10.4 Site to be free from Encumbrances**

Subject to the provisions of Clause 10.3, the Site shall be made available by the Authority to the Concessionaire pursuant hereto free from all Encumbrances and occupations.

#### **10.5 Protection of Site from encroachments**

During the Concession Period, the Concessionaire shall protect the Site from any and all occupations, encroachments or Encumbrances, and shall not create nor permit any other person claiming through or under the Concessionaire to create any Encumbrance or Security Interest over all or any part of the Site or the Project Assets, or on any rights of the Concessionaire therein or under this Agreement, save and except as otherwise expressly set forth in this Agreement.

#### **10.6 Access to the Authority and Independent Engineer**

The right to use the Project Site granted to the Concessionaire hereunder shall always be subject to the right of access of the Authority and the Independent Engineer and their employees and agents for inspection, viewing and exercise of their right and performance of their obligation under this Agreement.

10.7 The right to use granted in terms of this Agreement to the Concessionaire shall always be subject to existing rights of way.

10.8 It is expressly agreed that the right to use granted hereunder in terms of Site Handover Letter shall terminate automatically and forthwith, without the need for any action to be taken by the Authority to terminate, upon the Termination of this Agreement for any reason whatsoever.

## **ARTICLE 11**

### **LICENCE FEE**

#### **11.1 Licence Fee**

11.1.1 The Concessionaire shall, have to make a non-refundable amount equivalent to 10% of the capital value of the project as quoted by bidder in their financial proposal as per clause 11.1.2, in part consideration of being granted the rights to undertake the design, engineering, furnishing, procurement of equipment, installation, operation and maintenance of the Laboratory Facilities in accordance with the terms of this Agreement.

11.1.2 The Concessionaire shall pay the License fee as quoted in the financial bid in twelve (12) equal monthly instalments. The first of such instalment being paid on the Commercial Operation Date.

11.1.3 The Concessionaire shall pay the License fee in the form of Demand Draft in favour of the Executive Engineer, [Insert Name of division], Govt. of Odisha from a scheduled/nationalized bank having its local branch in Bhubaneswar.

## ARTICLE 12

### CONSTRUCTION OF THE PROJECT

#### 12.1 Obligations prior to commencement of construction

Prior to commencement of Construction Works, the Concessionaire shall within 30 days of Site handover:

- (a) submit to the Authority and the DAC its detailed design methodology, quality assurance procedures, and the procurement, and construction (furnishing & installation) time schedule for completion of the Project in accordance with the Project Completion Schedule;
- (b) appoint its Authorised Representative to deal with the Authority in respect of all matters under or arising out of or relating to this Agreement;
- (c) undertake, do and perform all such acts, deeds and things as may be necessary or required before commencement of construction under and in accordance with this Agreement, the Applicable Laws and Applicable Permits.

#### 12.2 Maintenance during Construction Period

During the Construction Period, the Concessionaire shall maintain, at its cost, the Site(s) and shall undertake the necessary maintenance works for this purpose.

#### 12.3 Drawings

In respect of the Concessionaire's obligations with respect to the Drawings of the Project Facilities, the following shall apply:

- (a) The Concessionaire shall prepare and submit, three copies each of all Drawings to the Design Approval Committee (DAC) for review within 30 days of site handover;
- (b) By submitting the Drawings for review to the Design Approval Committee, the Concessionaire shall be deemed to have represented that it has determined and verified that the design and engineering, including field construction criteria related thereto, are in conformity with the Specifications and Standards;
- (c) Within 30 (Thirty) days of the receipt of the Drawings, the Design Approval Committee shall review the same and convey its observations to the Concessionaire with particular reference to their conformity or otherwise with the Scope of the Project and the Specifications and Standards. The Concessionaire shall not be obliged to await the observations of the Design Approval Committee on the Drawings submitted pursuant hereto beyond the said 30 (Thirty) days period and may begin or continue Construction Works at its own discretion and risk;
- (d) If the aforesaid observations of the Design Approval Committee indicate that the Drawings are not in conformity with the Scope of the Project or the Specifications and Standards, such Drawings shall be revised by the Concessionaire and resubmitted to the Design Approval Committee for review. The Design Approval Committee shall give its observations, if any, within 7 (seven) days of receipt of the revised Drawings;

- (e) No review and/or observation of the Design Approval Committee and/or its failure to review and/or convey its observations on any Drawings and/or any delay in review shall relieve the Concessionaire of its obligations and liabilities under this Agreement in any manner nor shall the Design Approval Committee or the Authority be liable for the same in any manner;
- (f) Without prejudice to the foregoing provisions of this Clause 12.3, the Concessionaire shall submit to the Authority for review and comments, its Drawings, location and layout of Project and Project Facilities, and the Authority shall have the right but not the obligation to undertake such review and provide its comments, if any, within 30 (thirty) days of the receipt of such Drawings. The provisions of this Clause 12.3 shall apply mutatis mutandis to the review and comments hereunder; and
- (g) Within 90 (ninety) days of the Project Completion Date, the Concessionaire shall furnish to the Authority and the Design Approval Committee a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Project and Project Facilities as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project and Project Facilities and setback lines, if any, of the buildings and structures forming part of the Project and Project Facilities.

#### **12.4 Scheduled Completion Date**

12.4.1 On or after the Appointed Date, the Concessionaire shall undertake construction of the Project and Project Facilities as specified in **Schedule 1**, and in conformity with the Specifications and Standards set forth in **Schedules**. The Construction Works shall be completed within **6 (six) months** from the Appointed Date (the "**Scheduled Completion Date**") and the Concessionaire agrees and undertakes that Project Facilities shall be completed on or before the Scheduled Completion Date.

12.4.2 The Concessionaire shall construct the Project Facilities in accordance with the Project Completion Schedule. In the event that the Concessionaire fails to achieve any Project Milestone within a period of 90 (Ninety) days from the date set forth for such Milestone, unless such failure has occurred due to Force Majeure or for reasons solely attributable to the Authority, it shall pay Damages to the Authority at a rate of 0.1% (zero point one percent) of the amount of Performance Security for delay of each day until such Milestone is achieved subject to the maximum of 10% of Performance Security; Any extension of time for completion of any Project Milestone or the Scheduled Completion Date shall not affect the Damages payable in terms of this Clause and upon such extension the Project Completion **Schedule** shall stand amended accordingly; provided further that in the event Project Completion Date is achieved, the Damages paid under this Clause 12.4.2 shall be refunded by the Authority to the Concessionaire, but without any interest thereon. For the avoidance of doubt, it is agreed that recovery of damages under this Clause 12.4.2 shall be without prejudice to the rights of the Authority under this Agreement, including the right of termination thereof.

12.4.3 In the event that Project and Project Facilities are not completed within the Scheduled Completion Date, unless the delay is on account of reasons solely attributable to the Authority or due to Force Majeure, the Authority shall be entitled to terminate this Agreement.

## **ARTICLE 13**

### **MONITORING OF CONSTRUCTION**

#### **13.1 Monthly progress reports**

During the Construction Period, the Concessionaire shall, no later than the expiry of 7 (seven) days after the close of each month, furnish to the Authority and the Independent Engineer, a monthly report on progress of the Construction Works and shall promptly give such other relevant information as may be required by the Independent Engineer.

#### **13.2 Inspection**

During the Construction Period, the Independent Engineer shall inspect the Project Facilities at least once a month and make a report of such inspection (the "**Inspection Report**") stating in reasonable detail, the defects or deficiencies, if any, with particular reference to the Scope of the Work as detailed in Schedule I and Specifications and Standards. It shall send a copy of the Inspection Report to the Authority and the Concessionaire within 7 (seven) days of such inspection and upon receipt thereof, the Concessionaire shall rectify and remedy the defects or deficiencies, if any, stated in the Inspection Report. Such inspection or submission of Inspection Report by the Independent Engineer shall not relieve or absolve the Concessionaire of its obligations and liabilities hereunder in any manner whatsoever.

#### **13.3 Tests**

13.3.1 For determining that the Construction Works conform to the Specifications and Standards, the Independent Engineer shall require the Concessionaire to carry out or cause to be carried out Tests, at such time and frequency and in such manner as may be specified by the Independent Engineer from time to time, in accordance with Good Industry Practice for quality assurance. The Concessionaire shall, with due diligence, carry out or cause to be carried out all the tests in accordance with the instructions of the Independent Engineer and furnish the results thereof to the Independent Engineer.

For the avoidance of doubt, the costs to be incurred on any Test which is undertaken for determining the rectification of any defect or deficiency in construction shall be borne solely by the Concessionaire.

13.3.2 In the event that results of any tests conducted under this Clause 13.3 establish any defects or deficiencies in the Construction Works, the Concessionaire shall carry out remedial measures and furnish a report to the Independent Engineer in this behalf. The Independent Engineer shall require the Concessionaire to carry out or cause to be carried out tests to determine that such remedial measures have brought the Construction Works into compliance with the Specifications and Standards, and the procedure set forth in this Clause 13.3 shall be repeated until such Construction Works conform to the Specifications and Standards. For the avoidance of doubt, it is agreed that tests pursuant to this Clause 13.3 shall be undertaken in addition to and independent of the tests that shall be carried out by the Concessionaire for its own quality assurance in accordance with Good Industry Practice. It is also agreed that a copy of the results of such tests shall be sent by the Concessionaire to the Independent Engineer forthwith.

### 13.4 Delays during construction

If the Concessionaire does not achieve any of the Project Milestones or the Independent Engineer shall have reasonably determined that the rate of progress of Construction Works is such that Project is not likely to be achieved by the Scheduled Completion Date, it shall notify the Concessionaire to this effect, and the Concessionaire shall, within 15 (fifteen) days of such notice, by a communication inform the Independent Engineer in reasonable detail about the steps it proposes to take to expedite progress and the period within which it shall achieve the Project Completion Date.

### 13.5 Suspension of unsafe Construction Works

13.5.1 Upon recommendation of the Independent Engineer to this effect, the Authority may by notice require the Concessionaire to suspend forthwith the whole or any part of the Construction Works if, in the reasonable opinion of the Authority, such work threatens the safety of the Users.

13.5.2 The Concessionaire shall, pursuant to the notice under Clause 13.5.1, suspend the Construction Works or any part thereof for such time and in such manner as may be specified by the Authority and thereupon carry out remedial measures to secure the safety of suspended works and the Users. The Concessionaire may by notice require the Independent Engineer to inspect such remedial measures and make a report to the Authority recommending whether or not the suspension hereunder may be revoked. Upon receiving the recommendations of the Independent Engineer, the Authority shall either revoke such suspension or instruct the Concessionaire to carry out such other and further remedial measures as may be necessary in the reasonable opinion of the Authority, and the procedure set forth in this Clause 13.5 shall be repeated until the suspension hereunder is revoked.

13.5.3 Subject to the provisions of Clause 34.7, all reasonable costs incurred for maintaining and protecting the Construction Works or part thereof during the period of Suspension (the "**Preservation Costs**"), shall be borne by the Concessionaire; provided that if the suspension has occurred as a result of any breach of this Agreement by the Authority, the cost of preservation of the Construction Works as ascertained by the Independent Engineer shall be borne by the Authority.

13.5.4 If suspension of Construction Works is for reasons not attributable to the Concessionaire, the Independent Engineer shall determine any extension of the dates set forth in the Project Completion Schedule to which the Concessionaire is reasonably entitled, and shall notify the Authority accordingly whereupon the Authority shall extend such Project Completion Schedule dates in accordance with the recommendations of the Independent Engineer. In the event that the Scheduled Completion Date is extended pursuant hereto, the Concession Period shall be deemed to be extended by a period equal in length to the period of extension of the Scheduled Completion Date.

## ARTICLE 14

### COMPLETION CERTIFICATE

#### 14.1 Tests

14.1.1 At least 30 (thirty) days prior to the likely completion of the Project, the Concessionaire shall notify the Independent Engineer of its intent to subject the Project to Tests. The date and time of each of the Tests shall be determined by the Independent Engineer in consultation with the Concessionaire, and notified to the Authority who may designate its Authorised Representative to witness the Tests. The Concessionaire shall provide such assistance as the Independent Engineer may reasonably require for conducting the Tests. In the event of the Concessionaire and the Independent Engineer failing to mutually agree on the dates for conducting the Tests, the Concessionaire shall fix the dates by not less than 10 (ten) days' notice to the Independent Engineer.

14.1.2 The Independent Engineer shall observe, monitor and review the results of the Tests to determine compliance of the Project with Specifications and Standards and if it is reasonably anticipated or determined by the Independent Engineer during the course of any Test that the performance of the Project or any part thereof does not meet the Specifications and Standards, it shall have the right to suspend or delay such Test and require the Concessionaire to remedy and rectify the defects or deficiencies. Upon completion of each Test, the Independent Engineer shall provide to the Concessionaire and the Authority copies of all Test data including detailed Test results. For the avoidance of doubt, it is expressly agreed that the Independent Engineer may require the Concessionaire to carry out or cause to be carried out additional Tests, in accordance with Good Industry Practice, for determining the compliance of the Project with Specifications and Standards. The Completion Certificate shall also be subject to the Independent Engineer being satisfied that all the Mandatory Project Components as detailed in paragraph 1.3 of Schedule 1: Terms of Reference have all been constructed by the Concessionaire.

The Independent Engineer shall along with the Concessionaire make an inventory of all the Laboratory Equipments and Instruments and the Interior Specifications.

#### 14.2 Completion Certificate

Upon completion of Construction Works and the Independent Engineer determining the Tests to be successful, it shall forthwith issue to the Concessionaire and the Authority, a certificate (the "**Completion Certificate**").

#### 14.3 Provisional Certificate

The Independent Engineer may, at the request of the Concessionaire, issue a provisional certificate of completion (the "**Provisional Certificate**") if the Tests are successful and the Project can be safely and reliably placed in commercial operation though certain works or things forming part thereof are outstanding and not yet complete. In such an event, the Provisional Certificate shall have appended thereto a list of outstanding items signed jointly by the Independent Engineer and the Concessionaire (the "**Punch List**"); provided that the Independent Engineer shall not withhold the Provisional

Certificate for reason of any work remaining incomplete if the delay in completion thereof is attributable to the Authority.

#### **14.4 Completion of Punch List items**

14.4.1 All items in the Punch List shall be completed by the Concessionaire within 90 (ninety) days of the date of issue of the Provisional Certificate and for any delay thereafter, other than for reasons solely attributable to the Authority or due to Force Majeure, the Authority shall be entitled to complete the Punch List items on its own cost and recover the same from the Concessionaire including by way of forfeiture of Performance Security, as the case may be; and in case of such forfeiture the provisions of clause 9 hereof shall apply.

14.4.2 Upon completion of all Punch List items, the Independent Engineer shall issue the Completion Certificate. Failure of the Concessionaire to complete all the Punch List items within the time set forth in Clause 14.4.1 for any reason, other than conditions constituting Force Majeure or for reasons solely attributable to the Authority, shall entitle the Authority to terminate this Agreement.

#### **14.5 Withholding of Provisional Certificate**

14.5.1 If the Independent Engineer determines that the Project or any part thereof does not conform to the provisions of this Agreement and cannot be safely and reliably placed in commercial operation, it shall forthwith make a report in this behalf and send copies thereof to the Authority and the Concessionaire. Upon receipt of such a report from the Independent Engineer and after conducting its own inspection, if the Authority is of the opinion that the Project or any part thereof is not fit and safe for commercial service, it shall, within 7 (seven) days of receiving the aforesaid report, notify the Concessionaire of the defects and deficiencies in the Project and direct the Independent Engineer to withhold issuance of the Provisional Certificate. Upon receipt of such notice, the Concessionaire shall remedy and rectify such defects or deficiencies and thereupon Tests shall be undertaken in accordance with this Article 14. Such procedure shall be repeated as necessary until the defects or deficiencies are rectified.

14.5.2 Notwithstanding anything to the contrary contained in Clause 14.5.1, the Authority may, at any time after receiving a report from the Independent Engineer under that Clause, direct the Independent Engineer to issue a Provisional Certificate under Clause 14.3, and such direction shall be complied forthwith.

#### **14.6 Rescheduling of Tests**

If the Independent Engineer certifies to the Authority and the Concessionaire that it is unable to issue the Completion Certificate or Provisional Certificate, as the case may be, because of events or circumstances on account of which the Tests could not be held or had to be suspended, the Concessionaire shall be entitled to re-schedule the Tests and hold the same as soon as reasonably practicable.



## **ARTICLE 15**

### **ENTRY INTO COMMERCIAL SERVICE**

#### **15.1 Commercial Operation Date (COD)**

The Project shall be deemed to be complete when the Completion Certificate or the Provisional Certificate, as the case may be, is issued under the provisions of Article 14, and accordingly the commercial operation date of the Project shall be the date on which such Completion Certificate or the Provisional Certificate is issued (the "**COD or Commercial Operation Date**"). The Project shall enter into commercial service on COD whereupon the Concessionaire shall be entitled to demand and collect Fee in accordance with the provisions of Article 21.

#### **15.2 Damages for delay**

Subject to the provisions of Clause 12.4, if COD does not occur prior to the 91st (ninety first) day from the Scheduled Completion Date, unless the delay is on account of reasons solely attributable to the Authority or due to Force Majeure, the Concessionaire shall pay Damages to the Authority in a sum calculated at the rate of 0.1% (zero point one percent) of the amount of Performance Security for delay of each day until COD is achieved subject to the maximum of 10% of Performance Security.

## **ARTICLE 16**

### **CHANGE OF SCOPE**

#### **16.1 Change of Scope**

16.1.1 The Authority may, notwithstanding anything to the contrary contained in this Agreement, require the provision of additional works and services which are not included in the Scope of the Project as contemplated by this Agreement (the “**Change of Scope**”). The terms and conditions of such Change of Scope, its procedure, payments to be made in this regard, restrictions on change of Scope, powers of the Parties, reduction of scope may be mutually agreed between the Authority and the Concessionaire.

16.1.2 If the Concessionaire determines at any time that a Change of Scope is necessary for providing safer and improved services to the Users, it shall by notices in writing request the Authority to consider such Change of Scope. The Authority, may in its sole discretion, within 30 days of receipt of such notice, either accept such Change of Scope with modifications, if any, or inform the Concessionaire in writing of its reasons for not accepting such change of scope.

## ARTICLE 17

### OPERATION AND MAINTENANCE

#### 17.1 O&M obligations of the Concessionaire

17.1.1 During the Operation Period, the Concessionaire shall operate and maintain the Project and Project Facilities in accordance with this Agreement either by itself, or through the O&M Contractor and if required, modify, repair or otherwise make improvements to the Project Facilities to comply with the provisions of this Agreement, Applicable Laws and Applicable Permits, and conform to Good Industry Practice. The obligations of the Concessionaire hereunder shall include:

- (a) permitting safe, smooth and uninterrupted O&M of the Project Facilities as per the scope of work given in paragraph 1.5 of Schedule 1;
- (b) Operating and maintaining the Project in accordance with the provisions of paragraph 1.5 of Schedule I: Terms of Reference;
- (c) collecting and appropriating the Fee;
- (d) minimizing disruption of operation of Project Facilities in terms hereof in the event of accidents or other incidents affecting the safety and use of the Project by providing a rapid and effective response and maintaining liaison with emergency services available in the State of Odisha;
- (e) carrying out periodic preventive maintenance of the Project;
- (f) Payment of recurring monthly water and electricity charges at rates those generally available to commercial customers receiving substantially equivalent services;
- (g) preventing, with the assistance of concerned law enforcement agencies, any unauthorized use or encroachments of the Project, including the Site;
- (h) protection of the environment and provision of equipment and materials thereof;
- (i) operation and maintenance of all communication, control and administrative systems necessary for the efficient operation of the Project; and
- (j) Subject to Applicable Laws, as in force and effect from time to time, the Concessionaire shall undertake any form of commercial advertising, display or hoarding at any place on Site(s) if the advertising does not, in the opinion of the government, distract the users or violate any Applicable Law and/or guidelines issued by Government of Odisha.

17.1.2 The Concessionaire shall remove promptly from the Project all surplus construction machinery and materials, waste materials (including hazardous materials and waste water), rubbish and other debris (including, without limitation, accident debris) and keep the Project and Project Facilities in a clean, tidy and orderly condition, and in conformity with the Applicable Laws, Applicable Permits and Good Industry Practice.

#### 17.2 Maintenance Requirements

17.2.1 The Concessionaire shall, at all times, operate and maintain the Project Facilities in accordance with the provisions of the Agreement, Applicable Laws and Applicable Permits. In particular, the

Concessionaire shall, at all times during the Operation Period, conform to the maintenance requirements (the "**Maintenance Requirements**") as under:

17.2.2 In respect of any defect or deficiency, the Quality Manager may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Concessionaire within the time limit specified by the Quality Manager.

### **17.2.3 Repair/rectification of defects and deficiencies**

The obligations of the Concessionaire in respect of Maintenance Requirements shall include repair and rectification of the defects and deficiencies.

**Extension of time limit:** If the nature and extent of any defect or deficiency justifies more time for its repair or rectification, the Concessionaire shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Quality Manager and conveyed to the Concessionaire and the Authority with reasons thereof.

**Emergency repairs/restoration:** If any defect, deficiency or deterioration in the Project and Project Facilities poses danger to the life or property of the Users thereof, the Concessionaire shall promptly take all reasonable measures for eliminating or minimizing such danger.

**Daily Inspection by the Concessionaire:** The Concessionaire shall, through its quality manager, undertake a daily visual inspection of the Project and maintain a record thereof in a register to be kept in such form and manner as the Quality Manager may specify. Such record shall be kept in safe custody of the Concessionaire and shall be open to inspection by the Authority and the Quality Manager at any time during office hours.

### **17.3 Maintenance Manual**

Not later than 45 (Forty Five) days prior to the Scheduled Completion Date, the Concessionaire shall evolve a repair and maintenance manual (the "**Maintenance Manual**") for the regular and preventive maintenance of the Project in conformity with the Maintenance Requirements, Safety Requirements and Good Industry Practice, and shall provide 5 (five) copies thereof to the Authority. The Maintenance Manual shall be revised and updated once every 3 (three) years and the provisions of this Clause 17.3 shall apply, *mutatis mutandis*, to such revision.

### **17.4 Maintenance Programme**

17.4.1 Not later than 45 (forty five) days prior to the beginning of each Accounting Year during the Operation Period, the Concessionaire shall provide to the Authority, its proposed annual programme of preventive, urgent and other scheduled maintenance (the "**Maintenance Programme**") to comply with the Maintenance Requirements, Maintenance Manual and Safety Requirements. Such Maintenance Programme shall include:

- (a) preventive maintenance schedule;
- (b) arrangements and procedures for carrying out urgent repairs;

- (c) criteria to be adopted for deciding maintenance needs;
- (d) intervals and procedures for carrying out inspection of all elements of the Project;
- (e) intervals at which the Concessionaire shall carry out periodic maintenance;
- (f) arrangements and procedures for carrying out safety related measures; and
- (g) intervals for major maintenance works and the scope thereof.

17.4.2 Within 30 (thirty) days of receipt of the Maintenance Programme, the Authority shall review the same and convey its comments to the Concessionaire with particular reference to its conformity with the Maintenance Requirements, Maintenance Manual and Safety Requirements.

17.4.3 The Concessionaire may modify the Maintenance Programme as may be reasonable in the circumstances, and the procedure specified in Clauses 17.4.1 and 17.4.2 shall apply mutatis mutandis to such modifications.

### **17.5 Safety, breakdowns and accidents**

17.5.1 The Concessionaire shall ensure safe conditions for the Users, and in the event of unsafe conditions, breakdowns and accidents, it shall follow the relevant operating procedures and removal of obstruction and debris without delay. Such procedures shall conform to the provisions of this Agreement, Applicable Laws, Applicable Permits and Good Industry Practice.

17.5.2 The Concessionaire's responsibility for rescue operations at the Project Site shall include safe evacuation of all Users and staff from the affected area as an initial response to any particular incident and shall also include prompt removal of debris or any other obstruction, which may endanger or interrupt the smooth operation of the Project and movement of the Users.

### **17.6 De-commissioning due to Emergency**

17.6.1 If, in the reasonable opinion of the Concessionaire, there exists an Emergency which warrants de-commissioning and closure to Users of the whole or any part of the Project facility, the Concessionaire shall be entitled to de-commission and close the whole or any part of the Project Facility to Users for so long as such Emergency and the consequences thereof warrant; provided that such decommissioning and particulars thereof shall be notified by the Concessionaire to the Authority without any delay, and the Concessionaire shall diligently carry out and abide by any reasonable directions that the Authority may give for dealing with such Emergency.

17.6.2 The Concessionaire shall re-commission the Project or the affected part thereof as quickly as practicable after the circumstances leading to its decommissioning and closure have ceased to exist or have so abated as to enable the Concessionaire to re-commission the Project.

### **17.7 Section closure**

17.7.1 The Concessionaire shall not close any section of the Project for undertaking maintenance or repair works, except with the prior written approval of the Authority. Such approval shall be sought by the Concessionaire through a written request to be made to the Authority, at least 7 (seven) days before the proposed closure of such section and shall be accompanied by particulars thereof. Within 7

(seven) days of receiving such request, the Authority may grant permission with such modifications as it may deem necessary.

17.7.2 The provisions of Clause 17.7.1 shall not apply to de-commissioning under Clause 17.6.1 or to closure of any section of the Project for a period not exceeding 6 (six) hours in a day at any time of the day specified by the Authority as off-peak hours.

17.7.3 Upon receiving the permission pursuant to Clause 17.7.1, the Concessionaire shall be entitled to close the designated section for the period specified therein.

### **17.8 Authority's right to take remedial measures**

17.8.1 In the event the Concessionaire does not maintain and/or repair the Project or any part thereof in conformity with the Maintenance Requirements, the Maintenance Manual or the Maintenance Programme, as the case may be, and fails to commence remedial works within 15 (fifteen) days of receipt of the O&M Inspection Report or a notice in this behalf from the Authority, the Authority shall, without prejudice to its rights under this Agreement including Termination thereof, be entitled to undertake [itself and/or through third party agency] such remedial measures at the risk and cost of the Concessionaire, and to recover its cost from the Concessionaire.

17.8.2 The Authority shall, in such case of breach by Concessionaire also have the right, to recover the delinquent amount by forfeiting and appropriating such amount from the Performance Security and/or from the payments to be made by the Authority towards O&M Fee. In case of forfeiture of Performance Security, the Concessionaire shall replenish or furnish fresh Performance Security in terms of clause 9 hereof; failing which the relevant provisions of the said clause shall apply.

### **17.9 Overriding powers of the Authority**

17.9.1 If in the reasonable opinion of the Authority, the Concessionaire is in material breach of its obligations under this Agreement and, in particular, the Maintenance Requirements, and such breach is causing or likely to cause material hardship or danger to the Users, the Authority may, without prejudice to any of its rights under this Agreement including Termination thereof, by notice require the Concessionaire to take reasonable measures immediately for rectifying or removing such hardship or danger, as the case may be.

17.9.2 In the event that the Concessionaire, upon notice under Clause 17.9.1, fails to rectify or remove any hardship or danger within a reasonable period, the Authority may exercise overriding powers under this Clause 17.9.2 and take over the performance of any or all the obligations of the Concessionaire to the extent deemed necessary by it for rectifying or removing such hardship or danger; provided that the exercise of such overriding powers by the Authority shall be of no greater scope and of no longer duration than is reasonably required hereunder; provided further that any costs and expenses incurred by the Authority in discharge of its obligations hereunder shall be deemed to be O&M Expenses, and the Authority shall be entitled to recover them from the Concessionaire in accordance with the provisions of Clause 17.8.

17.9.3 In the event of a national emergency, civil commotion or any other act specified in Clause 23.3, the Authority may take over the performance of any or all the obligations of the Concessionaire to the extent deemed necessary by it or as directed by the State Government or Government of India, and exercise such control over the Project or give such directions to the Concessionaire as may be

deemed necessary; provided that the exercise of such overriding powers by the Authority shall be of no greater scope and of no longer duration than is reasonably required in the circumstances which caused the exercise of such overriding power by the Authority. For the avoidance of doubt, the consequences of such action shall be dealt in accordance with the provisions of Article 34.

#### **17.10 Restoration of loss or damage to Project**

Save and except as otherwise expressly provided in this Agreement, in the event that the Project or any part thereof suffers any loss or damage during the Concession Period from any cause whatsoever, the Concessionaire shall, at its cost and expense, rectify and remedy such loss or damage forthwith so that the Project conforms to the provisions of this Agreement.

#### **17.11 Modifications to the Project**

The Concessionaire shall not carry out any material modifications to the Project save and except where such modifications are necessary for the Project to operate in conformity with the Maintenance Requirements and Good Industry Practice; provided that the Concessionaire shall notify the Authority of the proposed modifications along with particulars thereof at least 15 (fifteen) days before commencing work on such modifications and shall comply with all suggestions that the Authority may make within 30 (thirty) days of receiving the Concessionaire's proposal.

#### **17.12 Excuse from performance of obligations**

The Concessionaire shall not be considered in breach of its obligations under this Agreement if any part of the Project is not available to User on account of any of the following for the duration thereof:

- (a) an event of Force Majeure;
- (b) measures taken to ensure the safe use of the Project or any part thereof except when unsafe conditions occurred because of failure of the Concessionaire to perform its obligations under this Agreement; or
- (c) compliance with a request from the Authority or the directions of any Government Instrumentality, the effect of which is to close all or any part of the Project.

Notwithstanding the above, the Concessionaire shall keep all unaffected parts of the Project open to Users provided they can be operated safely.

#### **17.13 Barriers and diversions**

The Authority shall procure that during the Operation Period, no barriers are erected or placed by any Government Instrumentality on the Project Site except for reasons of Emergency, national security, law and order. The Authority shall also make best endeavours to procure that no Government Instrumentality shall undertake or cause to be undertaken, except for reasons of Emergency, national security or law and order, closing down of approach roads to the Project Site that may cause a material adverse effect on the O&M of the Project.

## ARTICLE 18

### MONITORING OF OPERATION AND MAINTENANCE

#### 18.1 Monthly status reports

During Operation Period, the Concessionaire shall, no later than 7 (seven) days after the close of each month, furnish to the Authority a monthly report stating in reasonable detail the condition of the Project including its compliance or otherwise with the Maintenance Requirements, Maintenance Manual, Maintenance Programme, Safety Requirements and the provisions of paragraph 1.5 of Schedule I: Terms of Reference, and shall promptly give such other relevant information as may be required by the Authority.

#### 18.2 Inspection

The Authority may inspect the Project at least once a month. It shall make a report of such inspection (the "**O&M Inspection Report**") stating in reasonable detail the defects or deficiencies, if any, with particular reference to the Maintenance Requirements, Maintenance Manual, the Maintenance Programme and Safety Requirements, and send a copy thereof to the Concessionaire within 15 (fifteen) days of such inspection.

#### 18.3 Tests

For determining that the Project conforms to the Maintenance Requirements, the Authority shall require the Concessionaire to carry out, or cause to be carried out, tests specified by it in accordance with Good Industry Practice. The Concessionaire shall, with due diligence, carry out or cause to be carried out all such tests in accordance with the instructions of the Authority and furnish the results of such tests forthwith to the Authority.

#### 18.4 Remedial measures

18.4.1 The Concessionaire shall repair or rectify the defects or deficiencies, if any, set forth in the O&M Inspection Report or in the test results referred to in Clause 18.3 and furnish a report in respect thereof to the Authority within 15 (fifteen) days of receiving the O&M Inspection Report or the test results, as the case may be; provided that where the remedying of such defects or deficiencies is likely to take more than 15 (fifteen) days, the Concessionaire shall submit progress reports of the repair works once every week until such works are completed in conformity with this Agreement.

18.4.2 The Authority shall require the Concessionaire to carry out or cause to be carried out tests, at its own cost, to determine that such remedial measures have brought the Project into compliance with the Maintenance Requirements and the procedure set forth in this Clause 18.4 shall be repeated until the Project conforms to the Maintenance Requirements. In the event that remedial measures are not completed by the Concessionaire in conformity with the provisions of this Agreement, the Authority shall be entitled to do these remedial measures at its own cost and recover the same from the Concessionaire [including from the amounts payable to the Concessionaire or by forfeiting and appropriating such amount from the Performance Security and in case of such forfeiture the Concessionaire shall replenish or furnish fresh Performance Security in terms of clause 9 hereof; failing which the relevant provisions of the said clause shall apply].



## ARTICLE 19

### INDEPENDENT ENGINEER

#### 19.1 Appointment of Independent Engineer

19.1.1. The Authority shall appoint the Independent Engineer, a firm or individual having expertise in supervising the setting up of water testing laboratories including procurement, installation of equipment and interior construction for required for commissioning of laboratory. The independent engineer shall be responsible for day to day contract management and supervision during the Construction Period and issuance of the completion certificate certifying that the laboratory establishment carried out by concessionaire is as per the requirement of this agreement and laboratory is ready for commissioning of tests. The Independent Engineer's staff shall include suitably qualified engineers/ experts and other professionals who are competent to carry out these duties. The cost of the external consultant shall be borne by the Authority.

#### 19.2 Functions of the Independent Engineer

- a) To monitor and supervise the construction progress of the project
- b) To submit regular report on the construction progress to Authority
- c) Determining the Tests to be successfully undertaken by Concessionaire before giving the Provisional Completion Certificate
- d) To issue the completion of Construction Work done by Concessionaire after inspection.

#### 19.3 Independent Engineer's Duties and Authority (during construction period)

1. The Independent Engineer shall have no authority to amend the Contract.
2. Except as specifically provided otherwise in the Contract, the Independent Engineer may exercise the authority attributable to the Independent Engineer as specified in or necessarily to be implied from the Agreement. The Authority undertakes not to impose further constraints on the Independent Engineer's authority, except as agreed with the Concessionaire.
3. If the Independent Engineer exercises a specified authority for which the Authority's approval is required then, for the purposes of the Agreement, the Authority shall be deemed to have given approval.
4. Except as otherwise stated in the Agreement,
  - a) if the Independent Engineer carries out duties or exercises authority, specified in or implied by the Contract, the Independent Engineer shall be deemed to act for the Authority;
  - b) the Independent Engineer has no authority to relieve any Party of any duties, obligations or responsibilities under the Contract; and
  - c) any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test or similar act by the Independent Engineer, including absence of disapproval, shall not relieve the Concessionaire from any responsibility it has under the Contract, including responsibility for errors, omissions, discrepancies and non-compliances.

#### 19.4 Delegation by the Independent Engineer

19.4.1 The Independent Engineer may from time to time assign duties and delegate authority to assistants, and may also revoke such assignment or delegation. These assistants may include a

resident engineer, or independent inspectors appointed to inspect or test items of laboratory or Equipment. The assignment, delegation or revocation shall be in writing and shall not take effect until copies have been received by both Parties. Unless otherwise agreed by both Parties, the Independent Engineer shall not delegate the authority to determine any matter in accordance with Clause 19.7.

19.4.2 Assistants shall be suitably qualified persons, who are competent to carry out these duties and exercise this authority, and who are fluent in the language for communications defined in Clause 36.15.

19.4.3 Each assistant, to whom duties have been assigned or authority has been delegated, shall only be authorized to issue instructions to the Concessionaire to the extent defined by the delegation. Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by an assistant, in accordance with the delegation, shall have the same effect as though the act had been an act of the Independent Engineer. However,

- a) any failure to disapprove any work or laboratory and Equipment shall not constitute approval, and shall therefore not prejudice the right of the Independent Engineer to reject the work or the laboratory and Equipment; and
- b) if the Concessionaire questions any determination or instruction of an assistant, the Concessionaire may refer the matter to the Independent Engineer, who shall promptly confirm, reverse or vary the determination or instruction.

## **19.5 Instructions of the Independent Engineer**

19.5.1 The Independent Engineer may issue to the Concessionaire, at any time during the Construction Period, instructions which may be necessary for the execution of the Construction Services and the remedying of any defects, all in accordance with the Contract. The Concessionaire shall only take instructions from the Independent Engineer, or from an assistant to whom the appropriate authority has been delegated under Clause 19.4. If an instruction constitutes a Change, Clause 16.1 shall apply.

19.5.2 The Concessionaire shall comply with the instructions given by the Independent Engineer or delegated assistant, on any matter related to the Agreement. These instructions shall be given in writing.

## **19.6 Replacement of the Independent Engineer**

19.6.1 If the Authority intends to replace the Independent Engineer, the Authority shall, not less than 42 days before the intended date of replacement, give notice to the Concessionaire of the name, address and relevant experience of the intended replacement Independent Engineer. The Authority shall not replace the Independent Engineer with a person against whom the Concessionaire raises reasonable objection by notice to the Authority, with supporting particulars.

## **19.7 Determinations by the Independent Engineer**

19.7.1 Whenever the Agreement provides that the Independent Engineer shall proceed in accordance with this Clause 19.7 to agree or determine any matter, the Independent Engineer shall consult with each Party in an endeavour to reach an agreement. If an agreement is not achieved, the Independent

Engineer shall make a fair determination in accordance with the Agreement, taking due regard of all relevant circumstances.

19.7.2 The Independent Engineer shall give notice to the Parties of each agreement or determination, with supporting particulars. Each Party shall give effect to each agreement or determination unless and until revised under this Agreement.

**ARTICLE 20**

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## ARTICLE 21

### CONCESSIONAIRE'S COMPENSATION AND TERMS OF PAYMENT

#### 21.1 Concessionaire's Compensation

21.1.1 The Authority hereby agrees to pay to the Concessionaire the Contract Price, in consideration of the performance by the Concessionaire of its obligations hereunder, and the Contract Price is:

- a) Price for Design-Build Services; Procurement & Commissioning of interiors, furniture, equipment, instruments and vehicles for establishment of laboratory and sample collections or such other sums as may be determined in accordance with the terms and conditions of the Contract;
- b) The Concessionaire shall be paid monthly by Authority as per the financial proposal for the defined no. of test to be carried out, for operation and maintenance of laboratory towards salaries of staff, consumables and materials as per schedule 1. This monthly fee paid by Authority to Concessionaire towards O&M charges will be subject to escalation at the rate of 5% after every year.
- c) The Concessionaire shall be paid separately for the additional test (if asked to be performed by the Authority in addition to the no. of test to be carried out as per schedule 1). The rates for each of the test shall be unit rates quoted by Concessionaire as a part of financial proposal.
- d) If Concessionaire fails to complete the assigned number of tests as per Schedule 1, a deduction shall be made from their monthly fee based on the unit rates quoted by Concessionaire as a part of financial proposal.

21.1.2 The Concessionaire shall be free to decide on the fee structure for the tests for the user outside the PHEO and can provide separate customized service or tariff packages or differential rates or special or seasonal discounts for specific, bulk, regular Users or different category of Users or during different parts of the year or for timely or early payment.

21.1.3 The Concessionaire shall be free to charge in addition to the Fee, actual state and central government taxes, duties, levies, cess, etc., but excluding income tax, to be paid by the Concessionaire to the competent Government authority under Applicable Laws.

21.1.4 The Concessionaire shall be and remain solely liable and responsible for the collection of Fee in accordance with this Agreement from Users other than Authority.

#### 21.2 Terms of Payment

The terms and procedures of payment by which the Authority will compensate the Concessionaire are set out in this clause of the Agreement.

##### 21.2.1 Payment during the Design-Build Period

1. In respect of the amount for Design-Build Services payable by Authority listed in Fin 3: Format for Capital Costs Price Schedule of the Concessionaire's Bid (the "Design-Build Price") for all current portions, the Authority shall make the following payments subject to Clause 21.2.2 of this agreement:
  - a) 100 per cent of the payment during the Design-Build Period shall be payable by Authority to Concessionaire as per the following.
    - (a) 5% on the completion of Interiors of the Laboratory as per this agreement,
    - (b) 5% on the placing of the order to equipment supplier for procuring the equipment,
    - (c) 40% on the procurement of all the equipment as per the agreement,
    - (d) 20% on the completed installation of all the equipment in the laboratory as per agreement,
    - (e) 30% on commissioning of the laboratory for carrying out the testing requirements,
  - b) All the payments shall be paid further to report of Independent certifying that the activity related to the payment under consideration has been completed or supplied, as applicable,
  - c) The Authority shall pay the Concessionaire's payment in the preceding month, no later than 30 days after receipt of the applicable Independent Engineer's Statement by the Authority;
2. The amounts to be paid to the Concessionaire during the Construction Work phase in accordance with Clause 21.2.1 (1) of this Agreement shall include only that portion of all costs and expenses of the Concessionaire in design-build services, establishment of the laboratory facility, including all costs and expenses relating to the procurement and installations of the equipment required as per Schedule 1 as mentioned in the Price Schedule of the Concessionaire's Bid.

#### **21.2.2 Holdback**

The Authority shall deduct from each payment to the Concessionaire pursuant to Clause 21.2.1 (1) (a) and holdback 10 per cent of each payment to the Concessionaire. The Authority shall pay the amounts held back pursuant to this Clause 21.2.2 to the Concessionaire no later than 45 days after the issuance of the Completion Certificate.

#### **21.2.3 Payment during the Operation Period**

In respect of the amount for O&M services required to be provided under the Agreement after the COD, the Authority shall pay the Concessionaire, the O&M Fee as specified in the financial proposal of the Concessionaire on a monthly basis ("Monthly Operations Payment"). Provided however that if there are any amounts payable by the Concessionaire to the Authority, pursuant to the provisions of the Agreement, the Concessionaire shall deduct such amounts from the O&M Fees payable and only the balance shall be paid by the Authority to the Concessionaire.

#### **21.3 Payment Procedures**

The procedures to be followed in applying for certification and making payments shall be as follows:

1. During the Design-Build Period, payment shall be dealt with in accordance clause 21.2.1, and

2. During the Operations Period, the Concessionaire shall deliver an invoice no later than 15 days after the end of the 30 day period to which the invoice applies.
3. The Concessionaire shall ensure submission of monthly report to Authority on test conducted during that month along with the monthly invoice for their payment approval and process.

## Article 22

### TRANSFER OF OWNERSHIP AND EXISTING EQUIPMENT AND MATERIALS

#### 22.1 Transfer of Ownership

- a) Ownership of the interiors, furniture and equipment, including spare parts, to be imported into the Laboratory shall be transferred to the Authority upon delivery at the Site.
- b) Ownership of the interiors, furniture and equipment procured in the laboratory shall be transferred to the Authority when the interiors, furniture and equipment are brought on to the Site.
- c) Ownership of the equipment of the Concessionaire used for designing and construction of the Project Facility (“Concessionaire’s Equipment (Design-Build)”) and equipment used in the operation and maintenance (“Concessionaire’s Equipment (Operations)”) of the Project Facility, including spare parts, shall remain with the Concessionaire.
- d) The Authority may, in its sole discretion, purchase as of the Transfer Date any of the Concessionaire’s Equipment (Operations), including spare parts, at the fair market value of such Concessionaire’s Equipment (Operations) as determined by an independent valuer appointed by the Authority and the Concessionaire shall transfer ownership and possession of such Concessionaire’s Equipment (Operations) to the Authority as of the Transfer Date.
- e) Notwithstanding the transfer of ownership of the interiors, furniture and equipment, the responsibility for care and custody of the interiors, furniture and equipment, Concessionaire's Equipment (Design-Build) and Concessionaire's Equipment, together with the risk of loss or damage thereto, shall remain with the Concessionaire until the Transfer Date.

#### 22.2 Existing Equipment and Materials

- a) The Authority shall transfer the care, control and responsibility for all existing equipment, materials, supplies and consumables, if any (the “Existing Equipment and Materials”) to the Concessionaire on the Appointed Date at no cost to the Concessionaire, the title to the same remaining with the Authority.
- b) The Concessionaire shall, no later than 15 days after the Appointed Date prepare a list of the Existing Equipment and Materials and submit it to the Authority for its review and approval. The Concessionaire shall update the list of Existing Equipment and Materials annually and submit it to the Authority for its review and approval.
- c) The Concessionaire shall return all Existing Equipment and Materials on the list, as updated, to the Authority on the Transfer Date in the same condition as they were transferred to the Concessionaire, except for reasonable wear and tear and at no cost to the Authority.

#### 22.3 Care of the Site and Facility

1. Except as provided in 22.3(2), the Concessionaire shall be responsible for the care and custody of the Site and Facility or any part thereof until the Transfer Date and shall make good at its own cost any loss or damage that may occur to the Site or Facility from any cause whatsoever during such period. The Concessionaire shall also be responsible for any loss or damage to the Site or Facility caused by the Concessionaire or its Subcontractors in the course of any work carried out, pursuant to this Agreement.



2. If any loss or damage occurs to the Site or Facility or any part thereof by reason of,
  - a) insofar as they relate to the nuclear reaction, nuclear radiation, radioactive contamination, pressure wave caused by aircraft or other aerial objects, or any other occurrences that an experienced Concessionaire could not reasonably foresee, or if reasonably foreseeable could not reasonably make provision for or insure against, insofar as such risks are not normally insurable on the insurance market and are mentioned in the general exclusions of the policy of insurance, including War Risks;
  - b) any use or occupation by the Authority or any Third Party, other than a Subcontractor, authorized by the Authority of any part of the Site or Facility; or
  - c) any use of or reliance upon any design, data or specification provided or designated by or on behalf of the Authority, or any such matter for which the Concessionaire has disclaimed responsibility herein,
  
3. The Authority shall pay to the Concessionaire all sums payable in respect of the Site or Facility executed, notwithstanding that the same may be lost, destroyed or damaged. If the Authority requests the Concessionaire in writing to make good any loss or damage to the Facility thereby occasioned, the Concessionaire shall make good the same at the cost of the Authority in accordance with Article 16. If the Authority does not request the Concessionaire in writing to make good any loss or damage to the Facility thereby occasioned, the Authority shall either request a change in accordance with Article 16, excluding the performance of that part of the Facility thereby lost, destroyed or damaged, or, where the loss or damage affects a substantial part of the Facility, the Authority shall terminate the Contract pursuant to Clause 27.1.
  
4. The Concessionaire shall be liable for any loss of or damage to any Concessionaire's Equipment (Design-Build), Concessionaire's Equipment (Operations) or any other property of the Operator used or intended to be used for purposes of the Site or the Facility, except where such loss or damage arises by reason of any of the matters specified in clause 22.3(2) (b).

5.

## ARTICLE 23

### INSURANCE

#### 23.1 Insurance during Concession Period

23.1.1 The Concessionaire shall effect and maintain at its own cost, during the Construction Period and the Operation Period, such insurances for such maximum sums as may be required by the Authority and in accordance with the Applicable Laws, and such insurances as may be necessary or prudent in accordance with Good Industry Practice. The Concessionaire shall also effect and maintain such insurances as may be necessary for mitigating the risks that may devolve on the Authority as a consequence of any act or omission of the Concessionaire during the Construction Period and/or Operation Period.

23.1.2 The Concessionaire shall, procure and maintain Insurance Cover including but not limited to the following during the term of the Agreement:

- (i) **Cargo Insurance During Transport:** Covering loss or damage, occurring while in transit from the Concessionaire's works or stores until arrival at the Site, for the Equipment, Concessionaire's Equipment (Design-Build) and Concessionaire's Equipment (Operations), including spare parts thereof;
- (ii) **Insurance During Construction and O&M:** Covering insurance for loss, damage or destruction, repair, maintenance and theft of all the Project Assets till the Concession Period;
- (iii) **Third Party Liability Insurance:** Covering bodily injury or death suffered by Third Parties, including the Authority's personnel, and loss of or damage to property occurring at the Site;
- (iv) **Professional Liability Insurance:** Covering loss or damage by reason of professional negligence in the design, construction and operation of the Site and Facility;
- (v) **Automobile Liability Insurance:** Covering all vehicles used by the Concessionaire or its Subcontractors, whether or not owned by them, in connection with the Scope of Work;
- (vi) **Workers' Compensation:** In accordance with the requirements of the Applicable Law;
- (vii) **Employer's Liability:** In accordance with the requirements of the Applicable Law; and
- (viii) **Other Insurance:** Such other insurance as may be required under this agreement.

23.1.3 The Authority shall be named as co-insured under all insurance policies taken out by the Concessionaire pursuant to clause 23.1.1, except for the Third Party Liability, Workers' Compensation and Employer's Liability Insurances. All insurers' rights of subrogation against such co-insured for losses or claims arising out of the performance of the Contract shall be waived under such policies.

#### 23.2 Notice to the Authority

Not later than 45 (forty-five) days prior to commencement of the Construction Period or the Operation Period, as the case may be, the Concessionaire shall by notice furnish to the Authority, in reasonable detail, information in respect of the insurances that it proposes to effect and maintain in accordance with this Article 23. Within 30 (thirty) days of receipt of such notice, the Authority may require the Concessionaire to effect and maintain such other insurances as may be necessary pursuant hereto, and in the event of any difference or disagreement relating to any such insurance, the Dispute Resolution Procedure shall apply.

### **23.3 Evidence of Insurance Cover**

All insurances obtained by the Concessionaire in accordance with this Article 23 shall be maintained with insurers on terms consistent with Good Industry Practice and shall be renewed in a timely manner. Within 15 (fifteen) days of obtaining any Insurance Cover, the Concessionaire shall furnish to the Authority, copies of the certificate (s) of insurance, copies of insurance policies and premia payment receipts in respect of such insurance, and no such insurance shall be cancelled, modified, or allowed to expire or lapse until the expiration of at least 45 (forty five) days after notice of such proposed cancellation, modification or non-renewal has been delivered by the Concessionaire to the Authority.

### **23.4 Remedy for failure to insure**

If the Concessionaire shall fail to effect and keep in force all insurances for which it is responsible pursuant hereto, the Authority shall have the option to either keep in force any such insurances, and pay such premia and recover the costs thereof from the Concessionaire, or in the event of computation of a Termination Payment, treat an amount equal to the Insurance Cover as deemed to have been received by the Concessionaire.

### **23.5 Waiver of subrogation**

All insurance policies in respect of the insurance obtained by the Concessionaire pursuant to this Article 23 shall include a waiver of any and all rights of subrogation or recovery of the insurers thereunder against, inter alia, the Authority, and its assigns, successors, undertakings and their subsidiaries, affiliates, employees, insurers and underwriters, and of any right of the insurers to any set-off or counterclaim or any other deduction, whether by attachment or otherwise, in respect of any liability of any such person insured under any such policy or in any way connected with any loss, liability or obligation covered by such policies of insurance.

### **23.6 Concessionaire's waiver**

The Concessionaire hereby further releases, assigns and waives any and all rights of subrogation or recovery against, inter alia, the Authority and its assigns, undertakings and their subsidiaries, affiliates, employees, successors, insurers and underwriters, which the Concessionaire may otherwise have or acquire in or from or in any way connected with any loss, liability or obligation covered by policies of insurance maintained or required to be maintained by the Concessionaire pursuant to this Agreement (other than third party liability insurance policies) or because of deductible clauses in or inadequacy of limits of any such policies of insurance.

### **23.7 Application of insurance proceeds**

The proceeds from all insurance claims, except life and injury, shall be paid to the Concessionaire and it shall apply such proceeds for any necessary repair, reconstruction, reinstatement, replacement, improvement, delivery or installation of the Project, and the balance remaining, if any, shall be paid to Authority.

## ARTICLE 24

### ACCOUNTS AND AUDIT

#### 24.1 Audited accounts

24.1.1 The Concessionaire shall maintain books of accounts recording all its receipts (including all Fees and other revenues derived/collected by it from or on account of the Project and/or its use), income, expenditure, payments, assets and liabilities, in accordance with this Agreement, Good Industry Practice, Applicable Laws and Applicable Permits.

24.1.2 The Concessionaire shall provide 2 (two) copies of its Balance Sheet, Cash Flow Statement and Profit and Loss Account, along with a report thereon by its Statutory Auditors, within 120 (one hundred and twenty) days of the close of the Accounting Year to which they pertain, including the accounts related to the First Operation Year and the Last Operation Year.

24.1.3 The Authority shall have the right to inspect the records of the Concessionaire during office hours and require copies of relevant extracts of books of accounts, duly certified by the Auditors, to be provided to the Authority for verification.

24.1.3 The Concessionaire agrees that Authority or its agents shall, at all reasonable times, have the right to examine and/or audit the books and accounts of the Concessionaire to verify the figures reported and to inspect any other records pertaining to the activities carried out in pursuance of this Agreement. In addition, the Authority shall be entitled to appoint an auditor to audit the accounts and records of the Concessionaire on a quarterly basis or at such intervals as may be decided by the Parties, subject to the following provisions:

- i. The Concessionaire shall extend full necessary co-operation to such auditor to enable him /her to perform his / her duties;
- ii. The Concessionaire shall make available to such auditor all its accounts and records;
- iii. On receipt of the report of the auditor, the Concessionaire shall be entitled to address queries in respect of any points raised by the auditor and the Concessionaire shall satisfy the auditor in regard to aforesaid points.

24.1.4. If the audit discloses any violation of an obligation by the Concessionaire under this Agreement, the same shall be brought to the notice of the Concessionaire by the Authority or the auditor, and the Concessionaire shall remedy the lapse to the satisfaction of Authority or the auditor within 1 (one) month from the date the violation is brought to the notice of the Concessionaire. If the Concessionaire does not remedy the lapse to the satisfaction of Authority, this will be considered a Material Adverse Effect.

24.1.5. The Concessionaire shall maintain and preserve during the Term of this Agreement full, complete, and accurate books, records, and accounts prepared in accordance with generally accepted accounting principles consistently applied including the records mentioned in this in Clause.

#### 24.2 Appointment of auditors

24.2.1 The Concessionaire shall appoint, and have during the subsistence of this Agreement as its Statutory Auditors, a firm chosen by it from a list of 10 (ten) reputable firms of chartered accountants (the "**Panel of Chartered Accountants**") mutually agreed with the Authority. All fees and expenses of the Statutory Auditors shall be borne by the Concessionaire.

24.2.2 The Concessionaire may terminate the appointment of its Statutory Auditors after a notice of 45 (forty five) days to the Authority, subject to the replacement Statutory Auditors being appointed from the Panel of Chartered Accountants.

### **24.3 Certification of claims by Statutory Auditors**

Any claim or document provided by the Concessionaire to the Authority in connection with or relating to receipts, income, payments, costs, expenses, accounts or audit, and any matter incidental thereto shall be valid and effective only if certified by its Statutory Auditors.

## ARTICLE 25

### FORCE MAJEURE

#### 25.1 Force Majeure

As used in this Agreement, the expression "**Force Majeure**" or "Force Majeure Event" shall mean occurrence in India of any or all of Non-Political Event, Indirect Political Event and Political Event, as defined in Clauses 25.2, 25.3 and 25.4 respectively, if it affects the performance by the Party claiming the benefit of Force Majeure (the "**Affected Party**") of its obligations under this Agreement and which act or event (i) is beyond the reasonable control of the Affected Party, and (ii) the Affected Party could not have prevented or overcome by exercise of due diligence and following Good Industry Practice, and (iii) has Material Adverse Effect on the Affected Party.

#### 25.2 Non-Political Event

A Non-Political Event shall mean one or more of the following acts or events:

- (a) act of God, epidemic, extremely adverse weather conditions, lightning, earthquake, landslide, cyclone, flood, volcanic eruption, chemical or radioactive contamination or ionising radiation, fire or explosion (to the extent of contamination or radiation or fire or explosion originating from a source external to the Site);
- (b) strikes or boycotts (other than those involving the Concessionaire or their respective employees/representatives, or attributable to any act or omission of any of them) interrupting supplies and services to the Project for a continuous period of 7 (seven) days and an aggregate period exceeding 30 (thirty) days in an Accounting Year, and not being an Indirect Political Event set forth in Clause 25.3;
- (c) any judgement or order of any court of competent jurisdiction or statutory authority made against the Concessionaire in any proceedings for reasons other than (i) failure of the Concessionaire to comply with any Applicable Law or Applicable Permit, or (ii) on account of breach of any Applicable Law or Applicable Permit or of any contract, or (iii) enforcement of this Agreement, or (iv) exercise of any of its rights under this Agreement by the Authority;
- (d) the discovery of geological conditions, toxic contamination or archaeological remains on the Site that could not reasonably have been expected to be discovered through a site inspection; or
- (e) any event or circumstances of a nature analogous to any of the foregoing.

#### 25.3 Indirect Political Event

An Indirect Political Event shall mean one or more of the following acts or events:

- (a) an act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, riot, insurrection, terrorist or military action, civil commotion or politically motivated sabotage;
- (b) industry-wide or State-wide strikes or industrial action for a continuous period of 7 (seven) days and exceeding an aggregate period of 30 (thirty) days in an Accounting Year;
- (c) any civil commotion, boycott or political agitation which prevents collection of Fee by the Concessionaire for an aggregate period exceeding 30 (thirty) days in an Accounting Year;

- (d) any Indirect Political Event that causes a Non-Political Event; or
- (e) any event or circumstances of a nature analogous to any of the foregoing.

#### **25.4 Political Event**

A Political Event shall mean one or more of the following acts or events by or on account of any Government Instrumentality:

- (a) Change in Law, only if consequences thereof cannot be dealt with under and in accordance with the provisions of Article 31;
- (b) compulsory acquisition in national interest or expropriation of any Project Assets or rights of the Concessionaire or of the Contractors; or
- (c) any event or circumstance of a nature analogous to any of the foregoing.

#### **25.5 Duty to report Force Majeure Event**

25.5.1 Upon occurrence of a Force Majeure Event, the Affected Party shall by notice report such occurrence to the other Party forthwith. Any notice pursuant hereto shall include full particulars of:

- (a) the nature and extent of each Force Majeure Event which is the subject of any claim for relief under this Article 25 with evidence in support thereof;
- (b) the estimated duration and the effect or probable effect which such Force Majeure Event is having or will have on the Affected Party's performance of its obligations under this Agreement;
- (c) the measures which the Affected Party is taking or proposes to take for alleviating the impact of such Force Majeure Event; and
- (d) any other information relevant to the Affected Party's claim.

25.5.2 The Affected Party shall not be entitled to any relief for or in respect of a Force Majeure Event unless it shall have notified the other Party of the occurrence of the Force Majeure Event as soon as reasonably practicable, and in any event not later than 7 (seven) days after the Affected Party knew, or ought reasonably to have known, of its occurrence, and shall have given particulars of the probable material effect that the Force Majeure Event is likely to have on the performance of its obligations under this Agreement.

25.5.3 For so long as the Affected Party continues to claim to be materially affected by such Force Majeure Event, it shall provide the other Party with regular (and not less than weekly) reports containing information as required by Clause 25.5.1, and such other information as the other Party may reasonably request the Affected Party to provide.

#### **25.6 Effect of Force Majeure Event on the Concession**

25.6.1 Upon the occurrence of any Force Majeure Event prior to the Appointed Date, the period for fulfillment of the conditions precedent affected by the Force Majeure Event shall be extended by a period equal in length to the duration of the Force Majeure Event.

25.6.2 At any time after the Appointed Date, if any Force Majeure Event occurs:



- (a) before COD, the Concession Period and the dates set forth in the Project Completion Schedule shall be extended by a period equal in length to the duration for which such Force Majeure Event subsists; or
- (b) after COD, whereupon the Concessionaire is unable to collect Fee despite making best efforts or it is directed by the Authority to suspend the collection thereof during the subsistence of such Force Majeure Event, the Concession Period shall be extended by a period, equal in length to the period during which the Concessionaire was prevented from collection of Fee on account thereof. Provided that such Fees has not be collected subsequently after the cessation of the Force Majeure Event.

25.6.3 The Affected Party, to the extent rendered unable to perform its obligations or part thereof inspite of exercise of due diligence, under this Agreement as a consequence of the Force Majeure Event shall be excused from performance of the obligations provided that the excuse from performance shall be of no greater scope and of no longer duration than is reasonably warranted by the Force Majeure Event.

### **25.7 Allocation of costs arising out of Force Majeure**

25.7.1 Upon the occurrence of any Force Majeure Event, the Parties shall bear their respective costs and no Party shall be required to pay to the other Party any costs thereof.

25.7.3 Save and except as expressly provided in this Article 25, neither Party shall be liable in any manner whatsoever to the other Party in respect of any loss, damage, cost, expense, claims, demands and proceedings relating to or arising out of occurrence or existence of any Force Majeure Event or exercise of any right pursuant hereto.

### **25.8 Termination Notice for Force Majeure Event**

If a Force Majeure Event subsists for a period of 180 (one hundred and eighty) days or more within a continuous period of 365 (three hundred and sixty five) days, either Party may in its discretion terminate this Agreement by issuing a Termination Notice to the other Party without being liable in any manner whatsoever, save as provided in this Article 25, and upon issue of such Termination Notice, this Agreement shall, notwithstanding anything to the contrary contained herein, stand terminated forthwith; provided that before issuing such Termination Notice, the Party intending to issue the Termination Notice shall inform the other Party of such intention and grant 15 (fifteen) days' time to make a representation, and may after the expiry of such 15 (fifteen) days period, whether or not it is in receipt of such representation, in its sole discretion issue the Termination Notice.

### **25.9 Termination Payment for Force Majeure Event**

25.9.1 If Termination is on account of a Non-Political Event, the Authority shall make a Termination Payment to the Concessionaire of an amount equal to 90% (ninety per cent) of the Debt Due less Insurance Cover.

25.9.2 If Termination is on account of an Indirect Political Event, the Authority shall make a Termination Payment to the Concessionaire in an amount equal to Debt Due less Insurance Cover.

25.9.3 If Termination is on account of a Political Event, the Authority shall make a Termination Payment to the Concessionaire in an amount that would be payable under Clause 27.3.2 as if it were an Authority Default.

#### **25.10 Dispute resolution**

In the event that the Parties are unable to agree in good faith about the occurrence or existence of a Force Majeure Event, such dispute shall be finally settled in accordance with the Dispute Resolution Procedure; provided that the burden of proof as to the occurrence or existence of such Force Majeure Event shall be upon the Party claiming relief and/or excuse on account of such Force Majeure Event.

#### **25.11 Excuse from performance of obligations**

If the Affected Party is rendered wholly or partially unable to perform its obligations under this Agreement because of a Force Majeure Event, it shall be excused from performance of such of its obligations to the extent it is unable to perform on account of such Force Majeure Event; provided that:

- (a) the suspension of performance shall be of no greater scope and of no longer duration than is reasonably required by the Force Majeure Event;
- (b) the Affected Party shall make all reasonable efforts to mitigate or limit damage to the other Party arising out of or as a result of the existence or occurrence of such Force Majeure Event and to cure the same with due diligence; and
- (c) when the Affected Party is able to resume performance of its obligations under this Agreement, it shall give to the other Party notice to that effect and shall promptly resume performance of its obligations hereunder.

## ARTICLE 26

### SUSPENSION OF CONCESSIONAIRE'S RIGHTS

#### 26.1 Suspension upon Concessionaire Default

Upon occurrence of a Concessionaire Default, the Authority shall be entitled, without prejudice to its other rights and remedies under this Agreement including its rights of Termination hereunder, to (i) suspend all rights of the Concessionaire under this Agreement including the Concessionaire's right to collect Fee, and other revenues pursuant hereto, and (ii) exercise such rights itself or authorise any other person to exercise the same on its behalf during such suspension (the "**Suspension**"). Suspension hereunder shall be effective forthwith upon issue of notice by the Authority to the Concessionaire and may extend up to a period not exceeding 180 (one hundred and eighty) days from the date of issue of such notice; provided that upon written request from the Authorised Representative of the Concessionaire, the Authority shall extend the aforesaid period of 180 (one hundred and eighty) days by a further period not exceeding 90 (ninety) days.

#### 26.2 Authority to act on behalf of Concessionaire

26.2.1 During the period of Suspension, the Authority shall, on behalf of the Concessionaire, collect all Fee and revenues under and in accordance with this Agreement and deposit the residual [if any after meeting the costs hereunder mentioned] in the Concessionaire's designated account conveyed to the Authority in this regard; after meeting the costs incurred by it for remedying and rectifying the cause of Suspension and any amount payable by the Concessionaire as damages, and thereafter for defraying other expenses incurred by it in connection with the implementation [on behalf of Concessionaire] of the Project in terms hereof.

26.2.2 During the period of Suspension hereunder, all assets and liabilities in relation to the Project shall continue to vest in the Concessionaire and all things done or actions taken, including expenditure incurred by the Authority for discharging the obligations of the Concessionaire under and in accordance with this Agreement and the Project Agreements, shall be deemed to have been done or taken for and on behalf of the Concessionaire and the Concessionaire undertakes to indemnify the Authority for all costs incurred during such period.

#### 26.3 Revocation of Suspension

26.3.1 In the event that the Authority shall have rectified or removed the cause of Suspension within a period not exceeding 180 (one hundred and eighty) days from the date of Suspension, it shall revoke the Suspension forthwith and restore all rights of the Concessionaire under this Agreement.

26.3.2 Upon the Concessionaire having cured the Concessionaire Default within a period not exceeding 180 (one hundred and eighty) days from the date of Suspension, the Authority shall revoke the Suspension forthwith and restore all rights of the Concessionaire under this Agreement.

#### 26.4 Termination

26.4.1 At any time during the period of Suspension under this Article 26, the Concessionaire may by notice require the Authority to revoke the Suspension and issue a Termination Notice. Subject to the rights in accordance with the provisions of this Agreement and within the period specified in Clause 26.4, the Authority shall within 15 (fifteen) days of receipt of such notice, terminate this Agreement under and in accordance with Article 27.

26.4.2 Notwithstanding anything to the contrary contained in this Agreement, in the event that Suspension is not revoked within 180 (one hundred and eighty) days from the date of Suspension hereunder or within the extended period, if any, set forth in Clause 26.1, the Concession Agreement shall, upon expiry of the aforesaid period, be deemed to have been terminated by mutual agreement of the Parties and all the provisions of this Agreement shall apply, *mutatis mutandis*, to such Termination as if a Termination Notice had been issued by the Authority upon occurrence of a Concessionaire Default.

## ARTICLE 27

### TERMINATION AND TRANSFER DATE

#### 27.1 Termination for Concessionaire Default

27.1.1 Save as otherwise provided in this Agreement, in the event that any of the defaults specified below shall have occurred, and the Concessionaire fails to cure the default within the Cure Period set forth below, or where no Cure Period is specified, then within a Cure Period of 180 (one hundred eighty) days, the Concessionaire shall be deemed to be in default of this Agreement (a "**Concessionaire Default**"), unless the default has occurred solely as a result of any breach of this Agreement by the Authority or due to Force Majeure. The defaults referred to herein shall include:

- (a) the Performance Security has been encashed and appropriated in accordance with Clause 9.2 and the Concessionaire fails to replenish or provide fresh Performance Security within a Cure Period of 30 (thirty) days;
- (b) the Concessionaire fails to cure, within a Cure Period of 90 (ninety) days, the Concessionaire Default for which whole or part of the Performance Security was appropriated;
- (c) the Concessionaire does not achieve the outstanding Project Milestone and continues to be in default for 90 (ninety) days;
- (d) the Concessionaire abandons or manifests intention to abandon the construction of the Project Facilities without the prior written consent of the Authority;
- (e) Project Completion Date does not occur within the period specified in Clause 12.4.3;
- (f) the Punch List items have not been completed within the period set forth in Clause 14.4.1;
- (g) the Concessionaire has failed during the Concession period to make any payment including property tax, electricity and water charges etc. within the period specified in this Agreement;
- (h) a breach of any of the Project Agreements by the Concessionaire has caused a Material Adverse Effect;
- (i) the Concessionaire creates any Encumbrance in breach of this Agreement;
- (j) the Concessionaire repudiates this Agreement or otherwise takes any action or evidences or conveys an intention not to be bound by the Agreement;
- (k) there is a transfer, pursuant to law either of (i) the rights and/or obligations of the Concessionaire under any of the Project Agreements, or of (ii) all or part of the assets or undertaking of the Concessionaire, and such transfer causes Material Adverse Effect;
- (l) an execution levied on any of the assets of the Concessionaire has caused a Material Adverse Effect;
- (m) the Concessionaire is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for the Concessionaire or for the whole or material part of its assets that has a material bearing on the Project;

- (n) the Concessionaire has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the Authority, a Material Adverse Effect;
- (o) the Concessionaire is in breach of its O&M obligations in respect of the Project inter-alia including the Maintenance Requirements, Safety Requirements and Good Industry Practice, as more particularly set out in terms of this Agreement.
- (p) a resolution for winding up of the Concessionaire is passed, or any petition for winding up on the Concessionaire is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 (ninety) days of the date thereof or the Concessionaire is ordered to be wound up by Court except for the purpose of amalgamation or reconstruction, provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of the Concessionaire are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of the Concessionaire under this Agreement and the Project Agreements, provided further that:
  - (i) the amalgamated or reconstructed entity has the capability and operating experience necessary for the performance of its obligations under this Agreement and the Project Agreements;
  - (ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under this Agreement and the Project Agreements and has a credit worthiness at least as good as that of the Concessionaire as at the Appointed Date, and
  - (iii) each of the Project Agreements remains in full force and effect;
- (q) any representation or warranty of the Concessionaire/ Selected Bidder herein contained which is, as of the date hereof, found to be materially false or the Concessionaire/ Selected Bidder is at any time hereafter found to be in breach thereof;
- (r) the Concessionaire submits to the Authority any statement which has a material effect on the Authority's rights, obligations or interests and which is false in material particulars;
- (s) the Concessionaire has failed to fulfill any obligation, for which failure Termination has been specified in this Agreement; or
- (t) the Concessionaire commits a default in complying with any provision of this Agreement or any of its covenants or obligations contained herein .

## **27.2 Termination for Authority Default**

27.2.1 In the event that any of the defaults specified below shall have occurred, and the Authority fails to cure such default within a Cure Period of 180 (one hundred eighty) days or such longer period as has been expressly provided in this Agreement, the Authority shall be deemed to be in default of this Agreement (the "**Authority Default**") unless the default has occurred as a result of any breach of this Agreement by the Concessionaire or due to Force Majeure. The defaults referred to herein shall include:

- (a) The Authority commits a material default in complying with any of the provisions of this Agreement and such default has a Material Adverse Effect on the Concessionaire;

(b) The Authority repudiates this Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by this Agreement; or the Authority repudiates this Agreement.

27.2.2 Without prejudice to any other right or remedy which the Concessionaire may have under this Agreement, upon occurrence of an Authority Default, the Concessionaire shall be entitled to terminate this Agreement by issuing a Termination Notice to the Authority; provided that before issuing the Termination Notice, the Concessionaire shall by a notice inform the Authority of its intention to issue the Termination Notice and grant 15 (fifteen) days to the Authority to make a representation, and may after the expiry of such 15 (fifteen) days, whether or not it is in receipt of such representation, issue the Termination Notice.

### **27.3 Termination Payment**

27.3.1 No Termination Payment shall be made by the Authority on account of termination of the Agreement on a Concessionaire Default. Further, in such case the Authority shall be entitled to forfeit and appropriate the Performance Security and recover damages without any prejudice to its other rights and remedies available under law or otherwise.

27.3.2 The following amounts as certified by a Valuer shall be payable as Termination Payment in the event of termination due to Authority Default:

- (i) all amounts payable towards the Design Build Price as may be certified by the Independent Engineer as payable on the basis of the work done by the Concessionaire;
- (ii) the outstanding Monthly Operations Payment;
- (iii) [●] as compensation

less any amounts recoverable from the Concessionaire in terms of the provisions of the Agreement or recovered/recoverable through Insurance Cover or costs and expenses to be incurred by the Authority towards repair and renovation of the Project Facility/Project Assets as ascertained by the Valuer (“**Termination Payment**”). The Performance Security, if any remaining shall be surrendered to the Concessionaire.

Termination Payment shall become due and payable to the Concessionaire within 30 (thirty) days of a demand being made by the Concessionaire to the Authority with the necessary particulars. Provided however that the Authority shall be entitled to retain a sum of Rs. [●] (“**Retention Amount**”) towards defect liability obligations of the Concessionaire. The Retention Amount shall be paid upon the expiry of the period of 180 days mentioned in Clause 29 provided that the Concessionaire has fulfilled all the obligations under Clause 29. In the event of any delay beyond a period of 180 days from the due date, the Authority shall pay interest at a rate equal to 8% (Eight per cent) per annum on the amount of Termination Payment remaining unpaid; provided that such delay shall not exceed 270 (two hundred seventy) days. For the avoidance of doubt, it is expressly agreed that Termination Payment shall constitute full discharge by the Authority of its payment obligations in respect thereof hereunder.

### **27.4 Consequence of Termination or expiry of Concession Period**

27.4.1 Upon Termination for any reason whatsoever, including pursuant to the expiry of the Concession Period, the rights of the Concessionaire and the Concession granted herein by the Authority shall automatically cease and:

- (a) The Concessionaire shall hand over unencumbered, peaceful and possession and control of the Project, Site, Project Assets and Project Facilities forthwith in a good condition, reasonable wear and tear excepted. All rights of the Concessionaire shall cease on and from the Transfer Date and the Authority shall be entitled to enter the Site and every part thereof and take possession of the entire Project Facility to the exclusion of all.
- (b) The Concessionaire shall hand over and the Authority shall be entitled to take possession and control of all materials, stores, implements, tangible and intangible assets [including moveable and immovable properties] and tools, furniture, consumer durables on or about the Site and the Concessionaire shall complete all legal or other formalities required in this regard;
- (c) The Authority shall be entitled to restrain the Concessionaire and any person claiming through or under the Concessionaire from entering upon the Site or any part of the Project.
  - (d) The Concessionaire shall hand over all the original insurance documents pertaining to the Facility to the Authority and transfer all the Documents and Drawings relating to the Facility;
  - (e) The Concessionaire shall hand over to the Authority or its nominated agency all Documents, Drawings, designs, information and records relating to the Project, the Project Assets/Facility including the records and documents required to be maintained in accordance with Schedule I;
    - (f) Assign to the Authority or its nominated agency at the time of transfer all unexpired guarantees and warranties by Contractors and suppliers and all insurance policies;
    - (g) At its cost remove from the Site all the moveable assets which are not taken over by the Authority or its nominated agency. In the event the Concessionaire fails to remove such objects within the stipulated time, the Authority or its nominated agency shall be entitled to appropriate and deal with the assets and equipments of the Concessionaire if any lying at the Site in such manner as it deems fit without any liability and at the risk and expense of the Concessionaire.
    - (h) Transfer ownership and possession of the Concessionaire's Equipment (Operations), if any in accordance with Clause 22.1(e).
    - (i) all work in progress under contracts with vendors, suppliers, Contractor and sub-contractors; and
    - (j) all entitlements with respect to any insurance proceeds payable to or for the account of the Concessionaire, but unpaid at the date of termination of the Agreement.

The obligations mentioned in this Clause are over and above any obligations contained anywhere else in the Agreement.

27.4.2 In the event the Transfer Date is the last day of the Concession Period, the Selected Bidder shall, no less than six (6) months prior to the Transfer Date and in the event the Transfer Date is not the last day of the Operation Period, within 1 month thereof, prepare and deliver to the Authority for its approval, a training program, including operation manuals, for the Authority's personnel. The Selected Bidder shall provide formal and on-the job training for an adequate number of such personnel to operate and maintain the Project.

27.4.3 No less than three (3) months prior to the Transfer Date if the Transfer Date is the last day of the Concession Period and otherwise 1 month subsequent thereto, the Authority and the Selected Bidder shall meet and agree on (i) transfer and security arrangements and (ii) the inventories for all fixtures, fittings, equipment, vehicles, spare parts, consumable supplies and other materials required



for the continued operation of or comprised in the Project.

27.4.4 On the Transfer Date, the Selected Bidder shall:

- a) provide the Authority with a written summary of the condition of the Project, including a complete listing of any and all conditions that do or could impair the safe operation of the Project; and
- a) execute and deliver to the Authority, a certificate in form and substance reasonably satisfactory to the Authority, warranting that there are no other conditions that are known to the Selected Bidder, after diligent inquiry, that do or could impair the safe operation of the Project.

27.4.5 If, on the Transfer Date, the Authority determines that there exists any outstanding works including (i) any unfinished repairs, replacements or modifications and (ii) any condition that would impair the safe operation or performance of the Project (the “**Outstanding Works**”), then the Authority shall immediately notify the Selected Bidder of the details of the Outstanding Works in writing. Upon receipt of such notice, the Selected Bidder shall, at its own cost, take whatever steps are required to complete the Outstanding Works.

## **27.5 Survival of rights**

Notwithstanding anything to the contrary contained in this Agreement, any Termination pursuant to the provisions of this Agreement shall be without prejudice to the accrued rights of either Party including its right to claim and recover money damages, insurance proceeds, security deposits, and other rights and remedies, which it may have in law or contract. All rights and obligations of either Party under this Agreement, including Termination Payments, shall survive the Termination to the extent such survival is necessary for giving effect to such rights and obligations. Further the Authority shall out of any payments payable to the Concessionaire on termination be entitled to retain [●]% as security for the Concessionaire’s performance of its defects liability obligations under Clause 29.

**ARTICLE 28**

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## **ARTICLE 29**

### **DEFECTS LIABILITY AFTER TERMINATION**

#### **29.1 Liability for defects after Termination**

The Concessionaire shall be responsible for all defects and deficiencies in the Project for a period of 6 (six) months after Termination, and it shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies observed by the Authority in the Project during the aforesaid period. In the event that the Concessionaire fails to repair or rectify such defect or deficiency within a period of 15 (fifteen) days from the date of notice issued by the Authority in this behalf, the Authority shall be entitled to get the same repaired or rectified at the Concessionaire's risk and cost so as to make the Project conform to the Maintenance Requirements. All costs incurred by the Authority hereunder shall be reimbursed by the Concessionaire to the Authority within 15 (fifteen) days of receipt of demand thereof, and in the event of default in reimbursing such costs, the Authority shall be entitled to recover the same from the Concessionaire by way of forfeiture and appropriation of delinquent amount from the Performance Security [if still subsisting] and in case of such forfeiture the provisions of clause 9 hereof shall apply.

## **ARTICLE 30**

### **ASSIGNMENT AND CHARGES**

#### **30.1 Restrictions on assignment and charges**

30.1.1 Subject to Clauses 30.2, this Agreement shall not be assigned by the Concessionaire to any person, save and except with the prior consent in writing of the Authority, which consent the Authority shall be entitled to decline without assigning any reason.

30.1.2 Subject to the provisions of Clause 30.2, the Concessionaire shall not create nor permit to subsist any Encumbrance, or otherwise transfer or dispose of all or any of its rights and benefits under this Agreement or any Project Agreement to which the Concessionaire is a party except with prior consent in writing of the Authority, which consent the Authority shall be entitled to decline without assigning any reason.

#### **30.2 Permitted assignment and charges**

The restraints set forth in Clause 30.1 shall not apply to:

- (a) liens arising by operation of law (or by an agreement evidencing the same) in the ordinary course of business of the Project Facilities ;

#### **30.3 Assignment by the Authority**

Notwithstanding anything to the contrary contained in this Agreement, the Authority may, after giving 60 (sixty) days' notice to the Concessionaire, assign any of its rights and benefits and/or obligations under this Agreement; to an assignee who is, in the reasonable opinion of the Authority, capable of fulfilling all of the Authority's then outstanding obligations under this Agreement.

## **ARTICLE 31**

### **CHANGE IN LAW**

#### **31.1 Change in Law**

31.1.1 In the event a Change in Law results in a Material Adverse Effect, the Authority or the Concessionaire may by notice in writing to the other Party request such modifications to the terms of this Agreement as the requesting party reasonably believes is necessary to place it in substantially the same legal, commercial and economic position as it was prior to such Change in Law. The Concessionaire and the Authority shall thereafter consult in good faith to agree to such modifications and in the event agreement cannot be reached, either of them may refer the matter for determination in accordance with the Dispute Resolution Procedure described under Article 34 of this Agreement.

For the avoidance of doubt, a change in the rate of any Tax or the imposition of a new Tax shall not constitute a Change in Law and the Parties shall be liable to bear the impact and incidence thereof at their cost and risk.

## ARTICLE 32

### LIABILITY AND INDEMNITY

#### 32.1 General indemnity

32.1.1 The Concessionaire will indemnify, defend, save and hold harmless the Authority and its officers, servants, agents, Government Instrumentalities and Government owned and/or controlled entities/enterprises, ("**the Authority Indemnified Persons**") against any and all suits, proceedings, actions, demands and third party claims for any loss, damage, cost and expense of whatever kind and nature arising out of any breach by the Concessionaire of any of its obligations under this Agreement or any related agreement or on account of any defect or deficiency in the provision of services by the Concessionaire to any User, except to the extent that any such suits, proceedings, actions, demands and claims have arisen solely due to any negligent act or omission, or breach of this Agreement on the part of the Authority Indemnified Persons.

32.1.2 The Authority will indemnify, defend, save and hold harmless the Concessionaire against any and all suits, proceedings, actions, demands and third party claims for any loss, damage, cost and expense of whatever kind and nature arising out of (i) defect in title and/or the rights of the Authority in the building comprised in the Site, and/or (ii) breach by the Authority of any of its obligations under this Agreement or any related agreement, which materially and adversely affect the performance by the Concessionaire of its obligations under this Agreement, save and except that where any such claim, suit, proceeding, action, and/or demand has arisen due to a negligent act or omission, or breach of any of its obligations under any provision of this Agreement or any related agreement and/or breach of its statutory duty on the part of the Concessionaire, its subsidiaries, affiliates, contractors, servants or agents, the same shall be the liability of the Concessionaire.

#### 32.2 Indemnity by the Concessionaire

32.2.1 Without limiting the generality of Clause 32.1, the Concessionaire shall fully indemnify, hold harmless and defend the Authority and the Authority Indemnified Persons from and against any all loss and/or damages arising out of or with respect to:

- (a) failure of the Concessionaire to comply with Applicable Laws and Applicable Permits;
- (b) payment of Taxes required to be made by the Concessionaire in respect of the income or other Taxes of the Concessionaire's contractors, suppliers and Authorised Representatives; or
- (c) non-payment of amounts due as a result of materials or services furnished to the Concessionaire or any of its contractors which are payable by the Concessionaire or any of its contractors.
- (d) Non payment of amounts payable by it under the Project Agreements or to any Third Parties in relation to the Project.

32.2.2 Without limiting the generality of the provisions of this Article 32, the Concessionaire shall fully indemnify, hold harmless and defend the Authority Indemnified Persons from and against any and all suits, proceedings, actions, claims, demands, liabilities and damages which the Authority Indemnified Persons may hereafter suffer, or pay by reason of any demands, claims, suits or

proceedings arising out of claims of infringement of any domestic or foreign patent rights, copyrights or other intellectual property, proprietary or confidentiality rights with respect to any materials, information, design or process used by the Concessionaire or by the Concessionaire's Contractors in performing the Concessionaire's obligations or in any way incorporated in or related to the Project. If in any such suit, action, claim or proceedings, a temporary restraint order or preliminary injunction is granted, the Concessionaire shall make every reasonable effort, by giving a satisfactory bond or otherwise, to secure the revocation or suspension of the injunction or restraint order. If, in any such suit, action, claim or proceedings, the Project, or any part thereof or comprised therein, is held to constitute an infringement and its use is permanently enjoined, the Concessionaire shall promptly make every reasonable effort to secure for the Authority a lease/license, at no cost to the Authority, authorising continued use of the infringing work. If the Concessionaire is unable to secure such lease/license within a reasonable time, the Concessionaire shall, at its own expense, and without impairing the Specifications and Standards, either replace the affected work, or part, or process thereof with non-infringing work or part or process, or modify the same so that it becomes non-infringing.

### **32.3 Notice and contest of claims**

In the event that either Party receives a claim or demand from a third party in respect of which it is entitled to the benefit of an indemnity under this Article 32 (the “**Indemnified Party**”) it shall notify the other Party (the “**Indemnifying Party**”) within 15 (fifteen) days of receipt of the claim or demand and shall not settle or pay the claim without the prior approval of the Indemnifying Party, which approval shall not be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim or demand, it may conduct the proceedings in the name of the Indemnified Party, subject to the Indemnified Party being secured against any costs involved, to its reasonable satisfaction.

### **32.4 Defence of claims**

32.4.1 The Indemnified Party shall have the right, but not the obligation, to contest, defend and litigate any claim, action, suit or proceeding by any third party alleged or asserted against such Party in respect of, resulting from, related to or arising out of any matter for which it is entitled to be indemnified hereunder, and reasonable costs and expenses thereof shall be indemnified by the Indemnifying Party. If the Indemnifying Party acknowledges in writing its obligation to indemnify the Indemnified Party in respect of loss to the full extent provided by this Article 32, the Indemnifying Party shall be entitled, at its option, to assume and control the defence of such claim, action, suit or proceeding, liabilities, payments and obligations at its expense and through the counsel of its choice; provided it gives prompt notice of its intention to do so to the Indemnified Party and reimburses the Indemnified Party for the reasonable cost and expenses incurred by the Indemnified Party prior to the assumption by the Indemnifying Party of such defence. The Indemnifying Party shall not be entitled to settle or compromise any claim, demand, action, suit or proceeding without the prior written consent of the Indemnified Party, unless the Indemnifying Party provides such security to the Indemnified Party as shall be reasonably required by the Indemnified Party to secure the loss to be indemnified hereunder to the extent so compromised or settled.

32.4.2 If the Indemnifying Party has exercised its rights under Clause 32.3, the Indemnified Party shall not be entitled to settle or compromise any claim, action, suit or proceeding without the prior

written consent of the Indemnifying Party (which consent shall not be unreasonably withheld or delayed).

32.4.3 If the Indemnifying Party exercises its rights under Clause 32.3, the Indemnified Party shall nevertheless have the right to employ its own counsel, and such counsel may participate in such action, but the fees and expenses of such counsel shall be at the expense of the Indemnified Party when and as incurred, unless:

- (a) the employment of counsel by such party has been authorised in writing by the Indemnifying Party; or
- (b) the Indemnified Party shall have reasonably concluded that there may be a conflict of interest between the Indemnifying Party and the Indemnified Party in the conduct of the defence of such action; or
- (c) the Indemnifying Party shall not, in fact, have employed independent counsel reasonably satisfactory to the Indemnified Party, to assume the defence of such action and shall have been so notified by the Indemnified Party; or
- (d) the Indemnified Party shall have reasonably concluded and specifically notified the Indemnifying Party either:
  - (i) that there may be specific defences available to it which are different from or additional to those available to the Indemnifying Party; or
  - (ii) that such claim, action, suit or proceeding involves or could have a material adverse effect upon it beyond the scope of this Agreement:

Provided that if Sub-clauses (b), (c) or (d) of this Clause 32.4.3 shall be applicable, the counsel for the Indemnified Party shall have the right to direct the defence of such claim, demand, action, suit or proceeding on behalf of the Indemnified Party, and the fees and disbursements of such counsel shall constitute legal or other expenses hereunder.

### **32.5 No consequential claims**

Notwithstanding anything to the contrary contained in this Article 32, the indemnities herein provided shall not include any claim or recovery in respect of any cost, expense, loss or damage of an indirect, incidental or consequential nature, including loss of profit, except as expressly provided in this Agreement.

### **32.6 Survival on Termination**

The provisions of this Article 32 shall survive Termination.



## **ARTICLE 33**

### **RIGHTS OVER THE SITE**

#### **33.1 User rights**

For the purpose of this Agreement, the Concessionaire shall have rights to the use of the Site subject to and in accordance with this Agreement. It may regulate the entry and use of the Project by third parties in accordance with and subject to the provisions of this Agreement. The Concessionaire shall not be entitled to any charge over the Project Facility, Project Assets and/or the Site.

#### **33.2 Access rights of the Authority and others**

33.2.1 The Concessionaire shall allow free access to the Site at all times for the Authorised Representatives of the Authority; the members of the Maintenance Board and the Independent Engineer, and the persons duly authorised by any Government Instrumentality to inspect the Project or Project Facilities or to investigate any matter within their authority, and upon reasonable notice, the Concessionaire shall provide to such persons reasonable assistance necessary to carry out their respective duties and functions.

#### **33.3 Property taxes and other charges**

All property Taxes, electricity and water charges on the Site(s) shall be payable by the Concessionaire during the Concession Period; and any such Taxes/ charges payable by the Concessionaire under Applicable Laws for use of the Site(s) shall not be reimbursed or payable by the Authority.

#### **33.4 Restriction on sub-letting**

The Concessionaire shall not sublease or sublet the whole or any part of the Site(s), save and except as may be expressly set forth in this Agreement; provided that nothing contained herein shall be construed or interrupted as restricting the right of the Concessionaire to appoint Contractors for the performance of its obligations hereunder including for operation and maintenance of all or any part of the Project.

## ARTICLE 34

### DISPUTE RESOLUTION

#### 34.1 Dispute resolution

34.1.1 Any dispute, difference or controversy of whatever nature regarding the validity, interpretation, implementation or the rights and obligations arising out of, or in relation to, or howsoever arising under or out of or in relation to this Concession between the parties, and so notified by either Party to other Party (the “**Dispute**”) shall be subject to the dispute resolution procedure set out in Article 34.

#### 34.2 Direct Discussion between Parties

The Parties agree that any Dispute that may arise between them shall be first submitted for direct discussion between the Parties. For this purpose, the notice of Dispute (the “**Notice of Dispute**”) sent by one Party to another Party under Article 34.1 shall be considered an invitation for direct discussion, and it should specify a reasonable time and venue for conduct of the negotiation proceedings. In addition, the Notice of Dispute shall specify the basis of the Dispute and the amount claimed. In the direct discussion proceedings, each Party shall be represented by officials or employees with sufficient knowledge and authority over the subject matter of the Dispute in order for the discussion to be meaningful. At the discussion proceedings, the Party that has given the Notice of Dispute shall present an offer of settlement, which may form the starting point of discussions between the two Parties during the discussion Proceedings.

#### 34.3 Arbitration

34.3.1 Procedure: Subject to the provisions of Clause 34.2 above, any Dispute which is not resolved amicably within 30 days, the same shall be referred to the sole arbitration of Commissioner-cum Secretary, Urban Development Department, Government of Odisha, whose decision shall be final and binding on both the Parties. Such arbitration shall be governed by the Arbitration and Conciliation Act, 1996 (“**Arbitration Act**”).

34.3.2. Place of Arbitration: The place of arbitration shall ordinarily be Bhubaneswar but by agreement of the Parties, the arbitration hearings, if required, may be held elsewhere.

34.3.3. Language: The request for arbitration, the answer to the request, the terms of reference, any written submissions, any orders and awards shall be in English and, if oral hearings take place, English shall be the language to be used in the hearings.

34.3.4. Enforcement of Award: The Parties agree that the decision or award resulting from arbitration shall be final and binding upon the Parties and shall be enforceable in accordance with the provision of the Arbitration Act, 1996 subject to the rights of the aggrieved parties to secure relief from any higher forum.

#### 34.4 Performance during Dispute

Performance of this Concession Agreement shall continue during the settlement of any Dispute under this Article 34. The provisions for dispute settlement shall be binding upon the successors, assigns and any trustee or receiver of either the Authority or the Concessionaire.

## **ARTICLE 35**

### **DISCLOSURE**

#### **35.1 Disclosure of Specified Documents**

Subject to terms hereof and Applicable Laws, the Concessionaire shall make available for inspection by any person, copies of this Concession Agreement, the Maintenance Manual, and the Maintenance Programme (hereinafter collectively referred to as the “**Specified Documents**”), free of charge, during normal business hours on all working days at the Concessionaire’s registered office and <<Insert the name of laboratory >> Laboratory. The Concessionaire shall prominently display at the Project Site, public notices stating the availability of the Specified Documents for such inspection, and shall provide copies of the same to any person upon payment of copying charges on a ‘no profit no loss’ basis.

#### **35.2 Disclosure of Documents relating to safety**

Subject to the terms hereof and Applicable Laws, the Concessionaire shall make available for inspection by any person copies of all documents and data relating to safety of the Project, free of charge, during normal business hours on all working days, at the Concessionaire’s registered office. The Concessionaire shall make copies of the same available to any person upon payment of copying charges on a ‘no profit no loss’ basis.

#### **35.3 Withholding disclosure of Protected Documents**

Notwithstanding the provisions of Clauses 35.1 and 35.2, the Authority shall be entitled to direct the Concessionaire, from time to time, to withhold the disclosure of Protected Documents (as defined herein below) to any person in pursuance of the aforesaid Clauses.

Explanation:

The capitalized expression “Protected Documents” shall mean such of the Specified Documents or documents referred to in Clauses 35.1 and 35.2, or portions thereof, the disclosure of which the Authority is entitled to withhold under the provisions of the Right to Information Act, 2005.

## ARTICLE 36

### MISCELLANEOUS

#### 36.1 Governing law and jurisdiction

This Agreement shall be construed and interpreted in accordance with and governed by the laws of India, and the courts at Bhubaneswar, shall have exclusive jurisdiction over matters arising out of or relating to this Agreement.

#### 36.2 Waiver of immunity

Each Party unconditionally and irrevocably:

- (a) agrees that the execution, delivery and performance by it of this Agreement constitute commercial acts done and performed for commercial purpose;
- (b) agrees that, should any proceedings be brought against it or its assets, property or revenues in any jurisdiction in relation to this Agreement or any transaction contemplated by this Agreement, no immunity (whether by reason of sovereignty or otherwise) from such proceedings shall be claimed by or on behalf of the Party with respect to its assets;
- (c) waives any right of immunity which it or its assets, property or revenues now has, may acquire in the future or which may be attributed to it in any jurisdiction; and
- (d) consents generally in respect of the enforcement of any judgement or award against it in any such proceedings to the giving of any relief or the issue of any process in any jurisdiction in connection with such proceedings (including the making, enforcement or execution against it or in respect of any assets, property or revenues whatsoever irrespective of their use or intended use of any order or judgement that may be made or given in connection therewith).

#### 36.3 Depreciation

36.3.1 Only for the purposes of depreciation under the Applicable Laws, the property representing the capital investment made by the Concessionaire in the Project shall be deemed to be acquired and owned by the Concessionaire. For the avoidance of doubt, the Authority shall not in any manner be liable in respect of any claims for depreciation to be made by the Concessionaire under the Applicable Laws.

36.3.2 Unless otherwise specified, any interest payable under this Agreement shall accrue on a daily outstanding basis and shall be compounded on the basis of quarterly rests.

#### 36.4 Delayed payments

36.4.1 The Parties hereto agree that payments due from one Party to the other Party under the provisions of this Agreement shall be made within the period set forth therein, and if no such period is specified, within 30 (Thirty) days of receiving a demand along with the necessary particulars. In the event of delay beyond such period, the defaulting Party shall pay interest for the period of delay

calculated at a rate equal to 8% (eight per cent) per year, and recovery thereof shall be without prejudice to the rights of the Parties under this Agreement including Termination thereof.

### **36.5 Waiver**

36.5.1 Waiver, including partial or conditional waiver, by either Party of any default by the other Party in the observance and performance of any provision of or obligations under this Agreement:

- (a) shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions of or obligations under this Agreement;
- (b) shall not be effective unless it is in writing and executed by a duly Authorised Representative of the Party; and
- (c) shall not affect the validity or enforceability of this Agreement in any manner.

36.5.2 Neither the failure by either Party to insist on any occasion upon the performance of the terms, conditions and provisions of this Agreement or any obligation thereunder nor time or other indulgence granted by a Party to the other Party shall be treated or deemed as waiver of such breach or acceptance of any variation or the relinquishment of any such right hereunder.

### **36.6 Liability for review of Documents and Drawings**

Except to the extent expressly provided in this Agreement:

- (a) no review, comment or approval by the Authority or Design Approval Committee or the Independent Engineer of any Project Agreement, Document or Drawing submitted by the Concessionaire nor any observation or inspection of the construction, operation or maintenance of the Project nor the failure to review, approve, comment, observe or inspect hereunder shall relieve or absolve the Concessionaire from its obligations, duties and liabilities under this Agreement, the Applicable Laws and Applicable Permits; and
- (b) the Authority shall not be liable to the Concessionaire by reason of any review, comment, approval, observation or inspection referred to in Sub-clause (a) above.

### **36.7 Exclusion of implied warranties etc.**

This Agreement expressly excludes any warranty, condition or other undertaking implied at law or by custom or otherwise arising out of any other agreement between the Parties or any representation by either Party not contained in a binding legal agreement executed by both Parties.

### **36.8 Survival**

36.8.1 Termination shall:

- (a) not relieve the Concessionaire or the Authority, as the case may be, of any obligations hereunder which expressly or by implication survive Termination hereof; and
- (b) except as otherwise provided in any provision of this Agreement expressly limiting the liability of either Party, not relieve either Party of any obligations or liabilities for loss or damage to the other Party arising out of, or caused by, acts or omissions of such Party prior to the effectiveness of such Termination or arising out of such Termination.

**36.9 Entire Agreement**

This Agreement and the Schedules together constitute a complete and exclusive statement of the terms of the agreement between the Parties on the subject hereof, and no amendment or modification hereto shall be valid and effective unless such modification or amendment is agreed to in writing by the Parties and duly executed by persons especially empowered in this behalf by the respective Parties. All prior written or oral understandings, offers or other communications of every kind pertaining to this Agreement are abrogated and withdrawn.

**36.10 Severability**

If for any reason whatever, any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not be affected in any manner, and the Parties will negotiate in good faith with a view to agreeing to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision. Failure to agree upon any such provisions shall not be subject to the Dispute Resolution Procedure set forth under this Agreement or otherwise.

**36.11 No partnership**

This Agreement shall not be interpreted or construed to create an association, joint venture or partnership between the Parties, or to impose any partnership obligation or liability upon either Party, and neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or Authorised Representative of, or to otherwise bind, the other Party.

**36.12 Third Parties**

This Agreement is intended solely for the benefit of the Parties and their respective successors and permitted assigns, and nothing in this Agreement shall be construed to create any duty to, standard of care with reference to, or any liability to, any person not a Party to this Agreement.

**36.13 Successors and Assigns**

This Agreement shall be binding upon, and inure to the benefit of the Parties and their respective successors and permitted assigns.

**36.14 Notices**

Any notice or other communication to be given by any Party to the other Party under or in connection with the matters contemplated by this Agreement shall be in writing and shall:

- (a) in the case of the Concessionaire, be given by facsimile or e-mail and by letter delivered by hand to the address of the Executive Engineer of the \_\_\_\_\_PH Division of the Concessionaire or to such other person as the Concessionaire may from time to time designate by notice to the

Authority; provided that notices or other communications to be given to an address outside Bhubaneswar may, if they are subsequently confirmed by sending a copy thereof by registered acknowledgement due, air mail or by courier, be sent by facsimile to the number and by email to the email address as the Concessionaire may from time to time designate by notice to the Authority;

- (b) in the case of the Authority, be given by facsimile and by letter delivered by hand and be addressed to the Executive Engineer of the \_\_\_\_\_PH Division or such other person as the Authority may from time to time designate by notice to the Concessionaire; provided that if the Concessionaire does not have an office in Bhubaneswar it may send such notice by facsimile and by registered acknowledgement due, air mail or by courier; and
- (c) any notice or communication by a Party to the other Party, given in accordance herewith, shall be deemed to have been delivered when in the normal course of post it ought to have been delivered.

### 36.15 Language

The language of this Agreement is English. All notices, correspondence, Project Agreements, documentation, Specifications and Standards, data, test reports, certificates and information in respect of this Agreement shall be in the English language. All other written and printed matter, communications, documentation, proceedings and notices etc. pursuant or relevant to this Agreement shall be in the English language.

### 36.16 Counterparts

This Agreement may be executed in two counterparts, each of which, when executed and delivered, shall constitute an original of this Agreement.

**IN WITNESS WHEREOF THE PARTIES HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DAY, MONTH AND YEAR FIRST ABOVE WRITTEN.**

SIGNED, SEALED AND DELIVERED For and on behalf of Odisha PHEO (“Authority”) by: Sign and Seal: Name: Designation:	Sign and Seal: Name: Designation:
SIGNED, SEALED AND DELIVERED For and on behalf of (“Concessionaire”)	Sign and Seal: Name: Designation:
by:	
THE COMMON SEAL OF CONCESSIONAIRE has been affixed pursuant to the resolution passed by the Board of Directors of the Concessionaire at its meeting held on the hereunto affixed in the presence of , Director, who has signed these presents in token thereof and , authorized signatory, who has countersigned the same in token thereof:	

SIGNED, SEALED AND DELIVERED For and on behalf of	Sign and Seal: Name: Designation:
---	--------------------------------------

In the presence of:

- 1.
- 2.



## **Schedules**

**TABLE OF CONTENTS**

<b>Schedule</b>	<b>Schedule Descriptions</b>
1	Terms of Reference
Annexure 1	Details of jurisdictions of proposed laboratories
Annexure 2	Specifications and Standards of the Equipment to be installed
2	Format of Performance Security
3	Design Approval Committee

## **Schedule 1. Terms of Reference**

### **1.1. Introduction**

The Housing & Urban Development Department, Government of Odisha has notified Odisha State Urban Water Supply Policy-2013 during October 2013 and intends to operationalize the same immediately. The policy envisages an implementation period of twelve years starting 2015-16. The policy recognizes the importance of Service Level Benchmarking framework and accordingly a set of performance indicators has been framed to drive the policy.

Public Health Engineering Organisation (PHEO) provides water supply service to all the ULB area of Odisha. The Organisation under Department of Housing & Urban Development is headed by Engineer-in-Chief and Chief Engineer who operates out of Bhubaneswar. PHEO is responsible for both new project implementation and operations & maintenance of the sector. For administration of PHEO, the state is divided into six circles headed by Superintending Engineer and there are 19 divisions which are headed by Executive Engineers. The Executive Engineers are assisted by Deputy Executive Engineers / Assistant Executive Engineers and Assistant Engineers/ Junior Engineers and are collectively responsible for the service delivery within the ULBs.

The Odisha State Urban Water Supply Policy 2013 mandates PHEO to undertake the establishment and operation & maintenance of advanced laboratories for testing and quality monitoring of water & waste water in the state of Odisha.

In this regard, PHEO through its Chief Engineer intends to set up one advanced laboratory at state level (situated at Bhubaneswar) and Eight numbers of laboratories at PH Division level (one each at Cuttack, Bhubaneswar, Sambalpur, Berhampur, Rourkela, Puri, Balasore and Baripada) on Public private Partnership (PPP) model for a period of **10 Years on Public Private Partnership (PPP) model**.

### **1.2. Objectives**

The objectives of this engagement are to establish and operation of water testing laboratories at nine different locations as outlined below:

- a) One State level Laboratory with NABL accreditation situated at Bhubaneswar, and
- b) Eight laboratories with NABL accreditation situated at PH Division levels each at different ULB's viz Bhubaneswar, Cuttack, Sambalpur, Berhampur, Rourkela, Puri, Balasore and Baripada.

These laboratories are envisaged to undertake following functions:

1.2.1. **State Laboratory:** A state of the art Laboratory with NABL accreditation located at Bhubaneswar. The functions of this laboratory shall be to:

- a. analyze all new production wells & hand pump tube wells.
- b. analyze all existing production wells each year & hand pump tube wells over a period of 3 years.
- c. analyze all existing water treatment plant(surface source +treated water) & sewage treatment plants(influent + treated water) each year.

- d. select/establish a few baseline/reference stations in the state, based on hydro-geological characteristics and monitor the water quality using GIS.
  - e. undertake analysis of all water quality parameters as per BIS/CPHEEO norms e.g.; heavy metals, toxic substances, pesticides, bacteriological, virological, biological & radiological analysis with sophisticated instruments
- 1.2.2. **Divisional Laboratory:** It will be a well-equipped laboratory with NABL accreditation capable of
- a. analysis of physicochemical & microbiological parameters of water & waste water.
  - b. undertaking routine monitoring & surveillance of distribution system and suggest corrective actions based on water quality data analysis.
  - c. routine Monitoring of identified control measures within water supply system.
  - d. identifying contamination points within water supply systems, and control.
  - e. validate & enter data in a standard database.

### 1.3. Scope of Work

The scope of work of the Concessionaire includes establishment and carrying out the operations of water testing laboratories at different locations in Odisha as per the package 1 or 2, as the case may be which includes following key activities:

#### A. Establishment

1. **Setting up of laboratories:** The Agency shall have to establish water testing laboratories at identified locations as per the package 1 or 2 as the case may be in the state of Odisha to strengthen the water quality monitoring with complete setup.

#### B. Operation and Maintenance:

1. **Resource Mobilisation:** Further to the establishment of the laboratories, agency shall be responsible for provision of requisite manpower to perform all the functions needs to be performed by each lab as per requirement,
2. **Collection of Samples to perform tests:** Laboratories shall be required to collect samples of water and waste water at regular intervals from domestic areas within the respective ULBs,
3. **Performing Water Quality tests:** Laboratories shall perform water quality tests of the collected samples as per the prescribed norms and standards to meet PHEO requirements and validate the data collected.
4. **Reporting:** Each Laboratory shall be required to report detailed analysis of the sample tested and provide timely hard copy and electronic reporting of the analytical results, and submit the same to PHEO, Odisha. In addition to reporting, they shall also be required to undertake database information management and record keeping of the tests.
5. **Data Verification (After Reporting):** To answer queries raised by PHEO regarding data authenticity, if any. The Laboratories shall have to re-run samples and provides new reports to PHEO.

The detailed terms of reference for this engagement is given below.

## 1.4. Establishment

### 1.4.1. Setting up of Laboratories

The selected agency has to setup each laboratory with NABL accreditation and all required infrastructure and equipment:

- a) One State level Laboratory situated at Bhubaneswar, and
- b) Eight laboratories at PH Division levels each at Bhubaneswar, Cuttack, Sambalpur, Berhampur, Rourkela, Puri, Balasore and Baripada.

The detailed Jurisdiction of each of the proposed laboratory is given in Annexure 1 to this TOR. Each of the laboratories shall have requisite infrastructure and materials congruent with the level of surveillance or control planned for that ULB. The envisaged laboratory infrastructure shall include the following:

- a) Requisite floor space
- a) Interior Specifications
- b) Equipment and instruments
- c) Furniture
- d) Reagents for physical and chemical analyses, and culture media for bacteriology
- e) Laboratory glassware
- f) Miscellaneous materials and calibration standards

#### A. Requisite floor space

The building, along with electrification and water supply will be provided by PHEO and shall have several units e.g., physical, chemical, bacteriological, biological, preparation room, etc. (Analytical area, Balance room, Instrument room, Microbiology room, Sample room-sample receipt and sample storage, Conference room-cum-library, Staff office, Computer room, Store room, Maintenance room, Record room (archives), key personnel, Field monitoring equipment room, Waste storage area).

The size of the laboratory shall depend upon the type of analysis carried out. In case of less number of parameters, various units could be combined into one laboratory. Table below specifies space requirement for the state level laboratory.

**Table 1: Laboratory space for state level laboratory**

Sl. No.	Laboratory area	Space required (m <sup>2</sup> )
1	Analytical area, balance and instrument room	100
2	Microbiology room	30
3	Biology room	30
4	Sample room-sample receipt and sample storage	40
5	Conference room-cum library	50
6	Staff office	40
7	Computer room	20
8	Store room	30
9	Maintenance room	30
10	Record room (archives, key personnel)	40

Sl. No.	Laboratory area	Space required (m <sup>2</sup> )
11	Field monitoring equipment room	40
12	Waste storage room	40
	<b>Total</b>	<b>500</b>

The space/area requirement for setting up divisional laboratories is expected to be about 80 square metres of covered area. Suitable accommodation i.e., building with electrification and water supply shall be provided by each PH division for housing the Divisional laboratories. The details of which are as given below:

**Table 2: Laboratory space for Divisional level laboratory**

Sl No.	Item	Area in Sq.m
1	Chemical and physical testing laboratory	50
2	Store room for glass wares, chemicals and Allied material.	10
3	Office room	20
	<b>Total</b>	<b>80</b>

### **B. Interior Specification**

Agency shall be responsible to carry out the interiors of the laboratories as per the specifications given below.

**Walls of laboratory:** The walls should be finished smooth in light colour and should have sufficient thickness and provision for built in cabinets. The working table should be placed along the walls.

**Lighting:** All work rooms including passages in the laboratory should be well lighted. There should be sufficient number of windows provided in the laboratory area with transparent window glasses. Adequate provision of artificial lighting should be provided to supplement natural light. Additional plug points should be provided for extra lighting if needed.

**Balance room:** Digital monopan balance shall be placed on separate (anti-static) table or in a separate room.

**Media preparation and sterilization room:** For bacteriological analysis, additional facilities for media preparation, centrifuging, laminar flow/bio safety cabinet, sterilization by autoclaving etc. are essential and this room shall within easy reach.

**Surface Treatment of Work tables and benches:** The complete M.S. material of cabinet must be pre – treated (degreased, Zinc Phosphate) and epoxy powder coated (45 to 50 microns) for better corrosion resistance & having Scratch Hardness of 3Kgs.

**Floor Units:** The steel frames, panels & shutters should be made from combination of 1.2 mm horizontal stiffeners and 0.8 mm vertical panel of CRCA MS sheet. Welded joints in the floor cabinets would not be acceptable

**Slides:** High precision Double Extension Ball slides should be used which enables the drawer to open fully. Roller Slides would not be acceptable.

**Legs:** All Legs to be made of plastic with a load carrying capacity of 450 kg/each. Leg should be able take unevenness of the floor.

**Skirting:** must be of Poly Vinyl Chloride that is light in weight & is not affected by water that comes in contact while cleaning the floor.

**Support Brackets:** Granite /Reagent Support Brackets which serve the purpose of supporting the granite and for carrying the service lines should be made of 2 mm CRCA MS sheet with epoxy powder coating.

**Configuration of Storage Units:** The storage units should be in three configurations:

1. Storage unit with one/two shutters and one adjustable shelf
2. Storage unit with one drawer, one/ two shutters and one adjustable shelf
3. Storage unit with 4 drawers

All storages should be fitted with 10 levers, 180 degree cam

**Sink Units** – The sink unit must be on alternate working table & consists of a base cabinet, sink and a 3 way faucet.

**Reagent Shelves:** Reagent Shelves to be made of complete modular design (0.9mm thick CRCA M.S mounted on PP caps) consisting of horizontal 2 stage storage shelves. Each shelf should have a load carrying capacity of 20 Kgs.

**Electrical Trunking:** Electrical trunking should be made up of 1.0mm and 0.8mm thick CRCA MS Sheet. It should have a high temperature withstanding capacity with excellent electrical insulation properties.

**Overhead Shelves:** to be of the same construction as that of the base storage cabinets and shall have a completely finished interior same as exterior.

**Pegboard:** Single faced stainless steel pegboard having a tray hole for water drainage and detachable pegs that are made up of polypropylene and are adjustable

**Switches and Sockets:** made of High gloss virgin grade engineering thermoplastics to impart a defect free surface along with excellent electrical insulation properties i.e. does not melt on heating or catches fire. Front plates can be changed at any time with ease without disturbing the wiring to quickly and economically match changes in the surroundings.

**Key Board Pullout Tray:** retractable mouse pad tray that has a smooth quite movement because of ball bearings and has a load bearing capacity of 4.5Kg

**Chemical Storage Cabinets:** Made of mild steel 1.2 mm thick CRCA used for storages of corrosive chemicals. It must be provided with a ventilation system to enable exhaust of localized fumes emanating from the chemicals stored. It is fitted with a float glass to enable visibility inside the cabinet. It also has louvers/perforations for air supply and. The overall dimensions are 1000 x 486 x 1800 mm (WxDxH).

### **C. Laboratory Instruments and Equipment**

The agency shall provide all the instruments and equipment required for water quality assessment laboratories as given in the table 3. The specifications for each of the equipment and instruments are as per the details given in Annexure 2.

**Table 3: Instruments and equipment for water quality assessment laboratory**

S. No	Items	Laboratory Type
<b>Instruments</b>		

S. No	Items	Laboratory Type
1	Gas Chromatograph Mass Spectrometer (GCMS)	State
2	Atomic Absorption Spectrometer (AAS) with graphite furnace	State
3	Gas Liquid Chromatography (GLC)	State
4	High Performance Liquid Chromatography (HPLC)	State
5	Inductively Coupled Plasma Spectrometer (ICPS)	State
6	Scintillation counter	State
7	Mercury Analyser	State
8	Total Organic Carbon Analyser	State
9	Stereoscopic Microscope	State, Divisional
10	Flame Photometer	State, Divisional
11	Spectrophotometer (Visible and Ultraviolet)	State, Divisional
12	Nephelometer	State, Divisional
13	Monopan Digital Balance, Chemical	State, Divisional
14	Conductivity Meter	State, Divisional
15	pH Meter	State, Divisional
16	Jar Test Apparatus	State, Divisional
17	Specific Ion Meter	State
18	Microscope	State
19	PCR	State, Divisional
20	Laminar flow,	State, Divisional
21	Ultrapure water	State, Divisional
<b>Equipment</b>		
22	Microwave Oven	State,
23	Kjeldahl Nitrogen Analyser	State,
24	Arsine generator	State, Divisional
25	Muffle Furnace	State, Divisional
26	Magnetic Stirrer	State, Divisional
27	Oven	State, Divisional
28	Autoclave	State, Divisional
29	Membrane Filter Assembly	State, Divisional
30	Incubators 370°C and 440°C	State, Divisional
31	Centrifuge ( adjustable rpm)	State, Divisional
32	Colour Comparator and comparator test set for residual Cl <sub>2</sub>	State, Divisional
33	Colony Counter	State, Divisional
34	Vacuum Pump	State, Divisional
35	Heating Mantle and Hot Plates	State, Divisional
36	Specific Ion electrodes (F <sup>-</sup> , Cyanide and others)	State,
37	Fume Cupboard	State, Divisional
38	Physical Balance	State, Divisional
39	Water Bath with 12 Concentric Holes and Discs	State, Divisional
40	Desiccators	State, Divisional
41	Soxhlet Extraction Unit	State, Divisional
42	BOD Incubator	State, Divisional



S. No	Items	Laboratory Type
43	COD reactor	State, Divisional
44	Sieve Shaker with standard sieves	State, Divisional
45	Rotary Shaker	State, Divisional
46	Double distillation unit	State, Divisional
<b>Miscellaneous</b>		
1	Deep Freezer	State,
2	Refrigerator	State, Divisional
3	Fuel Gas cylinder or pipe gas supply	State, Divisional
4	Burners	State, Divisional
5	Fire Extinguisher	State, Divisional
6	First aid Kit	State, Divisional
7	Safety Equipments (Goggles, apron, gloves, gas mask)	State, Divisional
8	UPS /Inverter	State, Divisional
9	PC with printer	State, Divisional
10	Telephone	State, Divisional
11	Internet	State, Divisional
12	Motorcycles with sampling kits	Divisional
13	Air conditioner	State, Divisional
14	Ice Box	State, Divisional
15	Wash station	State, Divisional

The above equipment must be from reputed international brands like ABB, Agilent, Anamed, Analytica Jena, Denver, Dionex, Emerson, GE, HACH, Hanna, Hitachi, La Motte, Lovibond, Merck, Metrohm, Mettler, Milipore, Perkin-Elmer, Phepps & birds, Orion, Remi, Sartorius, Satyam, Schmitzu, Spectro, Systronics, Teledyne, tempo, Thermo, Waters, WTW, Xylem etc. Please note this list is not exhaustive & the bidder may suggest for inclusion of standard brands.

#### ***D. Laboratory Furniture***

The Agency shall have to provide the work tables and benches in each of the lab proposed as per the requirement mentioned below:

- Tables should be of suitable height (0.75 to 1.0 metre) with acid resistant tops.
- Should have modular design, made from Prime Quality CRCA (Cold Rolled Cold Annealed) Steel.
- All cabinet bodies shall be of over closing design with fully KD (knock down) construction and having a Main and Add On construction to avoid any gaps in between two units.
- All units must have interlocking type construction to form a rigid integral structure.
- The units are supported on wide base plastic legs of diameter 50 mm.
- These legs are height adjustable with a range of +23/- 5 mm.
- Agency shall have to ensure provision of adequate gas, electric power and water points along the benches.

#### ***E. Reagents for physical and chemical analyses, and culture media for bacteriology***

**Distilled water:** All the laboratories must have proper facility of American Standard Test Methods (ASTM) Type 1 & Type II distilled water depending on the nature of analysis undertaken.

**Reagent:** All Laboratories must use Analytical Reagent Grade (AR) reagents. Primary standards must be obtained from a reliable source, pre-treated, e.g., dried, under specified conditions, accurately prepared in calibrated volumetric glassware, and stored in appropriate containers.

### ***F. Laboratory glassware***

Each of the laboratories should have necessary borosilicate glassware.

### ***G. Safety requirements***

Each room in Laboratory must be equipped with fire extinguisher. Laboratory must be equipped with fume hood, emergency shower, eye wash station, Splash proof goggles, UV goggles, face shield, gloves & sufficient number of Aprons.

Laboratory personnel should apply general and customary good laboratory practices. Each laboratory is encouraged to have a safety plan as part of their standard operating procedure which includes personnel safety, training and protection.

## **1.5. Operation and Maintenance**

Further to the establishment of the laboratories, the agency shall be required to carry out following activities as part of operation and maintenance of each of the laboratory for the period of 10 (Ten) years.

### **1.5.1. Resource Mobilization**

The agency shall be responsible for provision of requisite manpower to perform all the functions / activities needs to be performed by each lab as specified in scope of work and Water Quality Monitoring Protocol, Odisha.

### **1.5.2. Collection of Samples to perform tests:**

Each laboratory shall be responsible to collect water and waste water samples at regular intervals from domestic areas from respective ULBs within the Jurisdiction of the particular P H Division, based on specified sampling methods. Lab shall ensure that rigorous (QA/ QC) water quality monitoring protocols are followed for the sampling activities. The laboratories have to follow the following collection method to select/ collect the samples.

### ***A. Sampling procedure***

Laboratories shall be required to consider important factors for accurate analysis of the sample. These factors include proper collection of the samples, method of storage and protocol for microbial and chemical analysis, data analysis and interpretation. The general precautions in the Bureau of Indian Standards i.e., IS-3025/1622 shall be referred to for detailed information on sampling and testing procedures.

While sampling at a source, collect GPS coordinates and take pictures of the following:

- Intake and surrounding area
- Dam or water control structure
- Pump house or other structures of interest

The design of the sampling plan is part of the monitoring cycle, so it is desirable to collect the samples by laboratory personnel because collection of samples from different environmental matrices

can be considered as the first step in the measurement cycle. But if it is not possible, it is important that a written sampling protocol with specific sampling instructions be available to and used by sample collectors.

#### **General Guidelines and Precautions for drinking water sampling**

- Make detailed record of every sample collected (with unique code and Global Positioning System coordinates). Identify each container and record information like date, time and exact location & condition
- Strictly follow sampling guidelines

#### ***B. Sampling frequency:***

The sampling frequency of collection of samples is detailed in Table 6, under testing frequency.

#### ***C. Quantity of Sample to be collected***

Samples for chemical & bacteriological analysis should be collected separately. The interval between collection and analysis of the sample should be shortest possible.

- Quantity of sample for General Analysis: 2 litre (non-acidified).
- Quantity of sample for Bacteriological Analysis: 250 ml in sterilized bottles.
- Quantity of sample for Metals Analysis: 1000 ml acidified sample.

#### ***D. Collection Points***

The collection points are to be defined by PHEO (PH division). While undertaking sampling from distribution system the local corporate must be informed, who may suggest for a change of site & While sampling from production well the Assistant/ Junior Engineer to be associated.

The minimum numbers of samples are to be collected from the distribution system as per the CPHEEO norms.

#### **1.5.3. Performing Water Quality tests**

Each laboratory shall be responsible for performing water quality tests and analysis of the collected samples as per the prescribed norms and standards to meet PHEO requirements and validate the data. Labs shall ensure rigorous (QA/ QC) water quality monitoring protocols are followed for analytical activities and have to follow the requirements given in this section.

#### ***A. Functional Capabilities of Laboratories***

The State level laboratory shall concentrate on analysis of specific parameters enumerated by BIS whereas each PH Division will take up routine area specific approach. The agency has to ensure that each laboratory shall have the minimum functional capabilities to carryout following Tests. However each of the laboratory need to carry out tests listed at 6.5.3.C:

**Table 5: Functional capabilities of the various laboratories**

S. No.	Name of the test	Laboratory levels	
		Divisional	State
1	Colour ,Odour , pH ,Turbidity, Conductivity	√	√
2	Alkalinity/ Hardness	√	√
3	Residual chlorine/ Chlorine demand	√	√
4	Iron, Chloride, Fluoride	√	√
5	Nitrogen (ammonia)/ Nitrites/ Nitrates	√	√
6	Bacteriological analysis	√	√
7	Total solids, Suspended solids	√	√
8	Metal/ Heavy metals/ Toxicity	×	√
9	Virological analysis	×	√
10	Biological analysis	×	√
11	Waste water analysis viz., BOD, COD, TOC	√	√
12	Additional parameters,	√	√
13	Oil and grease, pesticides	×	√
14	Alpha/beta count	×	√

### ***B. Testing Procedure to be followed***

Agency shall be required to ensure that each laboratory has to carry out the tests using the materials as per the standards BIS/APHA/USEPA. Chemicals & glassware are to be procured as per requirement.

The Laboratories must keep standards with certificates relating to each test performed and demonstrate calibration of instruments with these standards as & when required by PHEO.

It is envisaged that each of the laboratory shall use uniform methods that are providing data to a common data bank are important in order to remove the methodology as a variable in comparison.

**Evaluation of Daily Performance:** Once valid precision and accuracy data are available on the selected method, systematic daily checks are necessary to insure that valid data are being generated. First of all, verification of the originally-constructed standard curve is mandatory.

**Validation of data:** It is necessary to ensure the quality of data through checks for correctness of chemical analyses. Laboratories need to be equipped with validation software.

### ***C. Testing Frequency***

The State laboratories shall mandatorily carry out analysis on each of the basic water quality parameters described below. However, Divisional Laboratories shall have to carry out analysis on Physical, Chemical and Bacteriological water quality parameter.

1. **Physical;** Color (Pt. Co), Odour, Free residual chlorine, Ammonia, pH, taste, Turbidity (NTU), dissolved solid, suspended solid
2. **Chemical;** Anionic detergent, Calcium, Chloramine, DBP, Chloride, Fluoride, Iron, Magnesium, Mineral oil, Nitrate (as NO<sub>3</sub>), Nitrite (as NO<sub>2</sub>), Phenolic compounds, Sodium, Potassium, Sulphate, Sulphide (as H<sub>2</sub>S), Phosphate, Silica, Dissolved Oxygen, Total alkalinity as calcium carbonate Total hardness (as CaCO<sub>3</sub>),

3. **Biological;** algae, zooplanktons, flagellates, Cryptosporidium, Giardia, cercariae of schistosomiasis, embryos of Dracunculus medinensis,
4. **Microbiological:**
  - a. **Bacteriological;** Total coli form bacteria (MPN Count), E. coli or thermo tolerant coli form bacteria (MPN Count), Streptococci
  - b. **Virological**
5. **Metals;** Aluminium, Barium, Boron, Selenium, Silver, Zinc, Cadmium, Lead, Mercury, Nickel, arsenic, chromium, Manganese, Copper
6. **Pesticides;** Alachlor, Atrazine, Aldrin/ Dieldrin, Alpha HCH, Beta HCH, Butachlor, Chlorpyrifos, Delta HCH, 2,4- Dichlorophenoxyacetic acid, DDT (o, p and p, p – Isomers of DDT, DDE and DDD), Endosulfan (alpha, beta, and sulphate) Ethion Gamma – HCH (Lindane), Isoproturon, Malathion, Methyl parathion, Monocrotophos, Phorate
7. **Toxicity;** Cyanide, Polychlorinated biphenyls, Poly nuclear aromatic hydrocarbons Tri halo methanes, Alpha emitters Bq/l, Max Beta emitters Bq/l.

**Suggested minimum sampling and testing frequency** for the present monitoring programme is given as follows. However, it may be gets modified as per CPHEEO requirements.

**Table 6: Minimum sampling and testing frequency for Water Quality Control Monitoring**

Size and Source	Frequency	Parameters						Remarks									
		Physical	Chemical	Bacteriological	Biological/ Microbiological	Metals &Pesticide/ Toxicity	Area specific Parameter	Bhubaneswar	Cuttack	Sambalpur	Berhampur	Puri	Rourkela	Balasore	Baripada	State	
a. Ground Water (production well)	Quarterly	√	√	√			√	336	179	144	127	149	16	143	77	1782	Division
	Annually	√	√	√		√	State										
b. Ground Water (Hand Pump)	Annually	√	√	√			√	3260	3269	3005	1969	2402	2453	1571	813	30389	Division
	Annually	√	√	√		√	State										
c. Surface water Raw water, source and intake point	Weekly	√	√	√				7	0	2	2	0	2	0	1	80	Division
	Annually				√	√	√										State
d. Distribution system	Daily	√						47	32.5	19.5	22.1	12.6	18.4	15.9	6.9		Division
	Weekly			√			Division										
	Monthly		√				Division										

Note:

- All the Production wells need to be monitored each quarter by the Divisional laboratory and each year by the State laboratory.
- All the hand pump tube wells need to be monitored each year by the Divisional laboratory & over a period of 3 years by the State laboratory.
- Surface sources need to be monitored each week by divisional laboratory and annually by State Laboratory.
- Distribution system must be monitored as per stipulated number.

#### ***D. Time period for Test result***

To be defined by PHEO for each type of analysis as per situational necessity. However the maximum time permitted is:

<b>Type of Analysis</b>	<b>Time period of Tests</b>
Physical analysis	One day
Chemical, Bacteriological analysis	One week
Metal, pesticide, toxicity, biological analysis	One month

#### ***E. Annual Work Load***

Based on the type of tests and frequency the total estimated annual Work load on each of laboratories is shown in Table 6. However, Agency shall factor that the workload may increase based on area specific problem and related parameters which are to defined & imposed by PHEO. Further work load for test to be carried out at sewage treatment plants are not included in the estimation. The annual workload is shown in Table below.

**Table 7: Annual Testing workload on each of the Laboratory**

	<b>Bhubaneswar</b>	<b>Cuttack</b>	<b>Sambalpur</b>	<b>Berhampur</b>	<b>Puri</b>	<b>Rourkela</b>	<b>Balasore</b>	<b>Baripada</b>	<b>State</b>
Physical	DS=f365=17155 SS=2f55=770 TW=f=3260 PW=4f=1344 Per day=54	DS=f365=11863 SS=2f55=0 TW=f=2749 PW=4f=716 Per day=42	DS=f365=7118 SS=2f55=220 TW=f=3005 PW=4f=576 Per day=30	DS=f365=8067 SS=2f55=220 TW=f=1969 PW=4f=508 Per day=29	DS=f365=4599 SS=2f55=0 TW=f=2402 PW=4f=596 Per day=21	DS=f365=6716 SS=2f55=220 TW=f=2453 PW=4f=64 Per day=26	DS=f365=5804 SS=2f55=0 TW=f=1573 PW=4f=572 Per day=22	DS=f365=2519 SS=2f55=110 TW=f=813 PW=4f=308 Per day=10	DS=0 SS=2f=160 TW=f/3=10130+3039 PW=f=1782+178 Per day=42
Chemical	DS=f12=564 SS=2f55=770 TW=f=3260 PW=4f=1344 Per day=16	DS=f12=390 SS=2f55=0 TW=f=2749 PW=4f=716 Per day=11	DS=f12=234 SS=2f55=220 TW=f=3005 PW=4f=576 Per day=11	DS=f12=265 SS=2f55=220 TW=f=1969 PW=4f=508 Per day=8	DS=f12=151 SS=2f55=0 TW=f=2402 PW=4f=596 Per day=9	DS=f12=221 SS=2f55=220 TW=f=2453 PW=4f=64 Per day=8	DS=f12=191 SS=2f55=0 TW=f=11573 PW=4f=572 Per day=6	DS=f12=83 SS=2f55=110 TW=f=813 PW=4f=308 Per day=4	DS=0 SS=2f=160 TW=f/3=10130+3039 PW=f=1782+178 Per day=42
Bacterio- logical	DS=f55=2585 SS=2f55=770 TW=f=3260 PW=4f=1344 Per day=22	DS=f55=1788 SS=2f55=0 TW=f=2749 PW=4f=716 Per day=14	DS=f55=1073 SS=2f55=220 TW=f=3005 PW=4f=576 Per day=13	DS=f55=1216 SS=2f55=220 TW=f=1969 PW=4f=508 Per day=11	DS=f55=693 SS=2f55=0 TW=f=2402 PW=4f=596 Per day=10	DS=f55=1012 SS=2f55=220 TW=f=2453 PW=4f=64 Per day=10	DS=f55=875 SS=2f55=0 TW=f=11573 PW=4f=572 Per day=8	DS=f55=380 SS=2f55=110 TW=f=813 PW=4f=308 Per day=5	DS=0 SS=2f=160 TW=f/3=10130+3039 PW=f=1782+178 Per day=42
Biological/ Micro- biological									DS=0 SS=2f=160 TW=0 PW=0= Per day=0.44
Metals Pesticide, $\alpha$ $\beta$ count									DS=0 SS=2f=160 TW=f/3=10130+3039 PW=f=1782+178 Per day=42

DS: Distribution System, SS: Surface Source, TW: Tube Well, PW: Production Well.



#### 1.5.4. Reporting

Each Laboratory shall carry out detailed analysis of the sample tested and provide timely hard copy and electronic reporting of the analytical results, and submit the same to PHEO Odisha as per the reporting formats

##### *A. Reporting*

Each laboratory should maintain detailed field reports regarding inspections and water analysis of water supplies available in the area. The information should also be passed on to PHEO authorities to allow follow-up;

The most common record is an internal bench sheet, or **bound book**, for recording of all data in rough form. Basic field laboratories or installations doing repetitive analyses for many parameters day in and day out, may use a **pre-printed form**. With loose-sheet multi-copy forms information can be forwarded daily, weekly, or on whatever schedule is necessary, while allowing retention of all data in the laboratory

The agencies responsible for monitoring should inform to Superintending Engineer of related locality regarding public health-related results obtained by them along with recommendations for action (e.g. boiling during severe faecal contamination, household water storage education etc.)

##### *B. Information management and record keeping*

Records are documents to provide objective proof that all work was carried out and reported according to approved procedures. The records must be sufficient to permit a qualified individual to reconstruct and understand all steps in the process that produced the final result. Maintaining accurate, up-to-date, and easily retrievable records of laboratory activities are essential for reducing future liability (e.g. fines for regulatory non-compliance, costly clean-up cost), facilitating inspections (internal and external) and responding to customer and other enquiries and information requests.

All laboratory records, reports and other supporting documentation should be safely stored as hardcopy and electronic records, held secure and in confidence for the client. The system should cover those records currently in use by the analyst (e.g., log books, sample receipt records, bench sheets, calibration and QC records), recently completed project records (e.g., work completed in the last six months) and archival records removed from daily access but in a readily retrievable location. Examples of the types of materials that constitute laboratory records include, (but are not limited to)

- a) Equipment maintenance records,
- b) Instrument logbooks,
- c) Instrument calibration data,
- d) Calibration records,
- e) Certificates of purity/composition for all standards and reference materials,
- f) Standard operating procedures,
- g) Standard preparation logbooks
- h) Chain-of-custody forms
- i) Raw analytical data, both electronic and handwritten
- j) QC results, and final reports

The laboratory should maintain a record inventory for all records. This inventory must be reviewed before the records are placed in archival storage. This shall assure that the necessary records are identified and retained by the laboratory.

Laboratories are required to maintain easily accessible records for five years and store records of chemical analyses of samples for 10 years. Changes in office, mergers, or closures of laboratories do not eliminate these requirements. This includes all raw data, calculations, and quality control data.

These data files may be either hard copy, microfiche or electronic. Electronic data should always be backed up by protected tape or disk or hard copy.

### ***C. Database management***

The State Laboratory shall be responsible for the development of following five (5) different common database formats, which shall be also accessible to public. Each laboratory shall be responsible to fill the information in the same data formats:

1. Raw Water Quality Database (intake)
2. Production well /Hand pump tube well water Quality Database
3. Tap Water Quality Database (distribution system)
4. Water treatment plant Database(stages of treatment)
5. Sewage treatment plant Database (stages of treatment)

#### **1.5.5. Data Verification (After Reporting)**

If there is a reasonable question from the PHEO regarding data authenticity (e.g., analytical results in an order of magnitude different from historical results), the Laboratory shall re-run samples and provides new reports at no additional charge.

**Annexure -1: Details of jurisdictions of proposed laboratories**

Name of the District	Name of the ULB	Estimated Population 2015	Surface Sources	Groundwater (P Wells & Open Wells)	Total No. of functional HPTWs	Minimum no. of tests for surveillance/ month
<b>PH Divisional Laboratory, Bhubaneswar</b>				<b>336</b>	<b>3260</b>	<b>1410</b>
	Division-I, BBSR	931445	Daya & Kuakhai Rivers, Spring Tank	190	0	
	Division-II, BBSR		Kuakhai	95	0	
	Division-III, BBSR		Mahanadi at Mundali (Naraj)	51	3260	
<b>PH Divisional Laboratory, Puri</b>				<b>149</b>	<b>2402</b>	<b>379</b>
Puri	Puri	222391	Nil	125	750	340
	Nimapara	20750	Nil	6	464	10
	Konark	18440	Nil	5	235	4
	Pipili	19250	Nil	3	250	4
Nayagarh	Nayagarh	18930	River Dahuka	7	221	4
	Khandapara	9393	River Kusumi	3	178	2
	Dasapalla NAC	33502	River Tel	0	172	14
	Ranapur NAC	14931	Nil	0	132	3
<b>PH Divisional Laboratory, Cuttack</b>				<b>179</b>	<b>3269</b>	<b>975</b>
Cuttack	Cuttack Mpl. Corporation	644677	Mahanadi	179	PH-465 CMC-2804	975
<b>PH Divisional Laboratory, Balasore</b>				<b>143</b>	<b>1573</b>	<b>477</b>
Balasore	Balasore Mplty.	152200	Nil	74	358	240
	Jaleswar NAC	27900	Nil	9	309	12
	Nilagiri NAC	18500	Nil	12	191	4
	Soro NAC	34900	Nil	12	163	14
Bhadrakh	Basudevpur NAC	35400	Nil	8	174	16
	Bhadrak Mplty.	114600	Nil	20	213	180
	Dhamnagar NAC	20600	Nil	3	126	8
	Chandabali	14500	Nil	5	38	3
<b>PH Divisional Laboratory, Baripada</b>				<b>77</b>	<b>813</b>	<b>206</b>
Mayurbhanj	Baripada Mplty.	116551	River Chipat	50	345	180
	Karanjia NAC	23472	River Deo.	10	149	10
	Rairangpur NAC	27431	River Khad-khai.	13	215	13
	Udala NAC	13799	River Sono.	4	104	3
<b>PH Divisional Laboratory, Sambalpur</b>				<b>144</b>	<b>3005</b>	<b>585</b>
Sambalpur	Sambalpur Mpl Corpn.	317250	Hirakud reservoir, power channel, Ayodhya Sorabar of River Mahanadi	28	1200	480

Name of the District	Name of the ULB	Estimated Population 2015	Surface Sources	Groundwater (P Wells & Open Wells)	Total No. of functional HPTWs	Minimum no. of tests for surveillance/ month
	Kuchinda NAC	16460	River Kharla	9	257	3
	Rairakhol NAC	16160	NIL	pw13+ow2=15	317	3
Baragarh	Barpalli NAC	21957	Nil	18	234	10
	Baragarh Mplty.	89390	River Jeera	37	437	72
	Padampur NAC	18664	River Ong	20	278	4
	Atabira NAC	14355	Jainjor Nallah	6	103	3
Deogarh	Deogarh Mplty.	23250	Pradhanpat Water Fall	11	179	10
<b>PH Divisional Laboratory, Rourkela</b>				<b>16</b>	<b>2453</b>	<b>551</b>
Sundergarh	Biramitrapur Mplty.	35215	"B" Quarry & Kanshabahal Quarry	4	283	14
	Rourkela Mpl Corpn.	296878	River Brahmani & Koel	0	1510	450
	Sundargarh Mplty.	51209	River "IB"	3	299	44
	Rajgangpur Mplty.	50082	Nakti Nalla	8	327	40
	Panposh	13313	Kanshbahal Irrigation Reservoir	1	34	3
<b>PH Divisional Laboratory, Berhampur</b>				<b>127</b>	<b>1969</b>	<b>662</b>
Gajapati	Kasinagar NAC	9700	-	7	97	2
	Paralakhemundi Mplty.	48600	Mahendra tanaya	13	239	20
Ganjam(A)	Berhampur Mpl. Corporation	421000	Dakhinapur Rushikulya	79	1277	630
	Gopalpur NAC	7900	-	9	99	2
	Digapahandi NAC	14700	0	6	137	3
	Chikiti NAC	12600	0	13	120	3

## Annexure -2: Specifications Requirements - Equipment and Instruments

The following tables shows the specification requirements of the equipment and instruments be used in each of the proposed laboratories.

S.NO.	Instruments/ Equipment	Specification
1	<b>Gas Chromatograph Mass Spectrometer (GCMS)</b>	<p>GC; Column Oven</p> <ul style="list-style-type: none"> <li>➤ Temperature control from ambient temperature +40 °C to 450 °C with at least 15/16 heating ramps</li> <li>➤ 2 capillary columns of 30m should be accommodating.</li> <li>➤ Maximum achievable temperature ramp rate should be 120 °C/min or better preferably cool down rate 400°C to 50°C within 5 minutes. Temperature set point resolution 1°C</li> </ul> <p>Injector;</p> <ul style="list-style-type: none"> <li>➤ The system should be provided with non-Programmable Inlet for wide range of capillary column, Pressure range – 0-150psi, Pneumatics – Electronic Flow Control (EFC)</li> </ul> <p>Fid Detector;</p> <ul style="list-style-type: none"> <li>➤ MDL: &lt; 2 pg c/s or better (specify the compound), Dynamic range: &gt; 10<sup>7</sup> , Data acquisition rate: up to 400 Hz or better</li> </ul> <p>Auto Sampler;</p> <ul style="list-style-type: none"> <li>➤ With vial capacity of 100 vials or more with large volume injection capability upto 200 microlitre. Auto sampler must have facility to inject samples at two injection port</li> </ul> <p>Triple Quadra pole Mass Spectrometer with EI:</p> <ul style="list-style-type: none"> <li>➤ Quadra pole should be made up of inert material to have better mass transfer efficiency and should have heating facility</li> <li>➤ EI source should be made of inert material with dual filaments and preferably programmable to 300 °C or better.</li> <li>➤ Electron energy 50-300 eV</li> <li>➤ The system should use low cost Nitrogen as collision gas to reduce cost of operation</li> <li>➤ Mass range (m/z) should be upto 1,000 amu or better</li> <li>➤ Dynamic range (electronic) 10e6</li> <li>➤ Scan rate (electronic) of 6,000 u/s or better</li> </ul> <p>Sensitivity of system;</p> <ul style="list-style-type: none"> <li>➤ The sensitivity of system should be as followed and demonstrated at site-100 fg octafluoronaphthalenem/z 272 – 241 transition should give</li> <li>➤ area precision - 4% (n=8)</li> <li>➤ Instrument Detection Limit (IDL) -12 fg or better</li> </ul> <p>Software Control System;</p> <ul style="list-style-type: none"> <li>➤ Basic operation of GC-MS-MS should be controlled from the Software having provision for automatic tuning.</li> </ul>

S.NO.	Instruments/ Equipment	Specification
		<p>The MS</p> <ul style="list-style-type: none"> <li>➤ MS can be vented and pumped down from the interface for the ultimate in easy maintenance.</li> </ul> <p>Quantitative analysis</p> <ul style="list-style-type: none"> <li>➤ Qualitative analysis software for GC QQQ should be provided</li> </ul> <p>Library;</p> <ul style="list-style-type: none"> <li>➤ NIST library–latest version with license to be supplied with the system.</li> </ul> <p>UPS</p> <ul style="list-style-type: none"> <li>➤ 10 KVA online UPS with ½ hours back up.</li> </ul> <p>Computer</p> <ul style="list-style-type: none"> <li>➤ PC with 8 GB RAM, i10 Processor, LED monitor, 1 TB, Display screen TFT colour screen size more than 15 cm.</li> </ul> <p>Accessories</p> <ul style="list-style-type: none"> <li>➤ Ferrule, gastight and non-gastight syringes with Teflon tip plunger, syringes, two MS columns compatible with the instrument.</li> </ul>
2	<b>Atomic Absorption Spectrometer (AAS) with graphite furnace</b>	<ul style="list-style-type: none"> <li>➤ Flame, Vapour generation assembly and Graphite furnace operation on a single instrument minimizing space requirements.</li> <li>➤ Easy changeover from flame to furnace operation, Auto-changeover and position optimization of integrated flame/graphite furnace atomizer. Auto-ignition,</li> <li>➤ Safety monitoring function: Optical flame monitoring, flame sensor error detection, fuel/auxiliary gas pressure monitoring, drain liquid monitoring, etc. Fully automatic photometer settings (wavelength, slit width, etc.)</li> <li>➤ Use of an 1800 line/mm, dual-blaze angle diffraction grating. Wavelength range should be at least 190 to 900 nm with accuracy <math>\pm 0.25</math>nm, resolution better than 0.3 nm. Automatic spectral bandwidth selection. Fully automated wavelength scanning and peaking</li> <li>➤ Fully-automated, automatic-focusing minimum 8-lamp cassette. Automatic hollow cathode lamp changeover</li> <li>➤ Zeeman background correction.</li> <li>➤ Transverse heating of graphite tubes to provide a uniform temperature over the length of the graphite tube. Heating rates up to 2000 °C/s independent of input line voltage (220-240V).</li> <li>➤ Baseline Offset Correction to automatically set the baseline to zero prior to atomization improving accuracy and precision when using peak area measurements.</li> <li>➤ Built-in furnace power supply, eliminating the space required for external power supplies.</li> </ul>

S.NO.	Instruments/ Equipment	Specification
		<ul style="list-style-type: none"> <li>➤ WINDOWS operating system, with multi-windows processing technology to observe the signal profile, the measured results and the calibration curve at the same time. All standard operating conditions are resident in the software and can be modified and stored and recalled for later use.</li> <li>➤ Safety features. Automated gas leak detection Automated under normal flame detection systems Flame failure detection system. Automated burner detection systems. Automated pulsed ignition, Automated under normal pressure detection system for fuel and oxidant Atomization source changeover must be fully interlocked, and all interlocks should be continuously monitored during changeover to assure maximum safety</li> <li>➤ Power requirement: 230V AC, 50Hz,</li> <li>➤ Requisite Accessories like Fume Hood: Made of &gt;1.0mm SS sheet, Appropriate Gas Cylinders with double stage regulator with metal diaphragm , Air Compressor, Furnace Water Cooling System, Compatible UPS /Stabilizer</li> </ul>
3	<b>Gas Liquid Chromatography (GLC)</b>	<p>Basic system:</p> <ul style="list-style-type: none"> <li>➤ Microprocessor based Gas Chromatograph with single split/split less injector</li> <li>➤ Flame Ionization Detector (FID) with auto sampler.</li> <li>➤ EPC/PPC/AFC/EFC control for carrier / detector Zone gases.</li> <li>➤ Should store all parameters as a part of method for better analysis reproducibility. Should meet the regulatory compliance.</li> <li>➤ Carrier gas pressure range: 0 to 140 psi or better.</li> <li>➤ Built in facility to save carrier gas &amp; power consumption</li> <li>➤ LCD graphic display for all GC parameters</li> <li>➤ Method storage of more than 35 methods built in basic SC. Higher method storage will be preferred.</li> <li>➤ External Communication via RS232/ Ethernet with built in logic input/output.</li> <li>➤ Accommodate 2 injectors &amp; 2 detectors</li> <li>➤ Injector: Standard configuration supports high-speed GC with narrow bore capillary columns. Gas saver function reduces split gas consumption. Permits high-pressure injection mode</li> <li>➤ Split/ Split less capillary column injector capable of connecting 0.53 mm itt to 0.05mm id Capillary column.; Should be electronic controlled via EPC/PPC/AFC/EFC</li> <li>➤ Temperature range: 450°C.</li> <li>➤ Programmable split ratio:≥1: 9000, more is preferred</li> </ul>

S.NO.	Instruments/ Equipment	Specification
		<ul style="list-style-type: none"> <li>➤ Pressure range <math>\geq 140</math> psi.</li> </ul> <p>Column Oven:</p> <ul style="list-style-type: none"> <li>➤ High power oven with temperature range from <math>+5^{\circ}\text{C}</math> to <math>450^{\circ}\text{C}</math>. Availability of option for Upgradability to <math>-100^{\circ}\text{C}</math> to <math>450^{\circ}\text{C}</math> by using liquid <math>\text{N}_2</math>, Temperature ramp rate : <math>\geq 140^{\circ}\text{C}/\text{mm}</math> , Heating rate: <math>0.1^{\circ}\text{C}/\text{mm}</math> up to <math>1500^{\circ}\text{C}/\text{mm}</math> throughout the operating temperature range (<math>+ 5^{\circ}\text{C}</math> to <math>450^{\circ}\text{C}</math>).</li> <li>➤ Low noise Fan Motor &amp; adequate safety features</li> <li>➤ Heating steps for temperature ramp/plateau 20,</li> <li>➤ With overheat temperature protection</li> <li>➤ Oven cooling time from <math>400^{\circ}\text{C}</math> to <math>50^{\circ}\text{C} &lt; 5</math> minutes.</li> <li>➤ Volume 10 Litres</li> </ul> <p>Detector:</p> <ul style="list-style-type: none"> <li>➤ Capability of installing any one of the SC detectors, as per the application needs.</li> <li>➤ Facility of flame out detection &amp; Auto Re-ignition.</li> </ul> <p>Software:</p> <ul style="list-style-type: none"> <li>➤ Optimized for latest windows platform with user friendly licensed software</li> </ul> <p>Other standard accessories</p>
4	<b>High Performance Liquid Chromatography (HPLC)</b>	<p>Pump:</p> <ul style="list-style-type: none"> <li>➤ Solvent delivery unit should contain two individual pumps</li> <li>➤ Gradient formation: High pressure binary mixing</li> <li>➤ High precision dual plunger design</li> <li>➤ Each individual pump should have a Flow rate range of: <math>0.0001\text{ml}</math> to <math>10.0\text{ ml}</math></li> <li>➤ Max. Operating Pressure up to <math>8000\text{ psi}</math> or better</li> <li>➤ Flow rate accuracy: <math>\pm 1\%</math></li> <li>➤ Flow Rate Precision: <math>0.1\%</math> RSD or better</li> <li>➤ Should have built in self-diagnostic and auto Purge function</li> <li>➤ Automatic plunger rinsing kit</li> <li>➤ Should have upgradeability for low pressure gradient Quaternary pump</li> </ul> <p>Dynamic gradient mixer</p> <ul style="list-style-type: none"> <li>➤ Dynamic Mixing for analytical, semi-micro &amp; semi-prep modes.</li> <li>➤ Mixing volume Should be user selectable in 3 steps</li> </ul> <p>Dual wavelength UV-vis detector</p> <ul style="list-style-type: none"> <li>➤ Wavelength range: <math>190\text{-}700\text{ nm}</math> or better</li> <li>➤ Accuracy : <math>1\text{ nm}</math> or better</li> <li>➤ Wavelength precision <math>0.1\text{ nm}</math></li> </ul>



S.NO.	Instruments/ Equipment	Specification
		<ul style="list-style-type: none"> <li>➤ Drift Less than <math>1 \times 10^{-4}</math> AU/Hour or better</li> <li>➤ Noise levels : <math>0.5 \times 10^{-5}</math> AU or better</li> <li>➤ Linearity of 2.5 AU (ASTM method) or better</li> <li>➤ Flow cell must be temperature controlled up to 50° C or better</li> </ul> <p>Manual Injector with automatic start and mounting kit with loops of 20µl and Syringes of 25µl. C18 Analytical Column of 250mm*4.6mm* 5u -1 No Software</p> <ul style="list-style-type: none"> <li>➤ Windows based 32 BIT software for complete control, acquisition, data processing, software should be 21 CFR parts 11 with GLP &amp; GMP compliance.</li> </ul>
5	<b>Inductively Coupled Plasma Spectrometer (ICPS)</b>	<p><b>Wavelength Range</b></p> <ul style="list-style-type: none"> <li>➤ 170 to 900 nm or better with resolution of 0.008 nm@200 nm.</li> </ul> <p>Polychromator State of art Echelle based high resolution optical system.</p> <p><b>Detector</b></p> <ul style="list-style-type: none"> <li>➤ Completely solid-state detector based on charge transfer/couple/injector</li> <li>➤ Programmable array device for simultaneous measurement with necessary cooling/heating system</li> </ul> <p><b>RF generator</b></p> <ul style="list-style-type: none"> <li>➤ Fully Solid-state generator. Operating frequency- 27MHz/40MHz, Adjustable power from 750 to 1300 watts or better with coupling efficiency of &gt;75%.</li> <li>➤ Auto ignition and operation, preferably computer control power for set point to compensate changing sample matrix/impedance. Internationally approved radio Frequency band certificate from competent authority.</li> <li>➤ Necessary cooling system and safety interlocks.</li> </ul> <p><b>Argon plasma and sample input</b></p> <p>Configuration;</p> <ul style="list-style-type: none"> <li>➤ Dual view configuration to select axial or radial view with automatic switchover possibility and auto alignment</li> </ul> <p>Torch;</p> <ul style="list-style-type: none"> <li>➤ Demountable/semi-demountable using quartz with suitable injector.</li> </ul> <p>Spray chamber Glass spray chamber;</p> <ul style="list-style-type: none"> <li>➤ Scott/Cyclonic type</li> </ul> <p>Nebulizer;</p> <ul style="list-style-type: none"> <li>➤ Cross Flow/Concentric of chemically resistant material</li> </ul> <p>Peristaltic Pump;</p> <ul style="list-style-type: none"> <li>➤ Four channels to deliver sample and reagent. Complete with necessary tubing for variable sample flow range in</li> </ul>

S.NO.	Instruments/ Equipment	Specification
		<p>steps</p> <p>Sample introduction assembly; Suitable for: Aqueous sample, high dissolved-solid sample and organic sample.</p> <p><b>Plasma and other Gas control; Computer</b> controlled plasma, Shear/Auxiliary and Nebulizer gas controlled with Built-in Mass Flow Controller minimum Four channels.</p> <p><b>Hydride Kit</b> Continuous Hydride Generation Assembly with External Gas Liquid Separator</p> <p><b>Minimum detection Limit; Cu-</b> 5 ppb or better, As- 1 ppb or better (with hydride generation),</p> <p>Data Station; Latest branded compatible data station with original Licensed Windows 7 loaded preferably from manufacturer with latest hardware (Processor, RAM, HDD, DVD writer etc.) with LCD/TFT display and latest B/W Laser Printer with automatic duplex printing facility</p> <p>Power Requirement; 230 Volt AC, 50 Hz Single phase</p> <p>Exhaust Hood; Compatible exhaust hood including ducting with complete installation and testing</p> <p><b>Auto Sampler;</b> for minimum 100 samples capacity with integrated pump and rinse station with sufficient number of sample/standard vials and accessories</p> <p>Consumables; Consumables for two years continuous operation UPS 10 KVA UPS with 1 hour power back up</p> <p>Other requirement for successful operation; Argon gas cylinder (4 nos) regulators (2 nos) along with gas distribution line. Gas changeover switch to connect minimum 2 cylinders with moisture trap.</p> <p><b>Multi-element Standard;</b> NIST traceable should include all elements possible to be analysed in the System.</p>
6	Scintillation counter	<ul style="list-style-type: none"> <li>➤ Simultaneous alpha beta sample counting</li> <li>➤ DETECTOR: ZnS(Ag) adhered to plastic scintillation material</li> <li>➤ TUBE: 5.1 cm (2 in.) diameter magnetically shielded photomultiplier</li> <li>➤ WINDOW: 0.4 mg/cm<sup>2</sup> aluminized Mylar</li> <li>➤ ACTIVE and OPEN AREA: 20.3 cm<sup>2</sup></li> <li>➤ EFFICIENCY(4π):alpha: 32% for 230Th; 39% for 238U;</li> </ul>

S.NO.	Instruments/ Equipment	Specification
		<p>37% for 239Pu /beta: 8% for 14C; 27% for 99Tc; 29% for 137Cs; 26% for 90Sr/90Y</p> <ul style="list-style-type: none"> <li>➤ CROSS TALK: alpha to beta: 10% or less/ beta to alpha: 1% or less</li> <li>➤ BACKGROUND: alpha: 3 cpm or less/beta gamma: typically 50 cpm or less (10 µR/hr field)</li> <li>➤ STATUS INDICATORS: Backlit indicators for daily QC check needed (QC)</li> <li>➤ Overload condition (OL)Counting in cpm or dpm mode (CPM/DPM)</li> <li>➤ SAMPLE HOLDER: brass housing with nickel plated brass sample tray capable of holding a 2.5 cm (1 in.) or 5.1 cm (2 in.) diameter sample up to 1.02 cm (0.4 in.) thick</li> <li>➤ SCALERS: two each six-digit LCD displays with backlights providing a range of 0–999999 counts</li> <li>➤ SCALER LINEARITY: reading within 2% of true value</li> <li>➤ COUNT TIMER SETTINGS: 0.1, 0.5, 1, 2, 5, 10, 60 minutes or the user-defined PC setting defined during setup using the RS-232 port. User-defined count time may be set from 0.1 to 546.1 minutes.</li> <li>➤ DATA-OUTPUT: 9-pin RS-232 port</li> <li>➤ POWER: 250 watts at 95–250 Vac, 50–60 Hz single phase; internal 12 Vdc, 1.2A/hr, trickle- charged battery will provides power up to eight hours</li> <li>➤ CONSTRUCTION: aluminium housing with grey powder coat paint and sub-surface printed front panel</li> </ul>
7	<b>Mercury Analyser</b>	<ul style="list-style-type: none"> <li>➤ <b>Measuring principle:</b> UV-Absorption, <b>Wavelength:</b> 254 nm</li> <li>➤ <b>UV source:</b> Electrodeless low-pressure mercury lamp</li> <li>➤ <b>Stabilization method:</b> Double beam (reference beam) method</li> <li>➤ <b>Optical cell:</b> Fused silica</li> <li>➤ <b>Optical cell heating:</b> approx. 70°C</li> <li>➤ <b>Measuring range:</b> lowest range: 0...1 µg/L, highest range: 0...100 mg/l</li> <li>➤ <b>Response time (99% signal):</b> approx. 1 minute</li> <li>➤ <b>Carrier gas:</b> Air, approx. 30 L/h, 1 bar</li> <li>➤ <b>Pump for liquids:</b> Multichannel peristaltic pump</li> <li>➤ <b>Reduction reagent:</b> Tin-II-chloride or alternatively sodiumhydroborate</li> <li>➤ <b>Sample digestion:</b> HCl or H2SO4, KMnO4 or H2O2 or Fenton´s Reagent or Na-chlorate (depending on sample composition)</li> <li>➤ <b>Input device:</b> Waterproof membrane keypad</li> <li>➤ <b>Display of readings:</b> Graphical LC display with</li> </ul>

S.NO.	Instruments/ Equipment	Specification
		background illumination ➤ <b>Housing:</b> Fibreglass-reinforced polyester, for use in highly corrosive environment - Reagent storage cabinet made of chemically resistant plastic material ➤ <b>Protection class:</b> IP 66 ➤ <b>Power Supply:</b> 230 V / 50 Hz
8	<b>Total Organic Carbon Analyser</b>	➤ Measurement Range- 2ppb to 30,000 ppm Carbon. ➤ TC Method- Acid and persulphate reaction. ➤ TIC Method – Acidification with Phosphoric acid & sparging. ➤ TOC Method – NPOC by heated persulphate or TC – TIC ➤ Heating – Adjustable to 100°C in 1° C increment ➤ Reproducibility 1.5% or 2ppb whichever is greater. ➤ Limit of detection less than 2 ppb ➤ CE touch screen user interface, direct network connectivity ➤ Rotary and X/Y Auto samplers ➤ Advanced software features and IQ/OQ/PQ documentation ➤ Operation Mode – Windows CE (Standalone).
9	<b>Stereoscopic Microscope</b>	➤ Viewing Head Binocular head, inclined at 45°, rotatable 360°, Interpupillary Distance 54-76mm ➤ Eyepiece 10×/Φ23mm high point, diopter adjustable ➤ Objective Zoom objective 0.66×□5× ➤ Zoom Ratio 1:7.6 ➤ Zoom Mode Axis zoom ➤ Magnification 6.6×□50× ➤ Working distance 110mm ➤ Illumination LED Reflecting illumination 3W LED Transmitting illumination 3W
10	<b>Flame Photometer</b>	➤ Micro-controller based automation for ease of operation ➤ Determination up to four elements with single aspiration (Na, K, Li, and Ca) ➤ Minimum Detective Limit; Na: 0.2 ppm, K: 0.1 ppm, Li: 0.1 ppm, Ca: 3 ppm ➤ Averaging: 2 to 15 seconds, selectable ➤ Aspiration Time: (5 Sec + Avg. Time) per element + 4 Sec. ➤ Curve Fitting Correction for non-linear emission characteristics of element, maximum five-point calibration ➤ Storing facility for Set-ups and results (date wise & batch wise, maximum 700 results); the same can be recalled whenever need arise ➤ Four Line 20-character LCD readout

S.NO.	Instruments/ Equipment	Specification
		<ul style="list-style-type: none"> <li>➤ Facility for re-standardization with single standard</li> <li>➤ Printout facility for individual sample, batch sample, total day's samples, or entire results in the memory (700 max.)</li> <li>➤ Air compressor with built-in air regulator and air filter PC Link software for transferring data to computer and manipulation of data in computer</li> </ul>
11	<b>Spectrophotometer (Visible and Ultraviolet)</b>	<ul style="list-style-type: none"> <li>➤ Scanning Speed 900 nm/min (in 1 nm steps)</li> <li>➤ Operating Mode Transmittance (%), absorbance and concentration (wavelength, time)</li> <li>➤ Source Lamp Tungsten (visible range), deuterium (UV range)</li> <li>➤ Wavelength Range 190 - 1100 nm with Wavelength Accuracy <math>\pm 1</math> nm,</li> <li>➤ Wavelength Reproducibility <math>&lt; 0.1</math> nm, Wavelength Resolution 0.1 nm</li> <li>➤ Wavelength Selection Automatic, based on method selection</li> <li>➤ Spectral Bandwidth 2 nm, Photometric Measuring Range <math>\pm 3</math> Abs, Photometric Accuracy <math>&lt; 1\%</math>, Photometric Linearity 0.5%</li> <li>➤ Stray Light KI-solution at 220 nm <math>&lt; 3.3</math> Abs/<math>&lt; 0.05\%</math></li> <li>➤ Display TFT 7 inch WVGA color touch</li> <li>➤ Sample Cell Compatibility; Rectangular: 10, 20, 30, 50 mm, 1 inch; round: 13 mm, 16 mm, 1 inch</li> <li>➤ Operating Conditions 10 to 40°C, max. 80% relative humidity (non-condensing)</li> <li>➤ Storage Conditions -25 to 60°C max.</li> </ul>
12	<b>Nephelometer</b>	<ul style="list-style-type: none"> <li>➤ <b>Units: NTU, FNU, FAU, EBC</b></li> <li>➤ Self-Diagnostic with message codes</li> <li>➤ Mode; Nephelometric</li> <li>➤ Turbidity Range; <b>0.001 – 1000 NTU</b></li> <li>➤ Accuracy; 0.001 between 10.000 to 99.999 NTU, 0.01 between 100.00 to 999.99 NTU,</li> <li>➤ Resolution; <math>\pm 2\%</math></li> <li>➤ Repeatability; <math>\pm 1\%</math></li> <li>➤ Calibration Options; Up to 4 points</li> <li>➤ Response Time; <math>&lt; 6</math> seconds</li> </ul>
13	<b>Monopan Digital Balance, Chemical</b>	<ul style="list-style-type: none"> <li>➤ Built-in, motorized calibration weight to ensure the highest accuracy at the press of a key</li> <li>➤ Readability; 0.1 mg, Capacity; 110 g, Tare range; 110 g, Reproducibility, 0.1 mg, Linearity; 0.2 mg, Measure time; 2 sec., Pan size; 80 mm</li> </ul>
14	<b>Conductivity Meter</b>	<ul style="list-style-type: none"> <li>➤ Automatic and manual temperature compensation with linear temperature function and non-linear function for ultrapure water and natural waters.</li> </ul>

S.NO.	Instruments/ Equipment	Specification										
		<ul style="list-style-type: none"> <li>➤ Tough shock resistant conductivity cell within built temperature probe with cell constant fixed; and freely adjustable between 0.25...2.50/cm</li> <li>➤ Measuring Range <table border="1" data-bbox="687 443 1401 645" style="margin-left: 20px;"> <tr> <td>Conductivity:</td> <td>0.01 <math>\mu</math>S/cm..... 500 mS / cm</td> </tr> <tr> <td>TDS:</td> <td>0.....1999mg/l</td> </tr> <tr> <td>Salinity:</td> <td>0.0..... 70.0 ppt</td> </tr> <tr> <td>Temperature:</td> <td>- 5.0 ..... + 105 °C</td> </tr> <tr> <td>Resistivity:</td> <td>0.000 to 1999 M<math>\Omega</math>cm</td> </tr> </table> </li> <li>➤ Accuracy 0.5% of Measured value</li> <li>➤ Reference temperature 20°C, 25°C selectable</li> <li>➤ Temperature Compensation Automatically</li> <li>➤ Auto reading drift control with automatic buffer recognition</li> </ul>	Conductivity:	0.01 $\mu$ S/cm..... 500 mS / cm	TDS:	0.....1999mg/l	Salinity:	0.0..... 70.0 ppt	Temperature:	- 5.0 ..... + 105 °C	Resistivity:	0.000 to 1999 M $\Omega$ cm
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Temperature:	- 5.0 ..... + 105 °C											
Resistivity:	0.000 to 1999 M $\Omega$ cm											
15	<b>pH Meter</b>	<ul style="list-style-type: none"> <li>➤ Measuring Range pH: - 2.000 to + 19.999, mV: <math>\pm</math> 1200,0 , <math>\pm</math> 2000 Temperature: - 5.0 to + 105 °C</li> <li>➤ Accuracy <math>\pm</math> 0.005 pH,</li> <li>➤ Temperature Compensation Automatically, manually</li> <li>➤ Auto reading ,drift control with automatic buffer recognition</li> <li>➤ Calibration AutoCal 1, 2 or 3-point calibration with DIN buffers</li> <li>➤ Electrode : Epoxy pH combination electrode with gel electrolyte, integrated temperature sensor waterproof DIN plug and banana plug, 3.3 ft (1 m) cable</li> <li>➤ Display 7 Segment LCD</li> </ul>										
16	<b>Jar Test Apparatus</b>	<ul style="list-style-type: none"> <li>➤ Bench top; Dimensions; (" W) 10.25 (" H) 13.5 (" L) 25.25</li> <li>➤ The single motor drives all positions at a constant stirring speed.</li> <li>➤ Stirring rod shafts can individually be stopped and height can be adjusted while the system is operating. With a digital display that shows stirring speed and time.</li> <li>➤ Stirring speed is programmable from 10 to 300 rpm, and time from 1 to 999 minutes or 0 to 99 hours.</li> <li>➤ Featuring an illuminated back panel for enhanced visibility.</li> <li>➤ Laboratory units require standard 2-L beakers</li> </ul>										
17	<b>Specific Ion Meter</b>	<ul style="list-style-type: none"> <li>➤ Absolute/relative mV modes for incremental techniques</li> <li>➤ Automatic buffer recognition (anion or cation ISE electrodes)</li> </ul>										

S.NO.	Instruments/ Equipment	Specification
		<ul style="list-style-type: none"> <li>➤ auto calibration at five values</li> <li>➤ Direct readout of concentration, LCD Display</li> <li>➤ Selectable pH/ISE resolution</li> <li>➤ Adjustable isopotential point</li> <li>➤ Automatic temperature compensation using ATC probe</li> <li>➤ Built-in data logger holds up to 25 readings.</li> <li>➤ Dust-, splash-, and chemical-resistant housing and sealed membrane keypads ensure long meter life.</li> </ul>
<b>18</b>	<b>Microscope</b>	<ul style="list-style-type: none"> <li>➤ Ergonomic design microscope body</li> <li>➤ Lenses &amp; all transmission tubes must be antifungal</li> <li>➤ Optics must be imported.</li> <li>➤ Wide field, planner/semi planner optics ( preferably planner)</li> <li>➤ Achromatic lenses.</li> <li>➤ Objectives 2x , 10 x, 40x, 60x, 100 x.</li> <li>➤ Eye pieces 10-15 x</li> <li>➤ Light illumination: uniform illumination through- out the field.</li> <li>➤ Focus &amp; stage mechanics must be co-axial. Refocusing stopper should be incorporated.</li> <li>➤ Coaxial X and Y motion control on right hand side with capacity to hold two slide glass at a time.</li> <li>➤ Photo switch-built in auto photo present switch</li> <li>➤ It should have built in filters.</li> <li>➤ Should have pointer with two colors.</li> <li>➤ Able to work at reasonable voltage range.</li> <li>➤ Must have provision for phase contrast.</li> <li>➤ Spares will be available for next 10 years.</li> </ul>
<b>19</b>	<b>PCR</b>	<ul style="list-style-type: none"> <li>➤ The system should be automated for both real-time PCR and post-PCR (end point) analysis using in-built Peltier based PCR machine.</li> <li>➤ System should support applications including absolute quantitation, simultaneous analysis data for relative quantitation of Unlimited plates of 96 wells each, (4-6 color multiplexing), allelic discrimination (SNP), dissociation curve analysis as well as pathogen detection and plus/minus assay using internal positive control.</li> <li>➤ Instrument should have 96-well sample block of 0.1ml capacity, able to run fast and</li> <li>➤ Standard run on the same block. It can also have 6 separate Peltier-controlled blocks with a fixed gradient with a 25 degree range.</li> <li>➤ System should complete Fast 40 cycle protocol in less than 40 minutes and standard protocol in less than 2 hours.</li> <li>➤ Sample Ramp Rate: fast Mode: <math>\pm 3.5^{\circ}\text{C}/\text{sec}</math></li> </ul>

S.NO.	Instruments/ Equipment	Specification
		<ul style="list-style-type: none"> <li>➤ Standard Mode: <math>\pm 1.6^{\circ}\text{C}/\text{sec}</math></li> <li>➤ 9600 Emulation Mode: <math>+0.8</math> and <math>-1.6^{\circ}\text{C}/\text{sec}</math> <math>^{\circ}\text{C}/\text{sec}</math></li> <li>➤ Pear Block Ramp Rate: <math>5.5^{\circ}\text{C}/\text{sec}</math></li> <li>➤ Temperature range: <math>4^{\circ}\text{C}</math>- <math>100^{\circ}\text{C}</math></li> <li>➤ Temperature Accuracy: <math>\pm 0.2</math></li> <li>➤ Temperature Uniformity: <math>\pm 0.50^{\circ}\text{C}</math>, 30 seconds after clock start</li> <li>➤ Excitation source should be single blue LED light source or Tungsten Halogen or high intensity Xenon lamp and emission detection by photodiodes or cooled CCD camera.</li> <li>➤ There should be enough excitation and emission filters to cover majority of dyes.</li> <li>➤ System should be flexible to support 96 well plates, individual tubes and 8 strip tubes.</li> <li>➤ System software should provide simultaneous analysis data for relative quantitation of Unlimited plates of 96 wells each.</li> <li>➤ All assays should run using Universal Thermal Cycling conditions to eliminate optimization of PCR conditions.</li> <li>➤ Dedicated licensed full version software for primer and probe design with comprehensive assay design and development guidelines for quantitative and qualitative real-time assays, should be provided to enable designing of custom oligo assays.</li> <li>➤ The instrument may have display with an LCD touchscreen that is a 6.5inch, full VGA (640 x 480). 21. Analysis work station should be of latest branded Pentium IV with licenced windows XP, operating system and colored laser printer.</li> <li>➤ The instrument should be UL approved and manufactured according to ISO 9001 standards.</li> <li>➤ Suitable on - line UPS (about 2 KVA) is required to support the instrument.</li> <li>➤ UV PCR Cabinet to Control potential PCR contamination with the built-in UV for inactivation of DNA between experiments</li> </ul>
20	Laminar flow	<ul style="list-style-type: none"> <li>➤ Type; Class II, Type A2</li> <li>➤ Electrical requirement; 230 V,50/60 Hz</li> <li>➤ Main body should be made of stainless steel [(304 grade)- Heavy gauge- 16 G]</li> <li>➤ Table top and working zone should be made of stainless steel [(304 grade)- - 14 G &amp;16 G] Table top should be in two parts: Front perforated portion 4” in size ,Non perforated working zone: Table sunken type (trough type)</li> </ul>



S.NO.	Instruments/ Equipment	Specification
		<p>for spillage management that can be lifted easily for cleaning below the table.</p> <ul style="list-style-type: none"> <li>➤ Work Area should be approximately 900 or 1200 x 600 x 600 mm (3 – 4 feet) in size with shutter opening of 489 mm</li> <li>➤ Overall Size of the cabinet should be approximately 1000 or 1300 x 825 x 2450 mm.</li> <li>➤ Air Flow should be vertical down flow with 100% exhaust.</li> <li>➤ Cleanliness level should be less than 3.5 particles/ litre of 0.5 µm and larger (ISO 14644-1).</li> <li>➤ Noise Level should be less than 65 db.</li> <li>➤ Vibration level: Less than 2.3 µm.</li> <li>➤ Average air flow should be 90±20 fpm (down flow).</li> <li>➤ HEPA filters should be of 99.99% efficiency for 0.3 micron with integral metal guards</li> <li>➤ Air pressurization system should be statically and dynamically balanced,</li> <li>➤ Front door should be made of polycarbonate/ toughened glass (6 mm), adjustable as per lab requirement, vertical sliding (one piece with counter weight arrangement for finger tip control).</li> <li>➤ Side walls should be made of stainless steel [(304 grade) - Heavy gauge- 14 G].</li> <li>➤ Should have Fluorescent light with low energy choke less to withstand larger fluctuations in voltage, should be placed outside working zone to avoid turbulence.</li> <li>➤ Should have support stand with levelling screws adjustable from 55-85 mm.</li> <li>➤ UV lamp should be in working zone (40 micro watts/ square cm at 254 nm or better) and placed so that the operator cannot see directly i.e. eyes should be always protected.</li> </ul>
21	<b>Ultrapure water</b>	<ul style="list-style-type: none"> <li>➤ Capable of dispensing Water at Instant Flow Rate Above 0.5 L/min an on demand directly from potable tap water</li> <li>➤ It should have dual purification cartridge packs that incorporate high quality organic absorbents, ion exchange resins, and membrane processes to purify the water in order to meet ASTM Type 1(18.2 Ω·cm resistivity at 25 °C), ISO 3696, and USP27 specifications.</li> <li>➤ Water quality parameters (resistivity or conductivity, temperature) should be clearly indicated on a bright color display.</li> <li>➤ Real time TOC should be displayed</li> <li>➤ In regular operating conditions Water within the unit</li> </ul>

S.NO.	Instruments/ Equipment	Specification
		<p>should be recalculated through the purification system to maintain purity an intermittent recirculation can be used overnight in 'sleep mode'</p> <ul style="list-style-type: none"> <li>➤ Unit calibrates electronic circuitry upon set up. Cartridges should be electronically tagged prevent incorrect cartridge fitting and potential leaks.</li> <li>➤ Can Produce Type 2 water for basic lab applications at a flow rate of 2.0 L/hr.</li> <li>➤ Lower Maintenance cost.</li> <li>➤ Alarm warning in case of a sudden drop in the quality of the product water control monitor should display cartridge recommended change out date.</li> <li>➤ Manufactured in ISO 9001 and ISO 14001 certified environments. Compact design for bench top, under bench, or wall mounting setting</li> </ul>
22	<b>Microwave Oven</b>	<p>Microwave Digestion System</p> <ul style="list-style-type: none"> <li>➤ Power supply: 240 V/50Hz, Installation power: 1600 watt ,</li> <li>➤ Magnetron Frequency: ≈ 2450 MHz,</li> <li>➤ Weight: ≈ 50-55 kg (without vessels) ,External Dimension: ≈ 63 (D) x 51 (W) x 60 (H) cm</li> <li>➤ Maximum control for the digestion of high-temperature or high-pressure samples</li> <li>➤ Vacuum fluorescent display with graphics and alpha/numeric capabilities</li> <li>➤ Heavy-duty, multi-layer Fluoropolymer coated cavity (appx. 1.5-1.7 cubic feet) and corrosion resistant exhaust system</li> <li>➤ Solid steel door construction with quadruple safety door latch</li> <li>➤ Cavity inlet/outlet ports, printer port, computer port</li> <li>➤ Internal RAM backup for 100 multi set samples preparation procedures</li> <li>➤ Pre-programmed EPA methods</li> <li>➤ Halogen cavity lamp and detachable power cord</li> <li>➤ Temperature Control Sensor</li> <li>➤ Internal fibre optic temperature control.</li> <li>➤ Maximum operating temperature is 330 °C</li> <li>➤ Pressure Control includes 1 Electronic Sensor Plus (ESP Plus)</li> <li>➤ Vessel Starter Set; This accessory set contains Complete High Pressure Vessel Assemblies,</li> <li>➤ 1 High Pressure Control Vessel, 1 Turntable, 1 Retaining Ring, 1 Membrane Insertion Tool, 1 Membrane Removal Tool and 1 Box Rupture Membranes</li> </ul>
23	<b>Kjeldahl Nitrogen</b>	<ul style="list-style-type: none"> <li>➤ Kjeldahl Dry Block Digester Designed for high</li> </ul>

S.NO.	Instruments/ Equipment	Specification
	<b>Analyser</b>	<p>temperature multi-function dry bath heating precise temperature control from ambient to 450°C with <math>\pm 1^\circ\text{C}</math> accuracy.</p> <ul style="list-style-type: none"> <li>➤ Fitted with Microprocessor Based Digital Temperature Indicator cum Controller for auto control with respect to time and temperature</li> <li>➤ Over temperature protector works as a safety device.</li> <li>➤ Uniform and stable heating</li> <li>➤ Temp. Controller Microprocessor Based Digital Temperature Indicator cum Controller display LED with set value (SV) and Process value (PV)</li> <li>➤ Tube Cavity Size 25 mm - 60 mm (D), No. of Cavities greater than 10 holes,. Sample Size 25-100 ml. ml</li> <li>➤ Sensor: Thermocouple</li> <li>➤ Material (External) Powder Coated CRC Steel</li> <li>➤ Buzzer ----- Alarm for cycle end</li> <li>➤ Power Supply 230V AC, 50/60Hz</li> </ul>
24	<b>Arsine generator</b>	<ul style="list-style-type: none"> <li>➤ Designed for arsenic determination by the silver diethyldithiocarbamate photometric method</li> <li>➤ Meets A.P.H.A. Standard 104A, ACS/USP and EPA specifications.</li> <li>➤ The 125mL flask has a 24/40 inner Standard Taper joint and ball and socket joint between the absorber and scrubber is a 12/2 Spherical Joint</li> </ul>
25	<b>Muffle Furnace</b>	<ul style="list-style-type: none"> <li>➤ Housing made of heavy gauge MS duly finished in epoxy power coated shade. High grade silica boards &amp; layers of ceramic insulation provided to minimize the heat loss. The temperature controlled by microprocessor based auto tuning temp. Controller having dual indication of set and process temperature.</li> <li>➤ Wattage: 4000 W</li> <li>➤ Temperature: 1250°C</li> </ul>
26	<b>Magnetic Stirrer</b>	<ul style="list-style-type: none"> <li>➤ Digital Display</li> <li>➤ Speed, max. 1,400 rpm</li> <li>➤ Speed accuracy <math>\pm 2</math></li> <li>➤ Temperature control –microprocessor</li> <li>➤ Plate diameter- 145 mm</li> <li>➤ Dimension l x w x h (mm)- 173 x 277 x 94</li> <li>➤ Supply voltage- 230 V/ 50 Hz</li> </ul>
27	<b>Oven</b>	<ul style="list-style-type: none"> <li>➤ Double wall design, Outer cabinet and Inner chamber stainless steel 304 grade, Digital Temperature Indication and Control,</li> <li>➤ Silicon door gasket, Temperature range: Ambient +5 °C to 250 °C;</li> </ul>

S.NO.	Instruments/ Equipment	Specification
		<ul style="list-style-type: none"> <li>➤ Temperature control accuracy <math>\pm 1</math> °C of set point, 3½ digital LED display,</li> <li>➤ Stainless steel wire mesh shelves, no of shelves 3;</li> <li>➤ Motorized blower for air circulation.</li> </ul>
28	<b>Autoclave</b>	<ul style="list-style-type: none"> <li>➤ Chamber Size: 500 mm (W) x500 mm (L) x 950mm (H)</li> <li>➤ Electrical Power: 220V 50 HZ AC supply</li> <li>➤ Working pressure and Temperature: 1.2 to 2.2 Kg/sq.cm at 121 Deg C:</li> <li>➤ Material of Construction Inner chamber, Jacket, Door: SS 316.(5mm-10mm),Outer Chamber: SS 304 (Insulated properly)</li> <li>➤ Steam Generator: Non corrosive SS / Chromium plated Brass</li> <li>➤ Heater Plate: Brass / Stainless Steel</li> <li>➤ Pipe Line: Complete with SS</li> <li>➤ Stand: Stainless Steel / High quality non corrosive steel</li> <li>➤ Instrumentation: Temperature, Pressure and Vacuum gauges: Steam traps, vacuum driers, water level indicator on steam generator</li> <li>➤ Safety devices: Pressure switch and safety valve, self-locking of door when chamber is under pressure, Vacuum breaker for jacket, Steam generator with gauge glass valves and Low water protection with audio visual indicator.</li> <li>➤ The equipment should have ISI mark on quality.</li> </ul>
29	<b>Incubators 37°C and 44°C</b>	<ul style="list-style-type: none"> <li>➤ Temperature range: Ambient +5.0°C to 60.0°C</li> <li>➤ Temperature control accuracy <math>\pm 0.5</math>°C of set point</li> <li>➤ Temperature uniformity <math>\pm 0.5</math>°C</li> <li>➤ Control type: Time proportionate digital / Microprocessor PID, Auto tune</li> <li>➤ Temperature display: 3½ digit LED</li> <li>➤ With motorized fan blower for air circulation</li> <li>➤ Inner full length acrylic door</li> <li>➤ Input voltage: 230Volts AC, 50 Hz.</li> <li>➤ Outer cabinet SS 304 grade dull matt finish</li> <li>➤ Inner chamber stainless steel mirror finish</li> </ul>
30	<b>Centrifuge (adjustable rpm)</b>	<ul style="list-style-type: none"> <li>➤ Stable speed output even under unstable voltage condition, low sample temp., brushless induction motor with frequency drive, microprocessor controller with digital display, smooth &amp; soft start inverter fault detection with auto shut down;</li> <li>➤ 7 segment LED display of speed;</li> <li>➤ Digital countdown timer &amp; continuous run;</li> </ul>

S.NO.	Instruments/ Equipment	Specification
		<ul style="list-style-type: none"> <li>➤ Dynamic brake for quick deceleration; last set parameters recall ; Automatic door opening; Satin less steel centrifuge chamber, easy to clean; Imbalance detection &amp; centrifugation stop with display; Motor overload protection; Gas hinge to prevent door falling; Emergency lid lock release</li> <li>➤ With Rotor 6x50 ml angle head with P.P tube.</li> <li>➤ Maximum Speed: 6000 rpm</li> <li>➤ Max. RCF: 5070 g</li> <li>➤ Max. Capacity: 400 ml</li> <li>➤ Digital Timer Range: 0.59 min</li> <li>➤ Size(WxDxH): (380x460x305) Mm</li> </ul>
31	<b>Colour Comparator and comparator test set for residual Cl<sub>2</sub></b>	-
32	<b>Colony Counter</b>	<ul style="list-style-type: none"> <li>➤ Up to 99 values with a total of max. 32,500 colonies may be evaluated.</li> <li>➤ Marker pen can be used for counting</li> <li>➤ Inclination of the instrument's working surface is optimized for the operator, so that the Petri dish is positioned as horizontally as possible without forcing the user to bend over the instrument</li> <li>➤ Adjustment of the lighting angle, -movable and inclinable, for optimum additional illumination of the colonies.</li> <li>➤ USB interface, which may transfer the counting result directly</li> <li>➤ Dimensions (w x h x d): 260 x 130 x 250 mm</li> <li>➤ Height with gooseneck magnifying glass/top light lamp approx. 300 mm</li> <li>➤ Magnification: 3x or 8x</li> <li>➤ LED-Display: 4-digit (0-9999)</li> <li>➤ Size of Petri dish (Ø) 50-60, 90-100 mm</li> <li>➤ Reset/down counts/correction of counting mistakes: yes</li> <li>➤ Light intensity: LED-lighting technology (dimmable)</li> <li>➤ Count signal (buzzer): yes (adjustable)</li> <li>➤ Weight: 1.5 kg</li> <li>➤ Wall power supply: 100-240 V / 50-60 Hz</li> </ul>
33	<b>Vacuum Pump</b>	<ul style="list-style-type: none"> <li>➤ Two stage diaphragm pump made of chemical resistance material</li> <li>➤ Suction Capacity in m<sup>3</sup> / hour: 2 or more Ultimate Vacuum in mbar: 7 or less</li> <li>➤ Power Input in Watt: 180 Supply Voltage (V / Hz):230 /50</li> </ul>

S.NO.	Instruments/ Equipment	Specification
34	<b>Heating Mantle and Hot Plates</b>	<ul style="list-style-type: none"> <li>➤ Adjustable temperature and stir speed settings.</li> <li>➤ The temperature display is adjustable in increments of 5° C and indicates when set temperature is reached.</li> <li>➤ Safety features include POWER and HOT TOP icons, overheating protection, top-quality insulation, and an external spill trough to protect electronics and control knobs</li> <li>➤ Material; epoxy painted aluminium</li> <li>➤ Heating plate; aluminium alloy coated with special protection</li> <li>➤ Heating plate diameter; 180 mm</li> <li>➤ Protection rating; IP 42</li> <li>➤ Power; 1300 W</li> <li>➤ Power supply; 230 V / 50-60 Hz</li> </ul>
35	<b>Specific Ion electrodes (F-, Cyanide and others)</b>	-
36	<b>Fume Cupboard</b>	<ul style="list-style-type: none"> <li>➤ fume hoods (both superstructure and under structure cabinets) including worktops based on the specified Make List based on ASHRAE 110 (American Society of Heating, Refrigeration and Air Conditioning Engineers) - American Standards for Laboratory fume hood testing and European Standards for fume hood testing</li> <li>➤ Fittings attached to the fume hood superstructure shall be mounted on the front fascia</li> <li>➤ Superstructure Frame – Five feet free-standing rigid panel structure of steel (G.I). MS electro galvanised &amp; Powder coated outer casing.</li> <li>➤ Liner: Phenol Based Industrial Laminate, 6mm Thick. Vertical Type Sash with heat resistant toughened glass and Vitrified ceramic worktop with Oval Shaped 100x200mm PP cupsink. Remotely operated color coded three services (PW, Nit, Vac) with SS braided flexible hose &amp; brass fittings. A soft touch button panel with main switch, switch for blower &amp; tube light/CFL &amp; spare switch is provided. LED indicators to show the ON &amp; OFF positions of switches are provided</li> <li>➤ Interior Walls - Double wall ends, not more than 6” wide, shall be provided to maximize interior working area. The area between the double wall ends shall be closed to house the remote control valves. Cut outs to be provide inside the fume hood for service line accessibility.</li> <li>➤ Airfoil - A streamlined airfoil shall be integral at the Page 9 of 17 bottom of the hood opening on bench and distillation hoods. This foil shall provide a nominal 20mm</li> </ul>

S.NO.	Instruments/ Equipment	Specification
		<p>open space between the foil and the top front edge of the work surface to direct an air stream across the work surface to prevent back flow of air. The sash to be provided with a separate handle which also provides for air flow when in completely closed position. The foil shall be of 1.2mm steel to resist denting and flexing</p> <ul style="list-style-type: none"> <li>➤ Baffle - A stable, non-adjustable baffle with a single slot on the back baffle to aid in distributing the flow of air into and through the hood. The baffle shall be spaced out from the back liner and shall be removable for cleaning</li> <li>➤ Duct Collar - A 8"-10" diameter polyethylene funnel shaped rectangular duct collar shall be located in the top of the hood plenum chamber</li> <li>➤ Digital Panel- Fume hoods shall be provided with an audible alarm system &amp; shall have a mute provision shall have a digital display of the air velocity through the hood face in feet per minute.</li> <li>➤ Lattice Rod Assemblies – 12 mm dia solid SS IS 304 grade rods shall be clamped with the PP clamps to form a lattice arrangement to hold the test samples and rotors within the fume hood</li> <li>➤ Centrifugal Blower – Silent high efficiency PP + FRP lined remote blower consisting of continuous rating motor and chemical resistant impeller. The blower is designed to give a face velocity at safe working height as per the international safe velocity norms.(ANSI/AIHA Z9.5). The blower body is polypropylene UV treated high density and chemical (corrosion) resistant and is mounted on a metallic stand. Centrifugal Blower</li> <li>➤ Ducting – Rigid Ducting of PP (Polypropylene) + FRP (Fibre Reinforced Polyester) and flexible ducting with flanges, bends, damper transitions, clamps etc. Flexible joint is provided in the ducting in order to avoid transmitting the blower vibrations to the hood. A weather proof rain cowl is provided at the outlet of blower.</li> <li>➤ EXHAUST BLOWER: The exhaust fans supplied and installed shall be of Centrifugal Corrosion Resistant' type and shall be capable of delivering the design flow rate against all duct losses.</li> <li>➤ The fans shall be robust in construction and suitable for continuous duty operation. It shall be mounted with ease of maintenance and shall be installed with proper vibration isolators to minimize vibration transmission to ductwork and support structure. Fans selected shall be silent and vibration free when running and suitable for outdoor use.</li> </ul>

S.NO.	Instruments/ Equipment	Specification
		<ul style="list-style-type: none"> <li>➤ Motors – Direct drive, asynchronous, single or three phases, IP55. Single speed: three phase 230/400 V-50/60 Hz. Motor is outside the airstream.</li> <li>➤ Temperature Resistance – PPH casing and wheel recommended upto 80 degree celcius.</li> <li>➤ Performance – Fan performance based on tests conducted in accordance with AMCA 210-85 and ISO 5801</li> </ul>
37	<b>Water Bath with 12 Concentric Holes and Discs</b>	<ul style="list-style-type: none"> <li>➤ Should have a double walled construction.</li> <li>➤ The inner chamber and top lid should be made of stainless steel.</li> <li>➤ The space between the two walls should be packed with thick glass wool.</li> <li>➤ Should provide with a microprocessor based variable digital temperature controller with digital display.</li> <li>➤ Working temperature should be from ambient to 80°C having an accuracy of +/- 1°C</li> <li>➤ Should have an approximate inner chamber dimension of 450mm x 300mm x 175mm.</li> </ul>
38	<b>Desiccators</b>	<ul style="list-style-type: none"> <li>➤ Does not need oil during seal but high quality silicon rubber sealing ring.</li> <li>➤ Strong resistance to damage, good diaphaneity, light weight, make models with high quality polycarbonate.</li> <li>➤ Glass vacuum- long maintenance time, the plastic vacuum dryer can keep 30 days after vacuum, and the vacuum degree will be lower at less 3%.</li> </ul>
39	<b>Soxhlet Extraction Unit</b>	<ul style="list-style-type: none"> <li>➤ Borosilicate glass and complete with extractor, condenser, and flask. With screw thread connections</li> </ul>
40	<b>BOD Incubator</b>	<ul style="list-style-type: none"> <li>➤ Internal Size cms. : 55 X 85 X 55 (LxWxH)</li> <li>➤ Shelves: 2</li> <li>➤ Temperature Range: + 5 degree C to 70 degree C</li> <li>➤ Controller Accuracy: +/-0.5 degree C of set value for Temp.</li> <li>➤ Uniformity : +/-1 degree throughout chamber</li> <li>➤ Air Heater Element: Special Type S.S.Tubular Air Heaters with fins.</li> <li>➤ Heat up Time: 30 min. up to 60 degree C without load.</li> <li>➤ Cool Down time: 40 min. upto + 5 degree C without load</li> <li>➤ Cooler: Plate Fin Cooler</li> <li>➤ Compressor: EMMERSON Hermetically Sealed Brand</li> <li>➤ Controller: Digital Display Electronic Controller.</li> <li>➤ Sensor: Pt-100</li> <li>➤ Internal Chamber: Stainless Steel 304 grade.</li> <li>➤ External : Mild Steel Powder Coated</li> <li>➤ Inner Acrylic Door: Inner Full Size See through Acrylic 8 mm thick.</li> </ul>



S.NO.	Instruments/ Equipment	Specification
		<ul style="list-style-type: none"> <li>➤ Air Circulation: Motorized Blower from back and forced air circulation for temperature homogeneity.</li> <li>➤ Safety Device: Adjustable hydraulic over-temperature limiter protector.</li> <li>➤ PID Control: Microprocessor based PID Controller.</li> <li>➤ Computer Interface: RS 485 / RS232 interface for multiple &amp; single communication port.</li> <li>➤ Cyclic Timer: 0 to 24 hrs X 7 days cyclic ON / OFF timer for illuminating port.</li> <li>➤ Should have self-supported transparent doors inside and magnetic gasket outer doors.</li> <li>➤ Should have PUF Insulation.</li> <li>➤ Should have door operated illumination lamp to work on 220/230 VAC.</li> <li>➤ Should have Circular chart recorder for recording test conditions.</li> <li>➤ with Stabilizer of sufficient capacity.</li> </ul>
41	<b>COD reactor</b>	<ul style="list-style-type: none"> <li>➤ Digests up to minimum 15 samples simultaneously.</li> <li>➤ Temperature set between up to 165°C, and time between 1-minute to 8 hours.</li> <li>➤ Built-in timer features audible alarm and automatic shut-off to prevent overheating.</li> </ul>
42	<b>Sieve Shaker with standard sieves</b>	<ul style="list-style-type: none"> <li>➤ Heavy duty, vertically mounted FOR 8 "dia test sieves</li> <li>➤ Sieve shaker should be durably constructed to run by ¼ H.P. Electric motor 220 Volts A.C through reduction gear. Vibration controlled by speed regulator</li> <li>➤ Designed to carry at least 6 full heights (2" deep) test sieves of 200 mm Dia (8") with one set lid &amp; pan.</li> <li>➤ Capable of reproducing circular and tapping/hammering motion, as given in hand sieving but with uniform mechanical action</li> <li>➤ Capable of reproducing Circular (revolution approx.: 280 to 320 R.P.M and tapping approx.: 140 R.P.M to 160 R.P.M. with 0-99 minutes mechanical/digital timer.</li> <li>➤ Test sieves size: set of 12 test sieves. (4000, 2800, 2000, 1400, 1000, 710, 500, 425, 250, 180, 125, 63, micron openings) (According to IS: 460 -1962) along with pan &amp; lid</li> <li>➤ Test Sieves: made out of rolled Bras/stainless steel, Spun Body Frame without joint. Folded bottom having beading at top, tight fitting with each other: Mounted with Stainless Steel cloth. Mesh should be flat, taut, &amp; uniform with permanent tension around the whole circumference</li> </ul>
43	<b>Rotary Shaker</b>	<ul style="list-style-type: none"> <li>➤ manufactured with heavy mild steel sections</li> <li>➤ brush less Induction drive motor having frequency drive</li> </ul>

S.NO.	Instruments/ Equipment	Specification
		<ul style="list-style-type: none"> <li>➤ Variable speed from 20 RPM to 300 RPM.</li> <li>➤ Digital display of speed with pre-setting facility.</li> <li>➤ Shaking amplitude 30 mm.</li> <li>➤ Universal Platform to accommodate interchangeable clamps of assorted sizes for different capacity of flasks.</li> <li>➤ Automatic restart at pre-set speed in case of power failure.</li> </ul>
<b>44</b>	<b>Double distillation unit</b>	-
<b>B</b>	<b>Miscellaneous</b>	
<b>45</b>	<b>Deep Freezer</b>	<ul style="list-style-type: none"> <li>➤ Temp. range-20°C (can be varied from 0°C to -26°C)</li> <li>➤ Microprocessor based Controller with RTD Sensor(PT-100)</li> <li>➤ Display Resolution-0.1°C</li> <li>➤ Control Accuracy-±3 °C</li> <li>➤ Insulation-High Density Polyurethane Insulation (PUF)</li> </ul>
<b>46</b>	<b>Refrigerator</b>	<ul style="list-style-type: none"> <li>➤ 310 to 330 ltrs</li> <li>➤ Double door</li> <li>➤ Capable of working on 220 volts + 12 % A.C 50 Hz</li> <li>➤ CFC free with all standard accessories</li> </ul>
<b>47</b>	<b>Fuel Gas cylinder or pipe gas supply</b>	➤ LPG
<b>48</b>	<b>Burners</b>	➤ Bunsen
<b>49</b>	<b>Fire Extinguisher</b>	-
<b>50</b>	<b>First aid Kit</b>	-
<b>51</b>	<b>Safety Equipment (Goggles, apron, gloves, gas mask)</b>	➤ ISO Standards
<b>52</b>	<b>UPS /Inverter</b>	-
<b>53</b>	<b>PC with printer</b>	➤ 500 GB HD,4 GB RAM ,Latest Windows operating System preloaded with MS Office <b>with graphics 2GB</b>
<b>54</b>	<b>Telephone</b>	-
<b>55</b>	<b>Internet</b>	-
<b>56</b>	<b>Air conditioner</b>	-
<b>57</b>	<b>Ice Box</b>	-
<b>58</b>	<b>Wash station</b>	-

However this list is not exhaustive & the bidder may suggest for inclusion of standard brands.

## Schedule 2. Format of Performance Security

*(Bank Guarantee)*

### PERFORMANCE BANK GUARANTEE OF CONCESSIONAIRE

(To be issued by a Scheduled Bank)

(On a Non-Judicial Stamp Paper as per value applicable)

Bank Guarantee No.:

Dated: \_\_\_\_\_

**Issuer of Bank Guarantee:**

<<Insert the Name of the Bank>> (hereinafter referred to as the “Bank”)

**Beneficiary of Bank Guarantee:** Engineer in Chief, Public Health, Bhubaneswar

**Nature of Bank Guarantee:** Unconditional and irrevocable Bank Guarantee.

**Context of Bank Guarantee**

**THIS DEED OF GUARANTEE** executed on this the ----- day of ---at ----by

----- (Name of the Bank) having its Head/ Registered office at

----- hereinafter referred to as “the Guarantor” which expression

shall unless it be repugnant to the subject or context thereof include its successors and assigns; In favour of Engineer in Chief, Public Health, having its registered office at Bhubaneswar (“hereinafter

referred to as the “PHEO”), which expression shall unless it be repugnant to the subject or context thereof include successors and assigns.

a) By the Concession Agreement dated ----- (“the Concession Agreement/Agreement”)

entered into between **PHEO** and M/s. , having its registered office at -----,

hereinafter called “**the Company**”, the Company has been granted the rights to undertake the design, engineering, construction (if required), furnishing, procurement of equipment, installation, operation and maintenance of the Laboratory Facilities at ..... in accordance with the Concession Agreement.

b) In terms of Clause 3.1 pt. no. 21 and 22 of datasheet of the RFP document (Vol-1) and Clause \_\_\_\_ of the Agreement, the Company is required to furnish to **PHEO**, an unconditional and irrevocable bank guarantee for an amount of **Rs.** \_\_\_\_\_ (Rupees) for the State/ Divisional Laboratory of \_\_\_\_\_ as security for performance/ discharge of its obligation under the Concessionaire’s Agreement (“Performance Security”). At the request of the Company, the Guarantor has agreed to provide the Guarantee, being these presents guaranteeing the due and punctual performance/ discharge by the Company of its obligations under the Concessionaire’s Agreement.

**NOW THEREFORE THIS DEED WITNESSETH AS FOLLOWS:**

1. The capitalized terms used herein but not defined shall have the meaning assigned to them respectively in the Concessionaire’s Agreement.

2. The Guarantor hereby guarantees the due and punctual performance by the Company of all its obligations under the Concessionaire’s Agreement and accepts that the decision of the PHEO, in this behalf shall be final, conclusive and binding on the Guarantor.

3. The Guarantor shall, without any protest or demur and merely on a demand by PHEO, pay to PHEO sums not exceeding in aggregate Rs. \_\_\_\_\_ (Rupees only), immediately and not later than 24 (twenty four) hours of receipt of a written demand therefore from PHEO stating that the Company has failed to meet its performance obligations under the Concessionaire’s Agreement. The Guarantor shall have no obligation to go into the veracity of any demand made by PHEO and shall pay the amounts specified in the demand without any protest or demur and notwithstanding any direction to the contrary given or any dispute whatsoever raised by the Company or any other Person.

4. In order to give effect to this Guarantee, PHEO shall be entitled to treat the Guarantor as the principal debtor. The obligations of the Guarantor shall not be affected by any variations in the terms and conditions of the Concessionaire’s Agreement or other documents or by the extension of time for performance granted to the Company or postponement/non-exercise/ delayed exercise of any of its rights by PHEO or any indulgence shown by PHEO to the Company and the Guarantor shall not be relieved from its obligations under this Guarantee on account of any such variation, extension, postponement, non-exercise, delayed exercise of any of its rights by PHEO or any indulgence shown by PHEO provided nothing contained herein shall enlarge the Guarantor’s obligation hereunder.

5. This Guarantee shall be absolute, unconditional and irrevocable and shall remain in full force and effect until discharged by the Guarantor of all its obligations hereunder.

6. This Guarantee shall not be affected by any change in the constitution or winding up of the Company/the Guarantor or any absorption, merger or amalgamation of the Company/the Guarantor with any other Person.
7. The Guarantor has power to issue this guarantee and discharge the obligations contemplated herein, and the undersigned is duly authorized to execute this Guarantee pursuant to the power granted under \_\_\_\_\_.
8. The jurisdiction in relation to this Guarantee shall be the Courts at Bhubaneswar and Indian law shall be applicable.
9. This Guarantee shall be released or discharged only by an express release letter issued by PHEO.
10. The Guarantor hereby agrees that without the concurrence of the Guarantor, the Parties to the Concessionaire's Agreement shall be at liberty to vary, alter or modify the terms and conditions of the Concessionaire's Agreement and further agrees that its liability under this Guarantee shall in no manner be affected by such variation etc.
11. The Guarantor agrees that time is the essence of this Guarantee.
12. To give effect to this Guarantee, PHEO may act as though the Guarantor were the principal debtor to PHEO. PHEO shall be entitled to proceed to institute proceedings against the Guarantor notwithstanding that no legal proceedings or recovery action is commenced simultaneously or even during the course of recovery proceedings against the Company. The postponement of action against the Company shall be a matter of the sole discretion of PHEO and the Guarantor expressly agrees to such course of action and waives any objection thereto. The Guarantor accepts that the present guarantee is the prime security to PHEO and the realizations from the Company's assets can be postponed by PHEO till after the recovery of the amounts claimed or demanded from the Guarantor.
13. A certificate in writing signed by a duly authorized official of PHEO shall be conclusive evidence against the Guarantor of the amount for the time being due to PHEO from the Company in any action or proceeding brought on this Guarantee against the Guarantor.
14. This Guarantee shall not be wholly or partially satisfied or exhausted by any payments made to or settled with PHEO by the Company and shall be valid and binding on the Guarantor and operative until repayment in full of all moneys due to PHEO under the Concessionaire's Agreement. The Guarantee shall also not be released by any release by PHEO of any security whether with or without the consent or knowledge of the Guarantor.
15. The Guarantor represents and warrants that it has the full authority to make and execute this Guarantee. The Guarantor further represents that all regulatory approvals, permits and authorisations as are necessary for the issuance of this Guarantee have been received and are in full force and effect.
16. The Guarantor represents that there is no litigation or arbitration or other proceedings pending against the Guarantor, which could reasonably be expected to have a material adverse effect or change in the Guarantor's ability to perform its obligations under this Guarantee.
17. Any demand for payment or notice under this Guarantee shall be deemed to be sufficiently given if sent by post to or left at the last known address of the Guarantor or its successors or assigns, as the case may be.

**IN WITNESS WHEREOF THE GUARANTOR HAS SET ITS HANDS HEREUNTO ON THE DAY, MONTH AND YEAR FIRST HEREIN ABOVE WRITTEN.**

Signed and delivered by the above named \_Bank by its Authorised Signatory as authorised by Resolution/Regulation/Decision of its Regional Board/Central Board in accordance with the decision/resolution passed on Authorised Signatory In the presence of:

- 1.
- 2.

**Note: The Word Company may be replaced with word/phrase which purports and reflects the entity.**

### **Schedule 3. Design Approval Committee**

#### **DESIGN APPROVAL COMMITTEE (DAC)**

For the approval of the design of the “*Project*”, the Concessioneing Authority shall constitute a Committee with following members:

1. Superintending Engineer (S.E.), Concerned PH Circle, Chairman
2. Superintending Engineer (S.E.) Design (C.E. Office), Member
3. Executive Engineer, \_\_\_\_\_ PH Division, Convenor
4. Quality Manager, Member

The members of the Committee shall be responsible for approving the design submitted by the Concessionaire and give suggestions, if there, for improving the design.