

Ref. No. 03/ITP-19/15-16/OGPTL/RfP

January 06, 2016

To,

Sh. T. Amarendranath Reddy, Manager  
Sterlite Grid 3 Limited  
C-2, The Mira Corporate Suite,  
1 & 2 Ishwar Nagar, Okhla Crossing,  
Mathura Nagar,  
New Delhi-110065.

FAX : 011 – 49962288

E-mail:

[tan.reddy@sterlite.com](mailto:tan.reddy@sterlite.com)

Kind Attn.: Sh. T. Amarendranath Reddy, Manager

**Sub: Independent Transmission Project for “Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha” – Letter of Intent.**

Sir,

We refer to:

- 1) The Request for Proposal document dated October 08, 2015 issued to ‘Sterlite Grid 3 Limited’ as regards participation in the international competitive bidding process for Transmission Scheme for “Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha”, and as amended till the Bid Deadline including all correspondence / clarifications / amendments exchanged between ‘Sterlite Grid 3 Limited’ and PFC Consulting Limited in regard thereto (hereinafter collectively referred to as the “**Final RFP**”);
- 2) ‘Sterlite Grid 3 Limited’ offer by way of a Non-Financial Bid (Envelope 1) pursuant to (1) above submitted on December 15, 2015 in response to the Final RFP.
- 3) ‘Sterlite Grid 3 Limited’ offer, by way of a Financial Bid (Envelope 2) as submitted on December 15, 2015 in response to the Final RFP.
- 4) The Non-Financial Bid as in (2) above and the Financial Bid as in (3) above, hereinafter collectively referred to as the “**Bid**”.

This is to inform you that the process of evaluating bids received pursuant to the Final RfP, including the Bid, has been concluded. We are pleased to inform you that your proposal and offer received by way of the “**Bid**” has been accepted and ‘Sterlite Grid 3 Limited’ is

*Acknowledged and Accepted*

Authorized Signatory

hereby declared as the Successful Bidder as per clause 3.4.1.1 of the Final RfP for the above project and consequently, this Letter of Intent (hereinafter referred to as the "LoI") is being issued.

This LoI is based on the Final RFP and you are requested to please comply with the following:

- a) Acknowledging its issuance and unconditionally accepting its contents and recording "Accepted unconditionally" under the signature of your authorized signatory on each page of the duplicate copy of this letter attached herewith at the place indicated for the same, and returning the same to PFC Consulting Limited within seven (7) days of the date of issuance of LoI;
- b) Completion of various activities as stipulated in the Final RFP including in particular Clause 2.4, Clause 2.5 and Clause 2.6 of the Final RFP, within the timelines as prescribed therein.

It may be noted that PFC Consulting Limited has the rights available to them under the Final RfP, including rights under clause 3.4.1.3 thereof, upon your failure to comply with the aforementioned conditions.

As you are aware, the issuance and contents of this LoI are based on the Bid submitted by you as per the Final RFP including the Transmission charges and other details regarding the Scheduled COD as contained therein. The Quoted Transmission Charges as submitted by you and the Scheduled COD of each transmission Element and the Project as agreed by you in your Bid, as per Annexure 4 and Format-1 of Annexure 6 respectively of the Final RFP is annexed herewith as Schedule A and incorporated herein by way of reference.

Yours sincerely,

For PFC Consulting Limited



(H.K. Das)  
Sr. Vice President

**Enclosures:** Schedule A – Quoted Transmission Charges and the Scheduled COD of each Transmission Element and the Project submitted in your Bid, as per Annexure 4 and Format-1 of Annexure 6 respectively of the Final RFP.

*Acknowledged and Accepted*

  
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Authorized Signatory



**SCHEDULE – A**

(Page 1 of 2)

**1. Quoted Annual Transmission Charges as per Annexure-4 of the RfP**

Year (Term of License)	Commencement Date of Contract Year	End Date of Contract Year	Non-Escalable Transmission Charges (Rs.in Millions)	Escalable Transmission Charges (Rs.in Millions)
1	21-May-19	31-Mar-20	1587.20	16.01
2	01-Apr-20	31-Mar-21	1587.20	Same as Above
3	01-Apr-21	31-Mar-22	1549.91	Same as Above
4	01-Apr-22	31-Mar-23	1513.49	Same as Above
5	01-Apr-23	31-Mar-24	1477.93	Same as Above
6	01-Apr-24	31-Mar-25	1443.20	Same as Above
7	01-Apr-25	31-Mar-26	1409.28	Same as Above
8	01-Apr-26	31-Mar-27	1376.17	Same as Above
9	01-Apr-27	31-Mar-28	1343.83	Same as Above
10	01-Apr-28	31-Mar-29	1312.26	Same as Above
11	01-Apr-29	31-Mar-30	1281.42	Same as Above
12	01-Apr-30	31-Mar-31	1251.31	Same as Above
13	01-Apr-31	31-Mar-32	1221.91	Same as Above
14	01-Apr-32	31-Mar-33	1193.19	Same as Above
15	01-Apr-33	31-Mar-34	1165.16	Same as Above
16	01-Apr-34	31-Mar-35	1137.78	Same as Above
17	01-Apr-35	31-Mar-36	1126.91	Same as Above
18	01-Apr-36	31-Mar-37	1126.91	Same as Above
19	01-Apr-37	31-Mar-38	1126.91	Same as Above
20	01-Apr-38	31-Mar-39	1126.91	Same as Above
21	01-Apr-39	31-Mar-40	1126.91	Same as Above
22	01-Apr-40	31-Mar-41	1126.91	Same as Above
23	01-Apr-41	31-Mar-42	1126.91	Same as Above
24	01-Apr-42	31-Mar-43	1126.91	Same as Above
25	01-Apr-43	31-Mar-44	1126.91	Same as Above
26	01-Apr-44	31-Mar-45	1126.91	Same as Above
27	01-Apr-45	31-Mar-46	1126.91	Same as Above
28	01-Apr-46	31-Mar-47	1126.91	Same as Above
29	01-Apr-47	31-Mar-48	1126.91	Same as Above
30	01-Apr-48	31-Mar-49	1126.91	Same as Above
31	01-Apr-49	31-Mar-50	1126.91	Same as Above
32	01-Apr-50	31-Mar-51	1126.91	Same as Above
33	01-Apr-51	31-Mar-52	1126.91	Same as Above
34	01-Apr-52	31-Mar-53	1126.91	Same as Above
35	01-Apr-53	31-Mar-54	1126.91	Same as Above
36	01-Apr-54	May-2054 (35th anniversary of the Schedule COD)	1126.91	Same as Above

*Acknowledged and Accepted*

  
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 Authorized Signatory

**SCHEDULE – A**

(Page 2 of 2)

**2. Scheduled COD of each transmission Element and the Project as per Annexure 6 Format 1 of the RFP**

<b>Sr. No.</b>	<b>Name of the Transmission Element</b>	<b>Scheduled COD in months from Effective Date</b>	<b>Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project</b>	<b>Sequence of commissioning of Element(s)</b>
1	Jharsuguda (Sundargarh) – Raipur Pool 765kV D/c line (Hexa Zebra Conductor)	40 months	94%	NIL
2	OPGC – Jharsuguda (Sundargarh) 400kV D/c (Triple Snowbird Conductor)	July-2017	6%	NIL

**Scheduled COD for the Project: 40 months from Effective Date**

CC:

- (1) Chairman and Managing Director, Power Finance Corporation, "Urjanidhi", 1, Barakhamba Lane, Connaught Lane, New Delhi – 110 001.
- (2) Joint Secretary (Transmission), Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi- 110001.
- (3) Member Secretary, Empowered Committee / Chairperson, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi - 110 066.
- (4) Secretary, Central Electricity Regulatory Commission, 3rd & 4th Floor, Chanderlok Building, 36, Janpath, New Delhi – 110 001.
- (5) CEO, PFC Consulting Limited, First Floor, "Urjanidhi", 1, Barakhamba Lane, Connaught Lane, New Delhi – 110 001.

*Acknowledged and Accepted*  
Authorized Signatory



REQUEST FOR PROPOSAL  
DOCUMENT

FOR

SELECTION OF  
TRANSMISSION SERVICE PROVIDER

THROUGH TARIFF BASED COMPETITIVE BIDDING  
PROCESS

TO

ESTABLISH TRANSMISSION SYSTEM

FOR

" COMMON TRANSMISSION SYSTEM FOR PHASE-II  
GENERATION PROJECTS IN ODISHA AND  
IMMEDIATE EVACUATION SYSTEM FOR OPGC  
(1320 MW) PROJECT IN ODISHA"

ISSUED BY



(A wholly owned subsidiary of Power Finance Corporation Ltd.)

PFC CONSULTING LIMITED  
(A wholly owned subsidiary of Power Finance Corporation Ltd.)

Registered Office:  
1st Floor, " Urjanidhi" 1, Barakhambha Lane,  
Connaught Place, New Delhi - 110 001

October 08, 2015

**PFC Consulting Limited**  
**(A wholly owned subsidiary of Power Finance Corporation Ltd.)**  
**1st Floor, “Urjanidhi”, 1, Barakhambha Lane,**  
**Connaught Place, New Delhi – 110 001**

This Request for Proposal document for selection of Transmission Service Provider (TSP) through tariff based competitive bidding process to establish Transmission System for **“Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha”** is issued by **PFC Consulting Limited** for the benefit of Long Term Transmission Customer(s) as named in Annexure 1.

**This RFP document is issued to -**

**M/s. ....**

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**Along with following documents:**

- 1. Transmission Service Agreement**
- 2. Share Purchase Agreement**
- 3. Illustration of the Bid Evaluation/Computation of Levellised Transmission Charges (Excel file in CD)**

Signature: .....

**Sr. Vice President**  
**PFC Consulting Limited**  
(A wholly owned subsidiary of PFC Ltd.)  
**1st Floor, “Urjanidhi”**  
**1, Barakhambha Lane,**  
**Connaught Place,**  
**New Delhi – 110 001**  
**Tel.: +91 – 11 – 23456144**  
**Fax: +91 – 11 – 23456170**  
**Email: [pfccl.itp@pfcindia.com](mailto:pfccl.itp@pfcindia.com)**



**DISCLAIMER**

1. This Request for Proposal (RFP) document is not an agreement or offer by the Bid Process Co-coordinator (BPC) to the prospective Bidders or any other party. The purpose of this RFP is to provide interested parties with information to assist the formulation of their Bid. This RFP is based on material and information available in public domain.
2. This RFP, along with its Annexures, is not transferable and will be issued only to the Bidding Company or the Lead Member of the Bidding Consortium who has been short listed by the BPC based on its Response to RFQ. The RFP and the information contained therein is to be used only by the person to whom it is issued. It may not be copied or distributed by the recipient to third parties (other than in confidence to the recipient's professional advisors). In the event that the recipient does not continue with its involvement in the Project in accordance with this RFP, this RFP must be kept confidential.
3. While this RFP has been prepared in good faith, neither the BPC nor its employees or advisors/consultants make any representation or warranty express or implied as to the accuracy, reliability or completeness of the information contained in this RFP. The Bidders shall satisfy themselves, on receipt of the RFP document, that the RFP document is complete in all respects. Intimation of any discrepancy shall be given to this office immediately. If no intimation is received from any Bidder within ten (10) days from the date of issue of this RFP document, it shall be considered that the issued document, complete in all respects, has been received by the Bidders.

This bidding process is in accordance with the Bidding Guidelines issued by Ministry of Power, Government of India under Section 63 of the Electricity Act, 2003. Revisions or amendments in these Bidding Guidelines may cause the BPC to modify, amend or supplement this RFP document, including the RFP Project Documents to be in conformance with the Bidding Guidelines.

4. Neither the BPC, its employees nor its consultants will have any liability to any Bidder or any other person under the law of contract, tort, the principles of restitution or unjust enrichment or otherwise for any loss, expense or damage which may arise from or be incurred or suffered in connection with anything contained in this RFP, any matter deemed to form part of this RFP, the award of the Project, the information supplied by or on behalf of BPC or its employees, any advisors/consultants or otherwise arising in any way from the selection process for the said Project.
5. By purchasing the RFP, the purchaser of the RFP, which may be the Bidder or any Member of the Bidding Consortium and each of the Member of such

Consortium, shall be deemed to have confirmed that the Bidders are fully satisfied with the process of evaluation of the Responses to RFQ and the BPC's decision regarding the qualification or disqualification or short listing of the Bidders for sale of the RFP. The Bidders hereby expressly waive any and all objections or claims in respect thereof.

6. This RFP may be withdrawn or cancelled by the BPC at any time without assigning any reasons thereof. BPC further reserves the right, at its complete discretion to reject any or all of the Bids without assigning any reasons whatsoever.



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## DEFINITIONS

Any capitalized term, used but not defined in this RFP, shall have the meaning ascribed to such term in the RFP Project Documents, the RFQ, or the Bidding Guidelines, in that order. In absence of availability of definitions in the foregoing references, the capitalized terms shall be interpreted in accordance with the Electricity Act 2003, the CERC (Terms and Conditions of Tariff) Regulations 2009, Grid Code or any other relevant electricity law, rule or regulation prevalent in India, as amended or re-enacted from time to time, in that order.

**“Acquisition Price”** shall have the same meaning as defined in the Share Purchase Agreement;

**“Affiliate”** shall have the meaning as ascribed thereto in the RFQ;

**“Allocated Project Capacity”** shall mean, for each Long Term Transmission Customer, the sum of the generating capacities allocated to such Long Term Transmission Customer from the ISGS and the contracted power, if any, as adopted by CERC from time to time in determining sharing of transmission charges between the Long Term Transmission Customers;

**“Appropriate Commission”** shall mean the Central Regulatory Commission referred to in sub-section (1) of section 76 of the Electricity Act, or the State Regulatory Commission referred to in section 82 of the Electricity Act or the Joint Commission referred to in section 83 of the Electricity Act, as the case may be;

**“Appropriate Government”** shall mean the Central Government in case of any Inter-State Transmission System and the appropriate state government in case of an Intra-State Transmission System;

**“Bid”** shall mean Non-Financial Bid and Financial Bid submitted by the Bidders, in response to this RFP, in accordance with the terms and conditions thereof;

**“Bidder”** for the purpose of the RFP, shall mean Bidding Company (including its permitted successors and legal assigns subject to fulfillment of conditions given in RFQ) or Bidding Consortium (including permitted successors and legal assigns of its Members subject to fulfillment of conditions given in RFQ) which meets the Qualification Requirements as specified in the RFQ and has been short-listed by BPC based on its Response to RFQ for submission of Bid and has duly purchased the RFP from the BPC;

**“Bidding Company”** for the purpose of the RFP, shall refer to such single company (including its permitted successors and legal assigns subject to fulfillment of conditions given in RFQ) which meets the Qualification Requirements as specified in the RFQ and has been short-listed by BPC based on its Response to RFQ for submission of Bid and has duly purchased the RFP from the BPC;

**“Bidding Consortium”** or **“Consortium”** for the purpose of the RFP, shall refer to such group of companies (including its permitted successors and legal assigns subject to fulfillment of conditions given in RFQ) which meets the Qualification Requirements



as specified in the RFQ and has been short-listed by BPC based on its Response to RFQ for submission of Bid and has duly purchased the RFP from the BPC;

**“Bidding Guidelines”** shall mean the “Tariff Based Competitive Bidding Guidelines for Transmission Service” and “Guidelines for Encouraging Competition in Development of Transmission Projects” issued by Government of India, Ministry of Power dated 13<sup>th</sup> April 2006 under Section – 63 of Electricity Act and as amended from time to time;

**“Bid Bond”** shall mean the unconditional and irrevocable bank guarantee for **Rupees Fourteen Crore (Rs 14,00,00,000/=) only**, to be submitted along with the Bid by the Bidder under Clause 2.20 of this RFP, as per the format prescribed in Annexure 2;

**“Bid Deadline”** shall mean the last date and time for submission of Bid in response to this RFP, specified in Clause 2.16.1;

**“Bid Process Coordinator or BPC”** shall mean a person or its authorized representative as notified by the Government of India / concerned State Government, responsible for carrying out the process for selection of Transmission Service Provider;

**“CEA”** shall mean the Central Electricity Authority constituted under Section -70 of the Electricity Act;

**“CERC”** shall mean the Central Electricity Regulatory Commission of India constituted under Section-76 of the Electricity Act, 2003 or its successors;

**“Change in Ownership”** shall mean change of ownership of the Bidder / Member in a Bidding Consortium by way of merger / acquisition / amalgamation / reorganization / consolidation / demerger;

**“Conflict of Interest”**: A Bidder shall be considered to be in a Conflict of Interest with one or more Bidders in the same bidding process if they have a relationship with each other, directly or through a common company, that puts them in a position to have access to information about or influence the Bid of another Bidder;

**“Commercial Operation Date (COD)”** shall mean the date of charging the Project or part thereof to its rated voltage level or seven days after the date on which it is declared ready for charging by the Transmission Licensee, but is not able to be charged for reasons not attributable to the Transmission Licensee, its suppliers or contractors;

Provided that the date of commercial operation shall not be a date prior to the Scheduled Date of Commercial Operation mentioned in the TSA, unless mutually agreed to by all parties;

**“Consents, Clearances, Permits”** shall mean all authorizations, licenses, approvals, registrations, permits, waivers, privileges, acknowledgements, agreements, or concessions required to be obtained from or provided by any concerned authority for the development, execution and performance of Project including without any limitation on the construction, ownership, operation and maintenance of the transmission lines and/or sub-stations;

**“Contract Performance Guarantee”** shall have the meaning as per Clause 2.21 of this RFP;

**“Contract Year”** shall mean the period beginning on the Scheduled COD, and ending on the immediately succeeding March 31 and thereafter each period of 12 months beginning on April 1 and ending on March 31 provided that:

- (i) the last Contract Year shall end on the last day of the term of the TSA;

Provided that for the purpose of payment, the Contract Year shall be the applicable Contract Year as per Annexure-4 of this RFP;

**“CTU/Central Transmission Utility”** shall mean the utility notified by the Central Government under Section-38 of the Electricity Act, 2003;

**“Effective Date”** shall have the meaning as ascribed thereto in the TSA;

**“Element”** shall mean each Transmission Line or each circuit of the Transmission Lines (where there are more than one circuit) or each bay of the Sub-station or switching station or HVDC terminal or inverter station of the Project, which has a separate scheduled COD as per Schedule 3 of the TSA and has a separate percentage for recovery of Transmission Charges on achieving COD as per Schedule 6 of the TSA;

**“Empowered Committee”** shall mean the committee constituted by the Ministry of Power, Government of India in terms of Clause 13 of the “Guidelines for Encouraging Competition in Development of Transmission Projects”, notification no 11/5/2005-PG(ii) of the Government of India, Ministry of Power, dated 13<sup>th</sup> April 2006;

**“Financial Bid”** shall mean Envelope II of the Bid, containing the Bidder’s Quoted Transmission Charges as per the format at Annexure–4 of this RFP;

**“Financially Evaluated Entity”** shall mean the company which has been evaluated for the satisfaction of the financial requirements set forth in the RFQ;

**“Grid Code” / “IEGC” or “State Grid Code”** shall mean the Grid Code specified by the Central Commission under Clause (h) of sub-section (1) of section 79 of the Electricity Act and/or the State Grid Code as specified by the concerned State Commission, referred under Clause (h) of sub-section (1) of section 86 of the Electricity Act, as applicable;

**“Inter State Generating Station” or “ISGS”** shall mean a Central / other generating station in which two or more states have shares and whose scheduling is to be coordinated by the Regional Load Despatch Centre;

**“Inter-State Transmission System”** shall include:

- (i) Any system for the conveyance of electricity by means of main transmission line from the territory of one State to another State;
- (ii) The conveyance of electricity across the territory of an intervening State as well as conveyance within the State, which is incidental to such inter-State transmission of electricity;

- (iii) The transmission of electricity within the territory of a State on a system built, owned, operated, maintained or controlled by Central Transmission Utility;

**“Intra-State Transmission System”** shall mean any system for transmission of electricity other than an Inter-State Transmission System;

**“Lead Member of the Bidding Consortium” or “Lead Member”** shall have the meaning as ascribed thereto in the RFQ;

**“Lead Long Term Transmission Customer”** shall have the meaning as ascribed thereto in the TSA;

**“Letter of Intent”** shall mean the letter to be issued by the BPC to the Bidder, who has been identified as the Selected Bidder, for award of the Project to such Bidder;

**“Levelised Transmission Charges”** shall mean the Transmission Charges calculated in accordance with the provisions of Clause 3.3.2 in this RFP;

**“Long Term Transmission Customer”** shall mean a person availing or intending to avail access to the Inter-State Transmission System for a period up to twenty-five years or more, and for the purposes of this Project, shall refer to entities listed in Annexure-1 of this RFP;

**“MOP”** shall mean the Ministry of Power, Government of India;

**“MOEF”** shall mean the Ministry of the Environment and Forests, Government of India;

**“Non Financial Bid”** shall mean Envelope I of the Bid, containing the documents as listed out in Clause 2.14.1.1 of this RFP;

**“Parent Company”** shall have the meaning as ascribed thereto in the RFQ;

**“Quoted Transmission Charges”** shall mean the sum of the Quoted Escalable Transmission Charges and Quoted Non-Escalable Transmission Charges indicated by the Bidder as part of its Financial Bid as per the format in Annexure–4 of this RFP;

**“Quoted Escalable Transmission Charges”** shall mean the charges as quoted by the Bidder and indicated in column 5 of Annexure–4;

**“Quoted Non-Escalable Transmission Charges”** shall mean the charges as quoted by the Bidder and indicated in column 4 of Annexure–4;

**“RFP”** shall mean this Request for Proposal document along with all schedules, annexures and RFP Project Documents attached hereto and shall include any modifications, amendments, alterations or clarifications thereto;

**“RFQ”** shall mean the Request for Qualification document issued by BPC for tariff based competitive bidding process for selection of TSP to execute the Project and shall include any modifications, amendments or alterations or clarifications thereto;

**“RFP Project Documents”** shall mean the following documents to be entered into in respect of the Project, by the parties to the respective agreements:

- a. TSA,
- b. Share Purchase Agreement, and
- c. Any other agreement, as may be required;

**“Scheduled COD”** shall have the meaning as ascribed hereto in Clause 2.15 of this RFP;

**“Share Purchase Agreement”** shall mean the agreement amongst **PFC Consulting Limited**, **“Odisha Generation Phase II Transmission Limited”** and the Successful Bidder for the purchase of one hundred (100%) per cent of the shareholding of the **“Odisha Generation Phase II Transmission Limited”** for the Acquisition Price, by the Successful Bidder on the terms and conditions as contained therein;

**“Short Term Transmission Customer(s)”** shall mean a transmission customer other than the Long Term Transmission Customer;

**“Successful Bidder”** or **“Selected Bidder”** shall mean the Bidder selected pursuant to this RFP to acquire one hundred percent (100%) equity shares of **“Odisha Generation Phase II Transmission Limited”**, along with all its related assets and liabilities, which will be responsible as the TSP to establish the Project on build, own, operate and maintain basis as per the terms of the TSA and other RFP Project Documents;

**“Survey Report”** shall mean the report containing initial information regarding the Project and other details provided as per the provisions of Clause 1.5 (a) of this RFP;

**“Technically Evaluated Entity”** shall mean the entity which has been evaluated for the satisfaction of the technical requirements set forth in the RFQ;

**“Transmission Charges”** shall mean the charges payable to TSP by the Long Term Transmission Customers pursuant to the TSA, as adopted by the Appropriate Commission;

**“Transmission License”** shall mean the license granted by the Appropriate Commission in terms of the relevant regulations for grant of such license issued under the Electricity Act, 2003;

**“Transmission Licensee”** shall mean a licensee authorized to establish and operate Transmission Lines by the Appropriate Commission;

**“Transmission Lines”** shall mean all high pressure cables and overhead lines (not being an essential part of the distribution system of a licensee) transmitting electricity from a generating station to another generating station or a sub-station, together with any step-up and step-down transformers, switch-gear and other works necessary to and used for the control of such cables or overhead lines, and such buildings or part thereof as may be required to accommodate such transformers, switchgear and other works;

**“Transmission Service Agreement”** or **“TSA”** shall mean the agreement entered into between Long Term Transmission Customer(s) and the TSP pursuant to which TSP shall build, own, operate and maintain the Project and make available the assets of the Project to Long Term Transmission Customer(s) on a commercial basis and a

draft of which is attached hereto and marked as Format 1 of Annexure 3, including all its schedules, Annexures and all amendments or modifications;

**“Transmission Service Provider” or “TSP”** shall mean **“Odisha Generation Phase II Transmission Limited”**, which has executed the Transmission Service Agreement and has been / shall be acquired by the Selected Bidder;

**“Transmission System”** shall mean a line with associated sub-stations or a group of lines inter-connected together along with associated sub-stations and the term includes equipment associated with transmission lines and sub-stations;

**“Ultimate Parent Company”** shall have the meaning as ascribed thereto in the RFQ.



# **SECTION 1**

# **INTRODUCTION**

## 1. INTRODUCTION

- 1.1 The Government of India, Central Electricity Authority, vide Gazette Notification dated February 06, 2015 has notified PFC Consulting Limited to be the Bid Process Coordinator (BPC) for the purpose of selection of Bidder as Transmission Service Provider (TSP) to establish Transmission System for **“Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha”** through tariff based competitive bidding process.
- 1.2 The BPC now invites Bids for selection of Transmission Service Provider to establish the Transmission System as detailed below in the table for **“Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha”** (hereinafter referred to as 'Project') on build, own, operate and maintain basis, and to provide transmission service on a long term basis to the Long Term Transmission Customers, as listed out in Annexure-1 of this RFP. The BPC reserves the right to add, delete or replace any Long Term Transmission Customer(s) to the list.

S.No	Transmission System for <b>“Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha”</b>		
	Name of the Transmission Element	Completion Target	Conductor per phase
1	Jharsuguda (Sundargarh) – Raipur Pool 765kV D/c line (Hexa Zebra Conductor)	40 months	Hexa Zebra ACSR Conductor or equivalent AAAC. The transmission lines to be designed for a maximum operating conductor temperature of 85 deg C for both ACSR as well as AAAC.
2	OPGC – Jharsuguda (Sundargarh) 400kV D/c (Triple Snowbird Conductor)	July-2017	Triple Snowbird ACSR Conductor or equivalent AAAC. The transmission lines to be designed for a maximum operating conductor temperature of 85 deg C for both ACSR as well as AAAC.

**Note:**

1. CTU (POWERGRID) would provide 2 nos. 765kV line bays at each Jharsuguda (Sundargarh) and Raipur Pool substations of POWERGRID for termination of Jharsuguda (Sundargarh) – Raipur Pool 765kV D/c line.
2. CTU (POWERGRID) would provide 2 nos. 400kV line bays (GIS) at Jharsuguda (Sundargarh) substation of POWERGRID for termination of OPGC – Jharsuguda (Sundargarh) 400kV D/c.

3. CTU (POWERGRID) would provide 2x240 MVar switchable line reactor along with NGR at Jharsuguda (Sundargarh) end on Jharsuguda (Sundargarh) – Raipur Pool 765 kV D/c line.
  4. CTU (POWERGRID) would provide 2x240 MVar switchable line reactor along with NGR at Raipur Pool end on Jharsuguda (Sundargarh) – Raipur Pool 765 kV D/c line.
  5. 2 nos. 400kV line bays at OPGC generation switchyard are to be provided by the generation developer (OPGC).
- 1.3 The TSP shall ensure that design, construction and testing of all equipment, facilities, components and systems of the Project shall be in accordance with Indian Standards and Codes issued by Bureau of Indian Standards and only in case they are not available under certain conditions, the other equivalent internationally recognized Standards and Codes shall be followed, with prior approval of CEA.
- 1.4 The objective of the bidding process is to select a Successful Bidder pursuant to this RFP, who shall acquire one hundred percent (100%) of the equity shares of **“Odisha Generation Phase II Transmission Limited”** along with all its related assets and liabilities as per the provisions of the Share Purchase Agreement, at the Acquisition Price to be intimated by the BPC, 30 days prior to the Bid Deadline.
- The **“Odisha Generation Phase II Transmission Limited”**, of which one hundred percent (100%) equity shares has been acquired by the Selected Bidder, shall be responsible as the TSP, for ensuring that it undertakes ownership, financing, development, design, engineering, procurement, construction, commissioning, operation and maintenance of the Project, and to provide Transmission Service on a long term basis to the Long Term Transmission Customers as per the terms of the RFP Project Documents.
- 1.5 The BPC has initiated development of the Project and shall be responsible for the tasks in this regard as specified hereunder:
- a) Provide to the Bidders a Survey Report for the Project at least forty five (45) days prior to the Bid Deadline. The Survey Report will contain information regarding the transmission line, i.e. voltage level, line configuration (i.e., S/C or D/C), indicative route alignment, conductor type, conductor configuration and type of terrain likely to be encountered.

Provided that neither the BPC, its authorized representative, any of the Long Term Transmission Customer(s), nor their directors, employees or advisors/consultants make any representation or warranty, express or implied, or accept any responsibility or liability, whatsoever, in respect of any statements or omissions made in the Survey Report, or the accuracy, completeness or reliability of information contained therein, and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of such Survey Report, even if any loss or damage is caused to the Bidders by any act or omission on their part.

- b) To obtain approval for laying of overhead transmission lines under Section 68 of Electricity Act, from Appropriate Government at least thirty (30) days prior to Bid Deadline.
- c) To initiate process of seeking forest clearance, if required.
- d) Intimate the Bidders at least thirty (30) days prior to the Bid Deadline, the name of the BPC for the purpose of issue of the Bid Bond and the place where the Bid Bond shall be payable by the Guarantor Bank.
- e) Any addition, deletion or replacement to the list at Annexure 1, will be communicated at least 30 (thirty) days prior to the Bid Deadline. Further, the entities which are legally permitted to sign the TSA on behalf of the Long Term Transmission Customer(s) shall also be intimated to the Bidders at least thirty (30) days prior to the Bid Deadline.
- f) The BPC shall intimate the Bidders, the Acquisition Price payable by the Selected Bidder to the **PFC Consulting Limited** for the acquisition of one hundred percent (100%) of the equity shareholding of “**Odisha Generation Phase II Transmission Limited**”, along with all its related assets and liabilities at least thirty (30) days prior to Bid Deadline.
- g) The BPC shall ensure issuance of all finalized RFP Project Documents duly executed, except for the Share Purchase Agreement, at least seven (7) days prior to the Bid Deadline.

Provided that for any delay in meeting the above obligations of the BPC within the specified time period above, the Bid Deadline as per Clause 2.16 shall be extended on a day for day basis.

- 1.6 The Ministry of Power and the appropriate State Government(s) have agreed to provide their support to the TSP, on best endeavor basis, in enabling the TSP to develop the Project.
- 1.7 All Bidders are required to submit their Bid in accordance with the instructions set forth in this RFP.
- 1.8 Once the Successful Bidder is selected, the details and documents as may be obtained by the BPC in relation to the Project, shall be handed over to the Successful Bidder on as is where basis, so that it may take further actions to obtain all necessary Consents, Clearances and Permits and the TSP shall not be entitled for any extensions in the Scheduled COD of the Project.
- 1.9 The assets of the Project shall be made available on a commercial basis to the Long Term Transmission Customer(s) as per the terms and conditions of the TSA.

# **SECTION 2**

## **INFORMATION AND INSTRUCTIONS TO BIDDERS**



## 2. INFORMATION AND INSTRUCTIONS TO BIDDERS

- 2.1 Bidders shall familiarize itself with the procedures and time frames required to obtain all Consents, Clearances and Permits.
- 2.2 All Bidders are required to ensure compliance with the standards and codes mentioned in Clause 1.3.
- 2.3 The drafts of the following RFP Project Documents have been attached to this RFP.
  - a) TSA as per Format-1 of Annexure 3.
  - b) Share Purchase Agreement as per Format-2 of Annexure 3

Upon finalization of the RFP Project Documents after incorporating the amendments as envisaged in Clause 2.13 of this RFP, all the RFP Project Documents, except for the Share Purchase Agreement, shall be duly executed by **“Odisha Generation Phase II Transmission Limited”** and the Long Term Transmission Customers, and copies delivered to the Bidders at least seven (7) days prior to the Bid Deadline.

The RFP Project Documents shall be signed in required number of originals so as to ensure that one original is retained by each party to the Agreement(s).

- 2.4 Within ten (10) days of the issue of the Letter of Intent, the Selected Bidder shall:
  - a) provide the Contract Performance Guarantee in favour of the Long Term Transmission Customers as per the provisions of Clause 2.21;
  - b) execute the Share Purchase Agreement and all other RFP Project Documents as listed in Annexure-3;
  - c) acquire, for the Acquisition Price, one hundred percent (100%) equity shareholding of **“Odisha Generation Phase II Transmission Limited”** from **PFC Consulting Limited**, who shall sell to the Selected Bidder, the equity shareholding of **“Odisha Generation Phase II Transmission Limited”**, along with all its related assets and liabilities;

Stamp duties payable on purchase of one hundred percent (100%) of the equity shareholding of **“Odisha Generation Phase II Transmission Limited”**, along with all its related assets and liabilities, shall also be borne by the Selected Bidder.

- d) make an application to the Appropriate Commission for the adoption of Transmission Charges, as required under section 63 of the Electricity Act 2003.
- e) execute the RFP Project Documents in required number of originals so as to ensure that one original is retained by each party to the Agreement(s). All stamp duties payable for executing the RFP Project Documents shall be borne by the Successful Bidder.

Provided further that, if for any reason attributable to the BPC, the above activities are not completed by the Selected Bidder within the above period of ten (10) days

as mentioned in this Clause, such period of 10 days shall be extended, on a day for day basis till the end of the Bid validity period.

- 2.5 After the date of acquisition of the equity shareholding of “**Odisha Generation Phase II Transmission Limited**”, along with all its related assets and liabilities, by the Selected Bidder,
- i. the authority of the BPC in respect of this Bid Process shall forthwith cease and any actions to be taken thereafter will be undertaken by the Lead Long Term Transmission Customer,
  - ii. all rights and obligations of “**Odisha Generation Phase II Transmission Limited**”, shall be of the TSP,
  - iii. any decisions taken by the BPC prior to the Effective Date shall continue to be binding on the Long Term Transmission Customers and
  - iv. contractual obligations undertaken by the BPC shall continue to be fulfilled by the TSP.
- 2.6 Within ten (10) days of the issue of the Letter of Intent, the TSP shall apply to the Appropriate Commission for grant of Transmission License.
- 2.7 If the Selected Bidder / TSP fails or refuses to comply with any of its obligations under Clauses 2.4, 2.5 and 2.6, and provided that the Long Term Transmission Customer(s) and/or other parties to the respective RFP Project Documents are willing to execute the Share Purchase Agreement and **PFC Consulting Limited** is willing to sell the entire equity shareholding of “**Odisha Generation Phase II Transmission Limited**”, along with all its related assets and liabilities, to the Selected Bidder, such failure or refusal on the part of the Selected Bidder shall constitute sufficient grounds for cancellation of the Letter of Intent. In such cases, the BPC / its authorized representative(s) shall be entitled to invoke the Bid Bond of the Selected Bidder.
- 2.8 If the TSP fails to obtain the Transmission License from the Appropriate Commission, it will constitute sufficient grounds for annulment of award of the Project.
- 2.9 The annulment of award, as provided in Clauses 2.7 and 2.8 of this RFP, will be done by the Empowered Committee after giving the Selected Bidder / TSP an opportunity to be heard.

## **2.10 Point of contact in case of Bidding Consortium**

- 2.10.1 In case of Bid being submitted by a Consortium, the Lead Member of the Consortium will be the single point of contact for the purposes of the bid process before the date of signing of last of the RFP Project Documents. Settlement of any dispute amongst the Consortium Members shall not be the responsibility of the BPC and/or the Long Term Transmission Customer(s) and the BPC and/or Long Term Transmission Customer(s) shall not bear any liability whatsoever on this account.

## **2.11 Transmission Charges**

- 2.11.1 The Transmission Charges shall be as specified in the TSA and shall be payable to the TSP in Indian Rupees only. The Bidders shall quote Transmission Charges for each Contract Year during the term of the TSA as per the format at Annexure-4.

2.11.2 The Quoted Transmission Charges of the Selected Bidder shall be inserted in Schedule 6 of the TSA.

## **2.12 Clarifications and Pre-bid Meeting**

2.12.1 The Bidders may seek clarifications or suggest amendments to the RFP in writing, through a letter or by fax (and also soft copy by e-mail) to reach the BPC at the address indicated in Clause 2.23 within the date and time mentioned in Clause 2.16.2. For any such clarifications or amendments the Bidders should adhere to the format as per Annexure-7.

2.12.2 The Bidders or their authorized representatives are invited to attend the pre-bid meeting(s), which will take place on date as specified in Clause 2.16.2, or any such other date as notified by the BPC. The time and address of this would be intimated later.

2.12.3 The purpose of the pre-bid meeting will be to clarify any issues regarding the RFP, including in particular, issues raised in writing by the Bidders as per the provisions of Clause 2.12.1.

2.12.4 Non-attendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.

2.12.5 The BPC is not under any obligation to entertain / respond to suggestions made or to incorporate modifications sought for.

2.12.6 In case Bidders need any further clarifications not involving any amendments in respect of final RFP, they should ensure that written request for such clarification is delivered to the BPC at least fifteen (15) days prior to the Bid Deadline as mentioned in Clause 2.16.1. The BPC may issue clarifications only, as per its sole discretion, which is considered reasonable by it. Any such clarification issued shall be sent to all the Bidders to whom the RFP has been issued. Clarifications sought after this date shall not be considered in any manner and shall be deemed not to have been received. There shall be no extension in Bid Deadline on account of clarifications sought as per this clause 2.12.6.

## **2.13 Amendment of RFP**

2.13.1 Any time before the timeline mentioned in Clause 2.16.1, the BPC may, for any reason, whether at its own initiative or in response to a clarification requested by any Bidder, modify or amend the RFP, including the timelines specified in Clause 2.16.2 in this RFP.

2.13.2 The amendment to the RFP shall be notified in writing through a letter or fax or e-mail to all the Bidders and shall be binding on them.

2.13.3 In order to give Bidders reasonable time to take the above amendments into account in preparing their Bids, the BPC may, at its discretion, extend the Bid Deadline.

## **2.14 The Bidding Process**

2.14.1 Bid Formats

The Bids in response to this RFP will be submitted by the Bidders in the manner provided in Clause 2.18. The Bids shall comprise of the following:

**2.14.1.1 Envelope I – Non- Financial Bid comprising of:**

1. Board resolutions, as per prescribed formats enclosed as Annexure-8, duly certified by the Company Secretary / Managing Director, as applicable to the Bidder and mentioned hereunder,
  - (a) Board resolution from the Bidding Company (and any investing Affiliate / Parent Company / Ultimate Parent Company) committing one hundred percent (100%) in aggregate of the equity requirement for the Project – Format-1 of Annexure-8;
  - (b) Board resolutions from each of the Consortium Member of the Bidding Consortium (and any investing Affiliate / Parent Company / Ultimate Parent Company) together committing to one hundred percent (100%) in aggregate of equity requirement for the Project, in case Bidder is a Bidding Consortium – Format-1 of Annexure-8;
  - (c) In either of the cases as in (a) or (b) above as applicable, Board resolutions as per Format 2 of Annexure 8 for total equity investment commitment from the Technically / Financially Evaluated Entity(ies) whose technical / financial credentials had been considered for the purpose of meeting Qualification Requirements as per the RFQ

**OR**

Board resolutions as per Format 2 of Annexure 8 from the Parent Company or the Ultimate Parent Company for total equity investment commitment.

Provided that such Board resolutions, as specified in (a) or (b) or (c) above, in case of a foreign entity, shall be supported by an unqualified opinion issued by the legal counsel of such foreign entity, stating that the Board resolutions are in compliance with the applicable laws of the respective jurisdictions of the issuing company and the authorizations granted therein are true and valid.

For clarity sake, illustrations identifying which Board Resolution shall be applicable in typical cases are provided in Annexure 13-A.

2. Bid Bond, as per the prescribed format at Annexure-2;
3. Bidders Undertakings and details of equity investment in Project (as per prescribed formats 1 and 2 of Annexure-6);
4. Covering Letter (as per prescribed format enclosed as Annexure-9);
5. Original power of attorney issued by the Bidding Company or the Lead Member of the Consortium, as the case may be, in favour of the person signing the Bid, in the form attached hereto as Format-1 of Annexure-10.

Additionally, in case of a Bidding Consortium, the power of attorney in favour of the Lead Member issued by the other Members of the Consortium shall be provided in Original as per format attached hereto as Format-2 of Annexure-10.

Provided that in the event the Bidding Company or the Lead Member of the Consortium or any Member of the Bidding Consortium, as the case may be, is a foreign entity, it may issue Board resolutions in place of power of attorney for the purpose of fulfilling these requirements.

6. Undertaking from the Technically / Financially Evaluated Entity (ies) **OR** Undertaking from the Ultimate Parent Company, for total equity investment commitment, in the prescribed format in Annexure-10A, to meet any shortfall in the equity investment by the Selected Bidder in the **“Odisha Generation Phase II Transmission Limited”**.

**Note:** The effective Equity holding of the Selected Bidder in the **“Odisha Generation Phase II Transmission Limited”**, as specified in Clause 2.14.4.1 shall be computed as per the provisions of Clause 2.14.4.3 of this RFP.

Provided further, in case the Bidding Company or Member of a Consortium, (as the case may be) holds at least twenty-six percent (26%) equity in such Technically/Financially Evaluated Entities, whose credentials have been considered for the purpose of meeting the Qualification Requirements as per the RFQ, no such Undertaking shall be required from the Technically / Financially Evaluated Entities.

7. The Bidders shall submit a disclosure as per Annexure 14 regarding participation of any related companies in this bidding process.

#### **2.14.1.2 Envelope II – Financial Bid (as per prescribed format at Annexure-4).**

The Bidders shall inter-alia take into account the following while preparing and submitting the Financial Bid:-

- a. The Bidders shall quote Transmission Charges having two components, namely:
  - i. Quoted Escalable Transmission Charges, and
  - ii. Quoted Non-Escalable Transmission Charges
- b. In case of Quoted Escalable Transmission Charges, the Bidders shall quote charges only for the first Contract Year after Scheduled COD of the Project, subject to Sl. No. (f) below.
- c. Ratio of minimum and maximum Quoted Transmission Charges during the term of TSA shall not be less than zero point seven (0.7) and this ratio shall be applied only at the Bid evaluation stage on the Quoted Transmission Charges after duly escalating the Quoted Escalable Transmission Charges on the basis of the escalation rates specified in Clause 3.3.1.3. In addition, the Escalable Transmission Charges (after duly escalating the Quoted Escalable Transmission Charges on the basis of the escalation rates specified in Clause



3.3.1.3) for any Contract Year should not exceed fifteen percent (15%) of the corresponding Quoted Non-Escalable Transmission Charges for that Contract Year, and this percentage shall be applied only at the Bid evaluation stage.

- d. The Quoted Transmission Charges as per the format at Annexure-4 shall be inclusive of all charges and no exclusions shall be allowed. The Bidders shall take into account all costs including capital and operating, statutory taxes, duties, levies. Availability of the inputs necessary for operation and maintenance of the Project should be ensured by the TSP at the Project site and all costs involved in procuring the inputs (including statutory taxes, duties, levies thereof) at the Project site must be included in the Quoted Transmission Charges.
- e. Bidders are required to quote Transmission Charges for the Contract Years, for a period of 35 years commencing from the Scheduled COD of the Project, as per the format at Annexure-4.
- f. Bidders shall have the option to quote firm Quoted Transmission Charges for the period of 35 years commencing from the Scheduled COD of the Project, i.e., where the Quoted Escalable Transmission Charges shall be 'nil' for all the Contract Years.
- g. Annexure 4 duly signed by authorized signatory.

2.14.1.3 Wherever information has been sought in specified formats, the Bidders shall fill in the details as per the prescribed formats and shall refrain from referring to any other document for providing any information required in the prescribed format.

2.14.1.4 The Bidders should note that:

- (a) If any Bidder conceals any material information or makes a wrong statement or misrepresents facts or makes a misleading statement in its Bid, in any manner whatsoever, the BPC reserves the right to reject such Bid or cancel the Letter of Intent, if issued. If such event is discovered after the Effective Date, consequences specified in TSA shall apply.
- (b) If for any reason the Bid of the Bidder with the lowest evaluated levelized Transmission Charges is rejected or Letter of Intent issued to such Selected Bidder is cancelled, the BPC may:-
  - i. Invite best reduced financial bids from those Bidders whose Bids are responsive and valid; or
  - ii. Annul the bid process; or
  - iii. Take any such measure as may be deemed fit in the sole discretion of the BPC<sup>1</sup>
- (c) Bid submitted by the Bidders, within the Bid Deadline, shall become the property of the BPC and the Long Term Transmission Customer(s) and shall

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<sup>1</sup> BPC shall record reasons for the same.

not be returned to the Bidders.

- (d) Language of the Bid shall be English only.
- (e) Bidders shall mention the name of the contact person and complete address of the Bidder in the covering letter as per Annexure-9.
- (f) The BPC may, at its sole discretion, ask for additional information / document and/or seek clarifications from a Bidder after the Bid Deadline, inter alia, for the purposes of removal of inconsistencies or infirmities in its Bid. However, no change in the substance of the Quoted Transmission Charges shall be sought or permitted by the BPC.
- (g) Non submission and/or submission of incomplete data/information required under the provisions of the RFQ and RFP shall not be construed as waiver on the part of the BPC of the obligation of the Bidders to furnish the said data/information unless the waiver is in writing.

#### **2.14.2 Bidders to inform themselves fully**

- 2.14.2.1 The Bidders shall make independent enquiry and satisfy themselves with respect to all the required information, inputs, conditions and circumstances and factors that may have any effect on his Bid. Once the Bidders have submitted their Bids, the Bidders shall be deemed to have inspected and examined the site conditions (including but not limited to its surroundings, its geological condition and the adequacy of transport facilities to the site), the laws and regulations in force in India, the transportation facilities available in India, the grid conditions, the adequacy and conditions of roads, bridges, railway sidings, ports, etc. for unloading and/or transporting heavy pieces of material and has based its design, equipment size and fixed its price taking into account all such relevant conditions and also the risks, contingencies and other circumstances which may influence or affect the transmission of power. Accordingly, each Bidder acknowledges that, on being selected as Successful Bidder and on acquisition of one hundred percent (100%) of the equity shares of the “**Odisha Generation Phase II Transmission Limited**”, the TSP shall not be relieved from any of its obligations under the RFP Project Documents nor shall the TSP be entitled to any extension in Scheduled COD mentioned in this RFP or financial compensation for any reason whatsoever.
- 2.14.2.2 In their own interest, the Bidders are requested to familiarize themselves with all relevant laws of India, including without limitation, the Electricity Act 2003, the Income Tax Act 1961, the Companies Act, 1956, Environment Protection Act 1986 and Forest (Conservation) Act, 1980, the Customs Act, the Foreign Exchange Management Act, Land Acquisition Act, 1894, the Indian Telegraph Act 1885, Labour & Employment Laws of India, [Insurance Act] the regulations/standards framed by Appropriate Commissions and CEA, all other related acts, laws, rules and regulations prevalent in India, as amended from time to time.

In addition to the above, the Bidders are required to familiarize themselves with all relevant technical codes and standards, including but not limited to the Grid Code / State Grid Code, Central Electricity Authority (Installation and Operations of Meters) Regulations, 2006, Central Electricity Authority (Technical Standards for

Connectivity to the Grid) Regulations, 2007, Central Electricity Regulatory Commission (Open Access in Inter-State Transmission) Regulations, 2004, along with related amendments brought in from time to time.

The BPC shall not entertain any request for clarifications from the Bidders regarding the above laws / acts / rules / regulations / standards. Non-awareness of the same shall not be a reason for the Bidder to request for extension in Bid Deadline. The Bidders undertake and agree that, before submission of their Bid, all such factors as generally brought out above, have been fully investigated and considered while submitting their Bids.

- 2.14.2.3 Bidders may visit the route of the Transmission Lines associated with the Project and the surrounding areas and obtain / verify all information which they deem fit and necessary for the preparation of their Bid.
- 2.14.2.4 The BPC has carried out a survey of the Transmission Lines associated with the Project and shall provide each Bidder with its Survey Report of the Project. Bidders in their own interest should carry out required surveys and field investigation for submission of their Bid.
- 2.14.2.5 Failure to investigate the route of the Transmission Lines associated with the Project and to examine, inspect site or subsurface conditions fully shall not be grounds for a Bidder to alter its Bid after the Bid Deadline nor shall it relieve a Bidder from any responsibility for appropriately eliminating the difficulty or costs of successfully completing the Project.
- 2.14.2.6 The Selected Bidder shall obtain all necessary Consents, Clearances and Permits as required. The Bidders shall familiarize itself with the procedures and time frame required to obtain such Consents, Clearances and Permits.
- 2.14.2.7 The technical requirements of integrated grid operation are specified in the Indian Electricity Grid Code (IEGC). The Bidders should particularly acquaint themselves with the requirements of connection conditions, operating code for regional grids, scheduling and dispatch instructions / codes, etc. The Bidders are also advised to fully familiarize themselves with the real time grid conditions in the country. Information regarding grid parameters such as voltage and frequency is available on the websites of Regional / State Load Despatch Centres.

### **2.14.3 Change in the composition of the Bidder**

- 2.14.3.1 If any Bidder makes a request for Change in Ownership or change in membership of a Bidding Consortium or change from Bidding Consortium to Bidding Company or change from Bidding Company to Bidding Consortium as per Clause 2.2.6 of the RFQ, the Bidder shall submit all information for fulfilling the Qualification Requirements, in the formats specified in the RFQ. All such information required to be submitted in support of meeting the Qualification Requirements should be as of the dates specified in the RFQ.
- 2.14.3.2 The BPC reserves the right to seek additional information from the Bidders, if found necessary, during the course of examination of such request for change. In such a case, the BPC shall intimate the Bidders about its decision, at least fifteen

(15) days prior to Bid Deadline.

- 2.14.3.3 In case of non compliance with any of the conditions of Clause 2.2.6 of the RFQ, the BPC reserves the right to reject the Bid or cancel the Letter of Intent, if issued and the provisions of Clause 2.14.1.4 (b) shall apply.

**2.14.4 Minimum Equity holding/Equity Lock-In**

- 2.14.4.1 (a) The aggregate equity share holding of the Selected Bidder, in the issued and paid up equity share capital of “**Odisha Generation Phase II Transmission Limited**” shall not be less than the following:

- (i) Fifty one percent (51%) up to a period of (2) two years after COD of the Project; and
- (ii) Twenty six percent (26%) for a period of three (3) years thereafter.

- (b) In case the Selected Bidder is a Bidding Consortium, then any Member (other than the Lead Member) of such Bidding Consortium shall be allowed to divest its equity as long as the other remaining Members (which shall always include the Lead Member) hold the minimum equity specified in (i) and (ii) above.

- (c) If equity is held by the Affiliates, Parent Company or Ultimate Parent Company, then subject to the second proviso of this Clause 2.14.4.1 (c), such Affiliate, Parent Company or Ultimate Parent Company shall be permitted to transfer its shareholding in “**Odisha Generation Phase II Transmission Limited**” to another Affiliate or to the Parent Company / Ultimate Parent Company. If any such shareholding entity, qualifying as an Affiliate / Parent Company / Ultimate Parent Company, is likely to cease to meet the criteria to qualify as an Affiliate / Parent Company / Ultimate Parent Company, the shares held by such entity shall be transferred to another Affiliate / Parent Company / Ultimate Parent Company.

Provided that in case the Lead Member or Bidding Company is holding equity through Affiliate/s, Ultimate Parent Company or Parent Company, such restriction shall apply to such entities.

Provided further, that the aggregate equity share holding of the Bidding Consortium or a Bidding Company in the issued and paid up equity share capital of “**Odisha Generation Phase II Transmission Limited**” shall not be less than fifty one percent (51%) up to a period of two (2) years after COD of the Project and the lead Member of the Consortium shall have the equity share holding not less than twenty six percent (26%). The Lead Member shall continue to hold equity of at least twenty six percent (26%) up to a period of five (5) years after COD of the Project. In case the Selected Bidder is a Bidding Consortium, then any Member (other than the Lead Member) of such Bidding Consortium shall be allowed to divest its equity as long as the other remaining Members (which shall always include the Lead Member) hold the minimum equity specified in (a)(i) and (a)(ii) above.

(d) All transfer(s) of shareholding of “**Odisha Generation Phase II Transmission Limited**” by any of the entities referred to above, shall be after prior written permission from the Lead Long Term Transmission Customer.

2.14.4.2 The Selected Bidder may invest in the equity share capital of “**Odisha Generation Phase II Transmission Limited**” through its Affiliate(s) or Ultimate Parent Company or Parent Company. Details of such investment will have to be specified in the Non Financial Bid as per Format 2 of Annexure 6 of the RFP. If the Selected Bidder so invests through any Affiliate(s) or Ultimate Parent Company or Parent Company, the Selected Bidder shall be liable to ensure that minimum equity holding/lock-in limits specified in Clause 2.14.4.1 and as computed as per the provisions of Clause 2.14.4.3 are still maintained.

2.14.4.3 For computation of effective Equity holding, the Equity holding of the Selected Bidder or its Ultimate Parent Company in such Affiliate(s) or Parent Company and the equity holding of such Affiliate(s) or Ultimate Parent Company in “**Odisha Generation Phase II Transmission Limited**” shall be computed in accordance with the example given below:

If the Parent Company or the Ultimate Parent Company of the Selected Bidder A directly holds thirty percent (30%) of the equity in in “**Odisha Generation Phase II Transmission Limited**”, then holding of Selected Bidder A in in “**Odisha Generation Phase II Transmission Limited**” shall be thirty percent (30%);

If Selected Bidder A holds thirty percent (30%) equity of the Affiliate and the Affiliate holds fifty percent (50%) equity in in “**Odisha Generation Phase II Transmission Limited**”, then, for the purposes of ascertaining the minimum equity/equity lock-in requirements specified above, the effective holding of Bidder A in in “**Odisha Generation Phase II Transmission Limited**” shall be fifteen percent (15%), (i.e.,  $30\% \times 50\%$ );

2.14.4.4 The provisions as contained in this Clause 2.14.4 and Article 18.10 of the TSA shall override the terms of the Consortium Agreement submitted by the Bidder as part of the RFQ.



## **2.15 Project Schedule**

2.15.1 All Elements of the Project are required to be commissioned progressively as per the schedule given in the following table;

<b>Sl. No.</b>	<b>Name of the Transmission Element</b>	<b>Scheduled COD from Effective Date</b>	<b>Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project</b>	<b>Element(s) which are pre-required for declaring the commercial operation (COD) of the respective Element</b>
1	Jharsuguda (Sundargarh) – Raipur Pool 765kV D/c line (Hexa Zebra Conductor)	40 months	94%	NIL
2	OPGC – Jharsuguda (Sundargarh) 400kV D/c (Triple Snowbird Conductor)	July-2017	6%	NIL

The payment of Transmission Charges for any Element irrespective of its successful commissioning on or before its Scheduled COD shall only be considered after successful commissioning of the Element(s) which are pre-required for declaring the commercial operation of such Element as mentioned in the above table.

**Scheduled COD for overall Project: 40 months from Effective Date.**

## **2.16 Due dates**

2.16.1 The Bidders should submit the Bids so as to reach the address specified in Clause 2.18.4 by **15:00 hrs (IST) on December 08, 2015:**

2.16.2 Important timelines are mentioned below:

<b>Date</b>	<b>Event</b>
08-Oct-15	Issuance of RFP
20-Oct-15	Submission of written clarifications/amendments, if any, on the RFP / RFP Project Documents by Bidders so as to reach BPC by 1700 hours. Such written clarifications/amendments shall be in the format provided in Annexure-7.
27-Oct-15	Pre-Bid meeting(s)
02-Nov-15	Issue of revised RFP, if required, with balance RFP

<b>Date</b>	<b>Event</b>
	Project Documents, if any.
01-Dec-15	Issue of signed RFP Project Documents (except for the Share Purchase Agreement)
08-Dec-15	Submission of Bid & Opening of Non Financial Bid
08-Dec-15	Opening of Non Financial Bid
15-Dec-15	Opening of Financial Bid
23-Dec-15	Selection of Successful Bidder and issue of LOI
01-Jan-16	Signing of Share Purchase Agreement and transfer of <b>“Odisha Generation Phase II Transmission Limited”</b>

## **2.17 Validity of the Bid**

2.17.1 The Bidders shall submit the Bid which shall remain valid up to one hundred and eighty (180) days from the Bid Deadline. The BPC reserves the right to reject any Bid which does not meet the aforementioned validity requirement.

2.17.2 The BPC may solicit the Bidders' consent for an extension of the period of validity of the Bid. The request and the response, thereafter, shall be in writing. In the event any Bidder refuses to extend its Bid validity as requested by the BPC, the BPC shall not be entitled to invoke the Bid Bond. A Bidder accepting the BPC's request for validity extension shall not be permitted to modify its Bid and such Bidder shall, accordingly, extend the validity of the Bid Bond as requested by the BPC within seven (7) days of such request, failing which the Bid shall not be considered as valid.

## **2.18 Method of submission**

2.18.1 Bids are to be submitted in single closed envelope (as mentioned in Clause 2.18.2), containing Envelope I (Non-Financial Bid) and Envelope II (Financial Bid), each one duly closed separately. Envelope I (Non-Financial Bid) and Envelope II (Financial Bid) should be transcribed in the following way;

### **Envelope I (Non-Financial Bid) superscript -**

*“Bid for selection of Transmission Service Provider to establish Transmission System for: ..... [Insert Name of Project]”*

*Name of the Bidder: .....*

***Due for opening on December 08, 2015***

*Envelope I: Non Financial Bid ”*

### **Envelope II (Financial Bid) superscript -**

*“Bid for selection of Transmission Service Provider to*

*establish Transmission System for: .....  
[Insert Name of Project]*

*Name of the Bidder: .....*

*Due for opening on: **December 15, 2015***

*Envelope II: Financial Bid"*

- 2.18.2 Envelope I (Non-Financial Bid) and Envelope II (Financial Bid) (mentioned in Clause 2.18.1) for the Bid to be submitted by Bidders should be packed in a single closed envelope, with the following superscript:

**"Bid for selection of Transmission Service Provider to establish Transmission System for: Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha"**

**Due for opening at 16:00 hrs (IST) on December 08, 2015**

[Insert Address of the BPC]

"Name of the Bidder ....."

- 2.18.3 The Bidders have the option of sending their Bids either by registered post; or speed post; or courier; or by hand delivery, so as to reach the BPC at the specified address by the Bid Deadline. Bids submitted by telex/telegram/fax/e-mail shall not be considered under any circumstances. The BPC shall not be responsible for any delay in receipt of the Bids. Any Bid received by the BPC after the Bid Deadline shall be returned unopened.

- 2.18.4 Bids shall be submitted at the following address by the Bid Deadline specified in Clause 2.16.1.

**PFC Consulting Limited  
(A wholly owned subsidiary of Power Finance Corporation Ltd.)  
1<sup>st</sup> Floor, "Urjanidhi" 1, Barakhambha Lane,  
Connaught Place,  
New Delhi – 110 001**

- 2.18.5 It may be noted that Non-Financial Bid (Envelope I) shall not contain any information/document relating to Financial Bid. If Non-Financial Bid contains any such information/documents, the BPC shall not be responsible for premature opening of the Financial Bid.

All pages of the Bid, except for the Bid Bond (Annexure 2) and any other document executed on non-judicial stamp paper, forming part of the Bid and corrections in the Bid, if any, must be signed by the authorized signatory on behalf of the Bidder. It is clarified that the same authorized signatory shall sign all pages of the Bid. However, any published document submitted in this regard shall be signed by the authorized signatory at least on the first and last page of such document.

2.18.6 Bidders shall submit the Bid in one (1) original plus one (1) copy, duly signed by the authorized signatory of the Bidder. The original Bid shall be clearly marked "ORIGINAL", and the other copy to be clearly marked "COPY OF BID". In the event of any discrepancy between the original and the accompanying copies, only the original shall prevail.

2.18.7 No change or supplemental information to a Bid will be accepted after the Bid Deadline, unless the same is requested for by the BPC as per Clause 2.14.1.4 (f)

Provided that a Bidder shall always have the right to withdraw / modify its Bid before the Bid Deadline. In cases where the Bid is withdrawn by the Bidder, then such Bid shall be returned unopened.

2.18.8 If the outer cover envelope or Envelope I (Non-Financial Bid) or Envelope II (Financial Bid) is not closed and not transcribed as per the specified requirement, the BPC will assume no responsibility for the Bid's misplacement or premature opening.

## **2.19 Preparation cost**

2.19.1 The Bidders shall be responsible for all the costs associated with the preparation of the Bid and participation in discussions and attending pre-bid meetings, and finalization and execution of the Share Purchase Agreement, etc. The BPC shall not be responsible in any way for such costs, regardless of the conduct or outcome of this Bid process.

2.19.2 The cost of this RFP is Rupees Five Lakhs only (**Rs. 5,00,000/-**) or U.S. Dollar Ten Thousand only (US\$ 10,000/-) which shall be non-refundable. This amount shall be payable by a crossed demand draft or banker's cheque drawn in favour of **Odisha Generation Phase II Transmission Limited**, payable at **New Delhi**.

## **2.20 Bid Bond**

2.20.1 Each Bidder shall submit the Bid accompanied by Bid Bond issued by any of the Banks listed in Annexure-12. The Bid Bond shall be valid for a period of thirty (30) days beyond the validity of the Bid.

2.20.2 Subject to the provisions of Clause 2.7, the Bid Bond may be invoked by the BPC or its authorized representative, without any notice, demure, or any other legal process upon occurrence of any of the following:

- Failure to execute the Share Purchase Agreement as per the provisions of Clause 2.4; or
- Failure to furnish the Contract Performance Guarantee as per Clause 2.21; or
- Failure to acquire one hundred percent (100%) equity shares of "**Odisha Generation Phase II Transmission Limited**", along with all its related assets and liabilities, in accordance with the provisions of Clause 2.4. or
- Failure to apply for grant of Transmission License as per Clause 2.6.
- Failure to comply with the provisions of Clause 2.7 and 2.8, leading to annulment of the award of the Project.
- Bidders submitting any wrong information or making any misrepresentation in their Bid as mentioned in Clause 2.14.1.4.

Intimation of the reasons of the invocation of the Bid Bond shall be given to the Selected Bidder by the BPC within three (3) working days after such invocation.

2.20.3 The Bid Bond of the Selected Bidder shall be returned on submission of the Contract Performance Guarantee as per Clause 2.21 and the relevant provisions of the TSA.

2.20.4 The Bid Bond of all the Bidders, whose Bids are declared non-responsive, shall be returned within a period of thirty (30) days after the date on which the Financial Bids are opened.

2.20.5 The Bid Bond of all unsuccessful Bidders shall be returned and released by the BPC on the same day on which the “**Odisha Generation Phase II Transmission Limited**” is transferred to the Selected Bidder. The Bid Bond of the Successful Bidder shall be returned on submission of Contract Performance Guarantee as per Clause 2.21 of this RFP and the provisions of the TSA.

## **2.21 Contract Performance Guarantee**

2.21.1 Within thirty (30) days from the date of issue of the Letter of Intent, the Selected Bidder, on behalf of the TSP, will provide to the Long Term Transmission Customers the Contract Performance Guarantee for an aggregate amount of **Rs. 36,00,00,000/- (Rupees Thirty Six Crore only)**, which shall be provided separately to each of the Long Term Transmission Customers for the amount calculated pro-rata in the ratio of their Allocated Project Capacity, as on the date seven (7) days prior to the Bid Deadline (rounded off to the nearest Rupees one lakh (Rs. 100,000) with the principle that amounts below Rupees Fifty Thousand (Rs. 50,000) shall be rounded down and amounts of Rupees Fifty Thousand (Rs. 50,000) and above shall be rounded up). The Contract Performance Guarantee shall be initially valid for a period up to three (3) months after the Scheduled COD of the Project and shall be extended from time to time to be valid for a period up to three (3) months after the COD of the Project and thereafter shall be dealt with in accordance with the provisions of the TSA. The Contract Performance Guarantee shall be issued by any of the banks listed in Annexure-12.

2.21.2 In case the Selected Bidder is unable to obtain the Contract Performance Guarantee for the total amount from any one bank specified in Annexure-12, the Selected Bidder may obtain the same from not more than three (3) banks specified in Annexure-12, subject however to the apportionment as provided in Clause 2.21.1.

## **2.22 Opening of Bids**

2.22.1 Envelope I (Non-Financial Bid) and Envelope II (Financial Bid) will be opened as per the following time schedule and at the venue where the Bids are required to be submitted, as specified in Clause 2.18.4, in the presence of one representative from each of such Bidders who wish to be present:

Opening of Envelope I (Non-Financial Bid): **16:00 hrs (IST) on December 08, 2015**

Opening of Envelope II (Financial Bid): **15:00 hrs (IST) on December 15, 2015**

or such other dates as may be intimated by the BPC to the Bidders.

In the event of any of above dates falling on a day which is not a working day or which is a public holiday, then the bids shall be opened on the next working day at the same venue and time.

2.22.2 The following information from each Bid will be read out to all the Bidders at the time of opening of Envelope I (Non-Financial Bid) and Envelope II (Financial Bid):

- Name of the Bidding Company / Consortium Members in case of Bidding Consortium only, from Format-2 of Annexure-6 (applicable only for Envelope I)
- Details of Bid Bond (applicable only for Envelope I – Non-Financial Bid)
- Quoted Transmission Charges (applicable only for Envelope II – Financial Bid)

## **2.23 Enquiries**

Written clarifications on the RFP and other RFP Project Documents as per Clause 2.12 and 2.13 may be sought from:

**PFC Consulting Limited**  
**1st Floor, “Urjanidhi”1,**  
**Barakhambha Lane,**  
**Connaught Place,**  
**New Delhi – 110 001**

Telephone: +91 – 11- 23456144

Fax: +91 – 11 - 23456170

e-mail: [pfccl.itp@pfcindia.com](mailto:pfccl.itp@pfcindia.com)

## **2.24 Confidentiality**

2.24.1 The parties undertake to hold in confidence this RFP and RFP Project Documents and not to disclose the terms and conditions of the transaction contemplated hereby to third parties, except:

- a) to their professional advisors;
- b) to their officers, contractors, employees, agents or representatives, financiers, who need to have access to such information for the proper performance of their activities;
- c) disclosures required under Law,

without the prior written consent of the other parties of the concerned agreements.

Provided that the TSP agrees and acknowledges that any of the Long Term Transmission Customers may at any time, disclose the terms and conditions of the RFP and RFP Project Documents to any person, to the extent stipulated under the Law or the Bidding Guidelines.

## **2.25 Right of BPC to reject any Bid**

BPC reserves the right to reject all or any of the Bids or cancel the RFP without assigning any reasons whatsoever and without any liability.

## **2.26 Fraudulent and Corrupt Practices**

2.26.1 The Bidders and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bid process and subsequent to the issue of the LOI Notwithstanding anything to the contrary contained herein, or in the LOI, the BPC shall reject a Bid, withdraw the LOI, as the case may be, without being

liable in any manner whatsoever to the Bidder, if it determines that the Bidder has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bid process. In such an event, the BPC shall forfeit the Bid Bond, without prejudice to any other right or remedy that may be available to the BPC hereunder or otherwise.

2.26.2 Without prejudice to the rights of the BPC under Clause 2.26.1 hereinabove and the rights and remedies which the BPC may have under the LOI, if a Bidder is found by the BPC to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bid process, or after the issue of the LOI, such Bidder shall not be eligible to participate in any tender or RFP issued by the BPC during a period of 2 (two) years from the date such Bidder is found by the BPC to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practices, as the case may be.

2.26.3 For the purposes of this Clause 2.26, the following terms shall have the meaning hereinafter respectively assigned to them:

(a) **“corrupt practice”** means (i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bid process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the BPC who is or has been associated or dealt in any manner, directly or indirectly with the Bid process or the LOI or has dealt with matters concerning the TSA or arising there from, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the BPC, shall be deemed to constitute influencing the actions of a person connected with the Bid Process); or (ii) engaging in any manner whatsoever, whether during the Bid Process or after the issue of the LOI or after the execution of the TSA, as the case may be, any person in respect of any matter relating to the Project or the LOI or the TSA, who at any time has been or is a legal, financial or technical adviser of the BPC in relation to any matter concerning the Project;

(b) **“fraudulent practice”** means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bid process;

(c) **“coercive practice”** means impairing or harming, or threatening to impair or harm, directly or indirectly, any person or property to influence any person’s participation or action in the Bid process;

(d) **“undesirable practice”** means (i) establishing contact with any person connected with or employed or engaged by the BPC with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bid process; or (ii) having a Conflict of Interest; and

(e) **“restrictive practice”** means forming a cartel or arriving at any understanding or arrangement among Bidders with the objective of restricting or manipulating a full and fair competition in the Bid process.

# **SECTION 3**

# **EVALUATION CRITERIA**



### **3. EVALUATION CRITERIA**

#### **3.1 Bid Evaluation**

3.1.1 The Bid evaluation process shall comprise of the following three steps:

1. Step I – Responsiveness check (Envelope I)
2. Step II – Evaluation of Financial Bids (Envelope II)
3. Step III – Bidder selection

#### **3.2 Step I - Responsiveness check**

3.2.1 The Non-Financial Bids submitted by Bidders shall be scrutinized to establish “Responsiveness”. Subject to Clause 2.14.1.4(f) , any of the following may cause the Bid to be considered “Non-responsive”, at the sole discretion of the BPC:

- Applicable Board resolutions, or any other document, as provided in Clause 2.14.1.1, not being submitted; or
- Bid not accompanied by a valid Bid Bond; or
- Bid not signed by authorized signatory in the manner and to the extent indicated in this RFP as per Clause 0; or
- Non submission of power of attorney, supported by a Board resolution as per Clause 2.14.1.1; or
- Bid validity being less than that required as per Clause 2.17 of this RFP; or
- Bid not containing Format-1 (Bidders’ Undertakings) of Annexure-6; or
- Bid being conditional in nature; or
- Any request for change in membership of Bidding Consortium, Change in Ownership of Bidding Consortium, Change from Bidding Company to Consortium or Change from Bidding Consortium to Bidding Company has not been permitted by the BPC; or
- Bids having Conflict of Interest.

#### **3.3 Step II - Evaluation of Financial Bids**

##### **3.3.1 General**

3.3.1.1 Envelope II of Bids which have been found responsive by the BPC, based on the responsiveness check (Step I) as specified above in Clause 3.2, shall be opened in presence of the representatives of the Bidders, who wish to be present, as per the timelines indicated in Clause 2.16.2, or such other date as may be intimated by the BPC to the Bidders. The evaluation of Financial Bids will be carried out based on information furnished in Envelope II.

Provided however, in case Envelope II of only one Bidder remains after the responsiveness check (Step I) under Clause 3.2, the Envelope II of such Bidder shall not be opened and the matter shall be referred to the Appropriate Commission.

3.3.1.2 The Financial Bids submitted by the Bidders shall be scrutinized to ensure conformity with the provisions of Clause 2.14.1.2 of this RFP. Any Bid not meeting any of the requirements as per Clause 2.14.1.2 of this RFP may cause the Bid to be considered “Non-responsive”, at the sole decision of the BPC. Financial Bid not in conformity with the requirement of Sl. No. (c) and (g) of Clause 2.14.1.2 of this RFP shall be rejected.

3.3.1.3 The Bidders shall quote the different components of Transmission Charges as specified in the format at Annexure-4. Based on the Quoted Transmission Charges provided by the Bidders, the Levelised Transmission Charges (only in Rupees per year) of each Bid shall be calculated for the term of the TSA as per the methodology mentioned below:

- (a) For the purposes of comparison of the Financial Bids, the Quoted Escalable Transmission Charges of each Bidder shall be uniformly escalated as per the escalation rate mentioned below. However, for the purpose of actual payment of Transmission Charges, such escalation rate shall be applied as per the provisions of the TSA.

S. No.	Head	Value
1.	Annual escalation rate applicable to Quoted Escalable Transmission Charges	This shall be as per the rate notified by the CERC, applicable on the seventh day prior to the Bid Deadline
2.	Discount rate for computation of Levelised Transmission Charges	This shall be as per the rate notified by the CERC as applicable for generation projects, applicable on the seventh day prior to the Bid Deadline

- (b) The factor at Sl. No. 1 in the above table shall be applied from the Scheduled COD of the Project, and shall be applied as at the mid point of each Contract Year.

### **3.3.2 Computation of Levelised Transmission Charges**

3.3.2.1 The computed Quoted Transmission Charges (in Rupees per year) of each of the Bidders for each Contract Year for the term of TSA, calculated as per provisions of Clause 3.3.1.3, shall then be discounted up to the Scheduled COD of the Project mentioned in Clause 2.15 of this RFP, by applying the discount factors (based on the discount rate as mentioned at serial no. 2 of the table in Clause 3.3.1.3 above) and such aggregate discounted value for the term of the TSA shall be divided by the sum of such discount factors so as to calculate the Levelised Transmission Charge of each Bidder.

3.3.2.2 The Levelised Transmission Charges shall be calculated by assuming uniformly the following for all the Bidders

- Grant of Transmission License within 6 months from the date of Letter of Intent to the Selected Bidder by the BPC as per the timelines in Clause 2.16.2 above.

- Project to be commissioned on the date which is **40 months from effective date**.
- Transmission Charges shall be levelised over a period from the Scheduled COD of the Project, up to 35 years.

3.3.2.3 The methodology of computation of Levelised Transmission Charges is explained in the example provided in Annexure-13.

### **3.4 Step III - Bidder Selection**

- 3.4.1.1 The Levelised Transmission Charges calculated as per Clause 3.3.2 shall be compared and ranked from the lowest to the highest and the Bidder with lowest Levelised Transmission Charges shall be declared as the Successful Bidder and the Letter of Intent shall be issued to such Successful Bidder in two (2) copies.
- 3.4.1.2 The Selected Bidder shall unconditionally accept the LOI, and record on one (1) copy of the LOI, "Accepted unconditionally", under the signature of the authorized signatory of the Successful Bidder and return such copy to the BPC within seven (7) days of issue of LOI.
- 3.4.1.3 If the Successful Bidder, to whom the Letter of Intent has been issued, does not fulfill any of the conditions specified in Clauses 2.4, 2.5 and Clause 2.6, then subject to Clause 2.7, the BPC reserves the right to annul the award of the Project and cancel the Letter of Intent. Further, in such a case, the provisions of Clause 2.14.1.4 (b) shall apply.
- 3.4.1.4 The BPC, in its own discretion, has the right to reject all Bids if the Quoted Transmission Charges are not aligned to the prevailing market prices.

# **SECTION 4**

## **FORMATS FOR ANNEXURES**

# ANNEXURE 1

## List of Long Term Transmission Customers

**Note to Bidders:** The List provided below is subject to change

Sr. No	Name of Long Term Transmission Customers	Allocated Capacity
1	North Bihar Power Distribution Company Limited	As per PoC Mechanism
2	South Bihar Power Distribution Company Limited	As per PoC Mechanism
3	Jharkhand Bijli Vitran Nigam Limited	As per PoC Mechanism
4	Damodar Valley Corporation	As per PoC Mechanism
5	GRIDCO LIMITED	As per PoC Mechanism
6	Energy and Power Department, Govt. of Sikkim	As per PoC Mechanism
7	West Bengal State Electricity Distribution Company Limited	As per PoC Mechanism

**Note:**

- A. The above list of Long Term Transmission Customers is on date. Any addition or deletion in this list after the award of Lol shall be duly notified to the parties to the TSA.
- B. The new Long Term Transmission Customers shall become a party to the TSA after agreeing to the terms and conditions of the TSA and signing a Supplemental Agreement as annexed in Schedule 12 to the TSA.
- C. The transmission scheme would be included in National Transmission Pool for recovering transmission charges through PoC mechanism.
- D. While the bidding is being done on the basis of existing SBDs, and the list of LTTC is being provided as per the format of the existing SBDs, the transmission charges will be shared and recovered as per the applicable CERC regulation and will be recovered by the CTU from the Designated ISTS customers (DICs) and disbursed to the TSPs as per the Revenue Sharing Agreement.

## ANNEXURE 2

### FORMAT FOR BID BOND

**Format of the Bid Bond**  
**FORMAT OF THE UNCONDITIONAL AND IRREVOCABLE BANK**  
**GUARANTEE FOR BID BOND**

(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution.  
Foreign entities submitting Bids are required to follow the applicable law in their country)

In consideration of the ..... [Insert name of the Bidder] submitting the Bid *inter alia* for establishing the Transmission System for “**Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha**” on build, own, operate and maintain basis, in response to the RFP dated **October 08, 2015** issued by **PFC Consulting Limited**, as the Bid Process Coordinator (hereinafter referred to as BPC) agreeing to consider such Bid of ..... [Insert the name of the Bidder] as per the terms of the RFP, the ..... [Insert name and address of the bank issuing the Bid Bond, and address of the Head Office] (hereinafter referred to as “Guarantor Bank”) hereby agrees unequivocally, irrevocably and unconditionally to pay to **PFC Consulting Limited** or its authorized representative at **New Delhi** forthwith on demand in writing from **PFC Consulting Limited** or any representative authorized by it in this behalf, any amount up to and not exceeding **Rupees Fourteen Crore (Rs. 14,00,00,000/=) only**, on behalf of M/s. ....[Insert name of the Bidder] .

This guarantee shall be valid and binding on the Guarantor Bank up to and including ..... [Date to be inserted on the basis of Clause 2.20 of this RFP] and shall not be terminable by notice or any change in the constitution of the Guarantor Bank or by any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed with or without our knowledge or consent, by or between concerned parties. **Rupees Fourteen Crore (Rs. 14,00,00,000/=) only**. Our Guarantee shall remain in force until ..... [Date to be inserted on the basis of Clause 2.20 of this RFP]. **PFC Consulting Limited** or its authorized representative shall be entitled to invoke this Guarantee until ..... [Insert Date, which is 30 days after the date in the preceding sentence]. The Guarantor Bank hereby expressly agrees that it shall not require any proof in addition to the written demand from the **PFC Consulting Limited** or its authorized representative, made in any format, raised at the above mentioned address of the Guarantor Bank, in order to make the said payment to **PFC Consulting Limited** or its authorized representative.

The Guarantor Bank shall make payment hereunder on first demand without restriction or conditions and notwithstanding any objection, disputes, or disparities raised by the Bidder or any other person. The Guarantor Bank shall not require **PFC Consulting Limited** or its authorized representative to justify the invocation of this BANK GUARANTEE, nor shall the Guarantor Bank have any recourse against **PFC Consulting Limited** or its authorized representative in respect of any payment made hereunder.

This BANK GUARANTEE shall be interpreted in accordance with the laws of India.

## RFP for Selection of Transmission Service Provider

The Guarantor Bank represents that this BANK GUARANTEE has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

This BANK GUARANTEE shall not be affected in any manner by reason of merger, amalgamation, restructuring or any other change in the constitution of the Guarantor Bank.

This BANK GUARANTEE shall be a primary obligation of the Guarantor Bank and accordingly, **PFC Consulting Limited** or its authorized representative shall not be obliged before enforcing this BANK GUARANTEE to take any action in any court or arbitral proceedings against the Bidder, to make any claim against or any demand on the Bidder or to give any notice to the Bidder to enforce any security held by **PFC Consulting Limited** or its authorized representative or to exercise, levy or enforce any distress, diligence or other process against the Bidder.

Notwithstanding anything contained hereinabove, our liability under this Guarantee is restricted to **Rupees Fourteen Crore (Rs. 14,00,00,000/=) only** and it shall remain in force until ..... [Date to be inserted on the basis of Clause 2.20 of RFP], with an additional claim period of 30 days thereafter. We are liable to pay the guaranteed amount or any part thereof under this BANK GUARANTEE only if **PFC Consulting Limited** or its authorized representative serves upon us a written claim or demand.

In witness whereof the Bank, through its authorized officer, has set its hand and stamp on this ..... day of ..... at .....

### Witness:

1. .... Signature: .....

Name and Address. Name: .....

2. .... Designation with Stamp:

Name and Address

Signature .....

Attorney as per power of attorney No. ....

For:

..... [Insert Name of the Bank]

### Banker's Stamp and Full Address:

Dated this ..... day of ..... 20....

### Notes:

1. The Stamp Paper should be in the name of the Executing Bank.

## **ANNEXURE 3**

### **FORMATS FOR RFP PROJECT DOCUMENTS**

**ENCLOSURE 1:- Draft TRANSMISSION SERVICE AGREEMENT (Provided separately)**

**ENCLOSURE 2:- Draft SHARE PURCHASE AGREEMENT (Provided separately)**



# ANNEXURE 4

## FORMAT FOR FINANCIAL BID

[To be provided on the Letterhead of the Bidding Company/Lead Member of the Bidding Consortium]

Date: .....

**Subject: Financial Bid in respect of Bid for selection of TSP for the “Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha”**

### Quoted Transmission Charges

[BPC to fill in the Scheduled COD for the Project and respective years in Columns 2 and 3]

Year (Term of License)	Commencement Date of Contract Year	End Date of Contract Year	Quoted Non- Escalable Transmission Charges (in Rupees Millions)	Quoted Escalable Transmission Charges (in Rupees Millions)
(1)	(2)	(3)	(4)	(5)
1.	<b>06-June-2019</b> <i>(Refer note 7 and 9)</i>	31-March-2020		
2.	1-April-2020	31-March-2021		Same as Above
3.	1-April-2021	31-March-2022		Same as Above
4.	1-April-2022	31-March-2023		Same as Above
5.	1-April-2023	31-March-2024		Same as Above
6.	1-April-2024	31-March-2025		Same as Above
7.	1-April-2025	31-March-2026		Same as Above
8.	1-April-2026	31-March-2027		Same as Above
9.	1-April-2027	31-March-2028		Same as Above
10.	1-April-2028	31-March-2029		Same as Above
11.	1-April-2029	31-March-2030		Same as Above
12.	1-April-2030	31-March-2031		Same as Above
13.	1-April-2031	31-March-2032		Same as Above
14.	1-April-2032	31-March-2033		Same as Above
15.	1-April-2033	31-March-2034		Same as Above
16.	1-April-2034	31-March-2035		Same as Above
17.	1-April-2035	31-March-2036		Same as Above
18.	1-April-2036	31-March-2037		Same as Above
19.	1-April-2037	31-March-2038		Same as Above
20.	1-April-2038	31-March-2039		Same as Above

## RFP for Selection of Transmission Service Provider

21.	1-April-2039	31-March-2040		Same as Above
22.	1-April-2040	31-March-2041		Same as Above
23.	1-April-2041	31-March-2042		Same as Above
24.	1-April-2042	31-March-2043		Same as Above
25.	1-April-2043	31-March-2044		Same as Above
26.	1-April-2044	31-March-2045		Same as Above
27.	1-April-2045	31-March-2046		Same as Above
28.	1-April-2046	31-March-2047		Same as Above
29.	1-April-2047	31-March-2048		Same as Above
30.	1-April-2048	31-March-2049		Same as Above
31.	1-April-2049	31-March-2050		Same as Above
32.	1-April-2050	31-March-2051		Same as Above
33.	1-April-2051	31-March-2052		Same as Above
34.	1-April-2052	31-March-2053		Same as Above
35.	1-April-2053	31-March-2054		Same as Above
36.	1-April-2054	<b>July-2054 (Refer note 8 and 9)</b>		Same as Above

### Notes:

- 1) The Bidders are required to ensure compliance with the provisions of Clause 2.14.1.2 of this RFP.
- 2) Quotes to be in Rupees Millions and shall be up to two (2) decimal points.
- 3) The contents of this format shall be clearly typed.
- 4) All pages of this format shall be signed by the authorized person in whose name power of attorney as per Clause 2.14.1.1 is issued.
- 5) Ensure **36** values of the Quoted Non-Escalable Transmission Charges and only 1 value for Quoted Escalable Transmission Charges, unless firm Transmission Charges are quoted.
- 6) In the likely situation of Bidders quoting firm Transmission Charges, the single value for the Quoted Escalable Transmission Charges should be filled as Nil.
- 7) Charges quoted for the first Contract Year would be the charges applicable for the period from the immediately preceding 1 April from the Scheduled COD till the immediately succeeding 31 March.
- 8) Charges quoted for the last Contract Year would be the charges applicable from immediately preceding 1 April to the date of thirty-fifth anniversary of the Schedule COD till the immediately succeeding 31 March.
- 9) However, in cases of both (7) and (8) above, total Transmission Charges payable to the TSP will be computed proportionately for the total number of days in the first and the last Contract Year respectively.

**Name and signature of authorized person in whose name power of attorney / Board resolution as per Clause 2.14.1.1 is issued**

**Signature of authorized person**

Name: .....

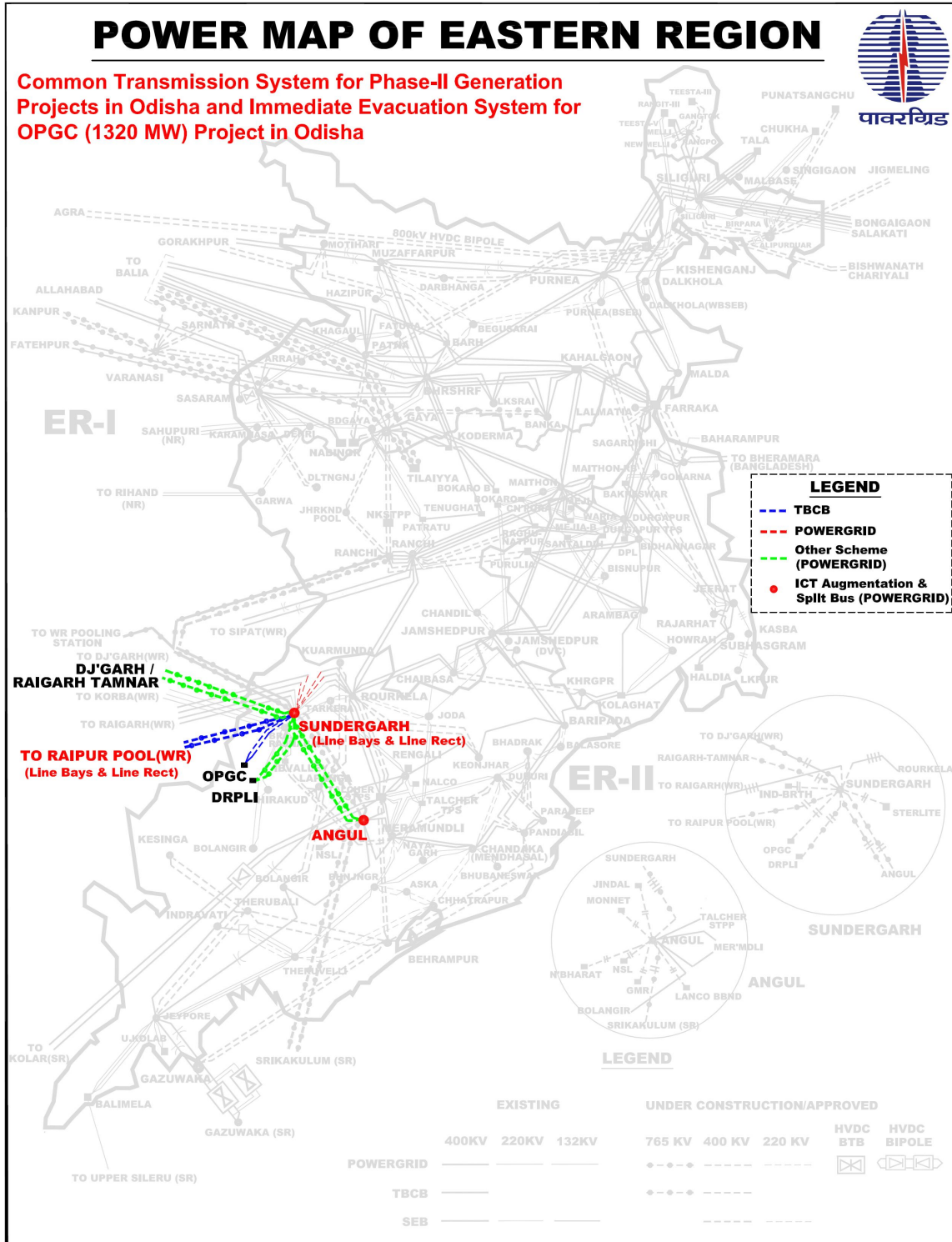
Designation: .....

Date: .....

**Company rubber stamp**

## **ANNEXURE 5**

### **GRID MAP OF THE PROJECT**



## ANNEXURE 6

### UNDERTAKINGS AND PROJECT SCHEDULE

#### Format 1: Bidders' Undertakings

*[On the Letter Head of the Bidding Company/Lead Member of Bidding Consortium]*

Date: .....

To.

**PFC Consulting Limited**  
(A wholly owned subsidiary of Power Finance Corporation Ltd.)  
1<sup>st</sup> Floor, "Urjanidhi", 1, Barakhambha Lane,  
Connaught Place,  
New Delhi – 110 001

Dear Sir,

**Sub: Bidders' Undertakings in respect of Bid for selection of TSP for the  
"Common Transmission System for Phase-II Generation Projects in Odisha  
and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha"**

We hereby undertake on our own behalf and on behalf of the TSP, that if selected as the Successful Bidder for the Project:

1. The Project shall comply with all the relevant electricity laws, codes, regulations, standards and Prudent Utility Practices, environment laws and relevant technical, operational and safety standards, and we shall execute any agreements that may be required to be executed as per law in this regard.
2. We confirm that the Project shall also comply with the standards and codes as per Clause 1.3 of the RFP and the TSP shall comply with the provisions contained in the Central Electricity Regulatory Commission (Open Access in inter-state transmission) Regulations, 2008 and the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 made pursuant to section 177 (2) of the Electricity Act, 2003, as amended from time to time.
3. We give our unconditional acceptance to the RFP dated **October 08, 2015** issued by the BPC and the RFP Project Documents, as amended, and undertake to ensure that the TSP shall execute the Share Purchase Agreement as per the provisions of this RFP.
4. We have submitted the Bid on the terms and conditions contained in the RFP and the RFP Project Documents. Further, the Financial Bid submitted by us is

## RFP for Selection of Transmission Service Provider

strictly as per the format provided in Annexure-4 of the RFP, without mentioning any deviations, conditions, assumptions or notes in the said Annexure.

5. Our Bid is valid up to the period required under Clause 2.17 of the RFP.
6. Our Bid has been duly signed by authorized signatory and stamped in the manner and to the extent indicated in this RFP and the power of attorney / Board resolution in requisite format as per RFP has been enclosed in original with this undertaking.
7. We have assumed that if we are selected as the Successful Bidder, the provisions of the Consortium Agreement submitted at the time of the RFQ, to the extent and only in relation to equity lock in and our liability thereof shall get modified to give effect to the provisions of Clause 2.14.4 of this RFP and Article 18.2 of the TSA. (**Note:** This is applicable only in case of a Bidding Consortium)
8. We confirm that our Bid meets the Scheduled COD of each transmission Element and the Project as specified below:

Sr. No.	Name of the Transmission Element	Scheduled COD in months from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Sequence of commissioning of Element(s)
1	Jharsuguda (Sundargarh) – Raipur Pool 765kV D/c line (Hexa Zebra Conductor)	40 months	94%	NIL
2	OPGC – Jharsuguda (Sundargarh) 400kV D/c (Triple Snowbird Conductor)	July-2017	6%	NIL

We agree that the Element(s) mentioned in Sr. No.1, 2 & 3 are critical to the operation of the Project and the actual COD of such Element(s) shall be no later than the Scheduled COD as mentioned in the above table.

We further agree that the payment of Transmission Charges for any Element irrespective of its successful commissioning on or before its Scheduled COD shall only be considered after the successful commissioning of such critical Element(s).

**Scheduled COD for the Project: 40 months from Effective Date**

9. We confirm that our Financial Bid conforms to all the conditions mentioned in this RFP, and in particular, we confirm that:
- a. Ratio of minimum and maximum Quoted Transmission Charges during the term of the TSA for which Transmission Charges have been quoted in the format at Annexure-4 of the Bid is not less than zero point seven (0.7) as provided in Clause 2.14.1.2.
  - b. Further, the Quoted Escalable Transmission Charges (after duly escalating the Quoted Escalable Transmission Charges on the basis of the escalation rates specified in Clause 3.3.1.3) for any Contract Year does not exceed fifteen percent (15%) of the corresponding Quoted Non-Escalable Transmission Charges for that Contract Year, for the entire term.
  - c. Financial Bid in the prescribed format of Annexure-4 has been submitted duly signed by the authorized signatory.
  - d. Financial Bid is unconditional.
  - e. Only one Financial Bid has been submitted.
10. We have neither made any statement nor provided any information in this Bid, which to the best of our knowledge is materially inaccurate or misleading. Further, all the confirmations, declarations and representations made in our Bid are true and accurate. In case this is found to be incorrect after our acquisition of **“Odisha Generation Phase II Transmission Limited”** pursuant to our selection as Selected Bidder, we agree that the same would be treated as a TSP’s Event of Default under TSA, and relevant provisions of TSA shall apply.
11. We confirm that there are no litigations or other disputes against us which materially affect our ability to fulfill our obligations with regard to the Project as per the terms of RFP Project Documents.
12. Original power of attorney / Board resolution as per Clause 2.14.1.1 is enclosed.

**Signature and stamp of Any Whole-Time Director / Manager** [refer Note 1 below] of Bidding Company or Lead Member of Consortium  
**(supported by a specific Board Resolution)**

**Please also affix common seal of Bidding Company / Member in a Bidding Consortium**

Common seal of ..... has been affixed in my / our presence pursuant to Board of Director’s Resolution dated .....

**WITNESS**



1. ....  
(Signature)

Name .....

Designation.....

2. ....  
(Signature)

Name .....

Designation.....

**Note:**

- 1) In case of Manager, the Company should confirm through a copy of Board Resolution attested by Company Secretary that the concerned person is appointed as Manager as defined under the Companies Act, 1956 for the purpose in question.

The Company Secretary also certifies that the Company does not have a Whole-Time Director.

**Format 2: Details of equity investment in Project**

1.1.a Name of the Bidding Company/ Bidding Consortium:

1.1.b Name of the Lead Member in the case of a Bidding Consortium:

1.2 Investment details of the Bidding Company/Member of the Bidding Consortium investing in “**Odisha Generation Phase II Transmission Limited**” as per Clause 2.14.4.2.

Sl. No.	Name of the Bidding Company / Member in case of a Bidding Consortium	Name of the Company investing in the equity of the ..... [Insert Name of SPV]	Relationship with Bidding Company/Member of the Bidding Consortium*	% of equity participation in the ..... [Insert Name of the SPV]
(1)	(2)	(3)	(4)	(5)
<b>TOTAL</b>				<b>100%</b>

\* In case the Bidder proposes to invest through its Affiliate(s) / Parent Company / Ultimate Parent Company, the Bidder shall declare shareholding pattern of such Affiliate(s) / Parent Company / Ultimate Parent Company and **provide documentary evidence** to demonstrate relationship between the Bidder and the Affiliate(s) / Parent Company / Ultimate Parent Company. **These documentary evidences could be, but not limited to, demat account statement(s) / Registrar of Companies' (ROC) certification / share registry book, etc duly certified by Company Secretary.**

Members of the Consortium or the Bidding Company making investment in the equity of the “**Odisha Generation Phase II Transmission Limited**” themselves to fill in their own names in the column (3)

**Signature and Name of authorized person in whose name power of attorney has been issued**

-----  
**Signature of authorized person**

Name: .....

Designation: .....

Date: .....

Company rubber stamp

## ANNEXURE 7

### Format for Clarifications / Amendments on the RFP / RFP Project Documents

Sl. No.	Name of the Document	Clause No. and Existing provision	Clarification required	Suggested text for the amendment	Rationale for the Clarification or Amendment

Signature .....

Name: .....

.....

For

**Bidder's Rubber Stamp and Full Address.**

(**Note:** This format shall be used for submission of requests for clarifications / amendments on the draft *RFP Project Documents* as per the provisions of Clause 2.12.1)

## ANNEXURE 8

### FORMATS FOR BOARD RESOLUTIONS

#### Format 1

**Format of the Board resolution for the Bidding Company / each Member of the Consortium / investing Affiliate / Parent Company / Ultimate Parent Company, where applicable**

[Reference Clause 2.14.1.1 of the RFP and the illustrations in Annexure 13A]

**[Note:** The following resolution no.1 needs to be passed by the Boards of each of the entity/(ies) making equity investment]

The Board, after discussion, at the duly convened Meeting on ..... [Insert date], with the consent of all the Directors present and in compliance of the provisions of the Companies Act, 1956, passed the following Resolution:

**1. RESOLVED THAT** pursuant to the provisions of the Companies Act, 1956 and compliance thereof and as permitted under the Memorandum and Articles of Association of the company, approval of the Board be and is hereby accorded for investment of .....% (..... per cent) of the total equity share capital of “**Odisha Generation Phase II Transmission Limited**” representing the entire amount proposed to be invested by the company for the “**Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha**”, partly by acquisition of the existing equity shares from **PFC Consulting Limited** and / or partly by subscribing to the new equity shares, as per the terms of the RFP.

**[Note:** Equity investment obligations by the Bidding Company/each Member of the Bidding Consortium/investing Affiliate or Parent or Ultimate Parent should add up to 100%.]

**[Note:** In the event the Bidder is a Bidding Consortium, the following Board resolution no. 2 also needs to be passed by the Lead Member of the Bidding Consortium]

**2. RESOLVED THAT** approval of the Board be and is hereby accorded to contribute such further amount over and above the said percentage limit to the extent becoming necessary towards the total equity share in the “**Odisha Generation Phase II Transmission Limited**”, obligatory on the part of the company pursuant to the terms and conditions contained in the Consortium Agreement dated ..... executed by the company as per the provisions of the RFQ.

**[Note:** In the event, the investing entity is an Affiliate or Parent or Ultimate Parent of the Selected Bidder, the following Board resolution no. 3 shall also be passed by the Selected Bidder]

**3. FURTHER RESOLVED THAT** the Board hereby acknowledges the Board Resolution(s) passed by the ..... [Name of the Affiliate(s)/ Parent / Ultimate Parent] regarding the investment of ..... (.....%) of the equity share capital requirements of “**Odisha Generation Phase II Transmission Limited**”, which is to be invested by the ..... [Name of the Affiliate(s)/ Parent / Ultimate Parent] for the “**Odisha Generation Phase II Transmission Limited**”, partly by acquisition of the existing equity shares from **PFC Consulting Limited** and partly by subscribing to the new equity shares, as per the terms of the RFP.

**[Note:** The following resolution no. 4 is to be provided by the Bidding Company / Lead Member of the Consortium only]

**4. FURTHER RESOLVED THAT** MR/MS ....., be and is hereby authorized to take all the steps required to be taken by the Company for submission of the Bid, including in particular, signing of the Bid, making changes thereto and submitting amended Bid, all the documents related to the Bid, certified copy of this Board resolution or letter or undertakings etc, required to be submitted to “**Odisha Generation Phase II Transmission Limited**” as part of the Bid or such other documents as may be necessary in this regard.

**Certified True Copy**

**Company rubber stamp to be affixed**

**[Notes:**

- 1) **This certified true copy should be submitted on the letter head of the Company**, signed by the Company Secretary / Managing Director of the Bidding Company or the Lead Member of Consortium.
- 2) The contents of the format may be suitably re-worded indicating the identity of the entity passing the resolution, i.e., the Bidding Company, each Member of the Bidding Consortium.
- 3) This format may be modified only to the limited extent required to comply with the local regulations and laws applicable to a foreign entity submitting this resolution. For example, reference to Companies Act 1956 may be suitably modified to refer to the law applicable to the entity submitting the resolution. However, in such case, the foreign entity shall submit an unqualified opinion issued by the legal counsel of such foreign entity, stating that the Board resolutions are in compliance with the applicable laws of the respective jurisdictions of the issuing company and the authorizations granted therein are true and valid.]

**Format 2**

**Format for the Board resolution of Technically / Financially Evaluated Entity / Ultimate Parent Company**

The Board, after discussion, at the duly convened Meeting on ..... [Insert date], with the consent of all the Directors present and in compliance of the provisions of the Companies Act, 1956, passed the following Resolution:

**RESOLVED THAT** pursuant to the provisions of the Companies Act, 1956 and compliance thereof and as permitted under the Memorandum and Articles of Association of the company, approval of the Board be and is hereby accorded for issuing an Undertaking to the BPC, in the format specified in the RFP issued by the BPC, draft of which is attached hereto and initialed by the Chairman whereby the company undertakes to invest .....percent (.... %) of the total equity share capital of “**Odisha Generation Phase II Transmission Limited**” representing the entire amount proposed to be invested by ..... [insert the name of the Bidder or Member] for the said Project, in case of failure of ..... [Insert the name of the Bidder or Member] to make such investment”.

**FURTHER RESOLVED THAT** ....., be and is hereby authorized to take all the steps required to be taken by the Company, including in particular, signing the said Undertaking, submitting the same to the BPC through .....[Insert name of Bidding Company/Lead Member of the Consortium] of all the related documents, certified copy of this Board resolution or letter, undertakings etc, required to be submitted to BPC as part of the Bid or such other documents as may be necessary in this regard.

**Certified True Copy**

**Company rubber stamp to be affixed**

**Notes:**

1. **This certified true copy should be submitted on the letter head of the Company**, signed by the Company Secretary / Managing Director of Bidding Company or Lead Member of Consortium.
2. The contents of the format may be suitably re-worded indicating the identity of the entity passing the resolution.
3. This format may be modified only to the limited extent required to comply with the local regulations and laws applicable to a foreign entity submitting this resolution. For example, reference to Companies Act 1956 may be suitably modified to refer to the law applicable to the entity submitting the resolution. However, in such case, the foreign entity shall submit an unqualified opinion issued by the legal counsel of such foreign entity, stating that the Board resolutions are in compliance with the applicable laws of the respective jurisdictions of the issuing company and the authorizations granted therein are true and valid.

## ANNEXURE 9

### FORMAT OF COVERING LETTER

[On the Letter Head of the Bidding Company/Lead Member of the Bidding Consortium]

Bidder's Name: .....

Full Address: .....

Telephone No.: .....

E-mail address: .....

Fax / No.: .....

To.

**PFC Consulting Limited**

(A wholly owned subsidiary of Power Finance Corporation Ltd.)

1<sup>st</sup> Floor, "Urjanidhi", 1, Barakhambha Lane,

Connaught Place,

New Delhi – 110 001

**Sub: Bid for selection of a Transmission Service Provider to build, own, operate and maintain "Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha" under the Tariff Based Competitive Bidding Process**

Dear Sir,

We, the undersigned Bidder having read and examined in detail the RFP for selection of a Transmission Service Provider to build, own, operate and maintain **"Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha"** through the Tariff Based Competitive Bidding Process, hereby submit our Bid comprising of Financial Bid and Non-Financial Bid.

**1) Bid Bond**

We have enclosed a Bid Bond of Rs. .... crores (Rs. .... crores) in the form of bank guarantee no. .... [Insert number of the Bank Guarantee] dated ..... [Insert Date of the Bank Guarantee] as per your proforma (Annexure-2) from ..... [Insert name of bank providing Bid Bond] and valid up to .....in terms of Clause 2.20 of the RFP.

**2) Acceptance**

We hereby unconditionally and irrevocably agree and accept that the decision made by the BPC on any matter regarding or arising out of the RFP shall be binding on us. We hereby expressly waive any and all claims in respect of Bid process.

**3) Familiarity With Relevant Indian Laws & Regulations**

We confirm that we have studied the provisions of relevant Indian laws and regulations as required to enable us to submit this Bid and execute the Share Purchase Agreement, in the event of our selection as the TSP. We further undertake and agree that all such factors as mentioned in Clause 2.14.2 of RFP have been fully examined and considered while submitting the Bid.

**4) Contact Person**

Details of contact person as required under Clause 2.14.1.4 (e) are furnished as under:

Name : .....  
Designation : .....  
Company : .....  
Address : .....  
Phone Nos.: .....  
Fax Nos.: .....  
E-mail address: .....

We are enclosing herewith Envelope I (Non Financial Bid) and Envelope II (Financial Bid) containing duly signed formats each one duly closed separately, **in one (1) original + one (1) copy (duly attested)** as desired by you in your RFP for your consideration.

It is confirmed that our Bid is consistent with all the requirements of submission as stated in the RFP and subsequent communications from BPC.

The information submitted in our Bid is complete, strictly as per the requirements stipulated in the RFP and is correct to the best of our knowledge and understanding. We would be solely responsible for any errors or omissions in our Bid.

We confirm that all the terms and conditions of the Bid are valid for acceptance for a period of one eighty (180) days from the Bid Deadline.



## **RFP for Selection of Transmission Service Provider**

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We confirm that we have not taken any deviation so as to be deemed non-responsive with respect to the provisions stipulated at Clause 2.14.1, of this RFP.

Dated this .....day of .....of ..... [Insert day, month and year]

Place: .....

Thanking you,  
We remain,

Yours faithfully,

**Name and signature of authorized person in whose name power of attorney / Board resolution as per Clause 2.14.1.1 is issued.**

**Signature of authorized person**

Name: .....

Designation: .....

Date: .....

**Company rubber stamp**

## ANNEXURE 10

### FORMATS OF POWER OF ATTORNEY

[Referred to Clause 2.14.1.1 in RFP]

(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution. The foreign Bidder to follow the applicable law in their country)

**Format 1: Power of attorney to be provided by the Bidding Company / Lead Member of the Bidding Consortium in favour of its representative**

Know all men by these presents, we .....(name and address of the registered office of the Bidding Company / Lead Member of the Bidding Consortium) do hereby constitute, appoint and authorize Mr. / Ms.....(name and residential address) as our true and lawful attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to submission of our Bid for the Project **“Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha”** in response to the RFP dated **October 08, 2015** issued by the BPC , including signing and submission of the Bid and all other documents related to the Bid, including, undertakings, letters, certificates, acceptances, clarifications, guarantees, etc, making representations to the BPC, and providing information / responses to the BPC, representing us in all matters before the BPC, and generally dealing with the BPC in all matters in connection with our Bid for the said Project till the completion of the bidding process.

We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this power of attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

All the terms used herein but not defined shall have the meaning ascribed to such terms under the RFP.

**Signed by the within named**

.....[Insert the name of the executant company]

through the hand of

Mr. ....

duly authorized by the Board to issue such Power of Attorney

Dated this ..... day of .....

**Accepted**

Signature of Attorney  
(Name, designation and address of the Attorney)

**Attested**

(Signature of the Executant)  
(Name, designation and Address of the Executant)

Signature and stamp of Notary of the place of execution

Common seal of ..... has been affixed in my/our presence pursuant to  
Board of Director's Resolution dated.....

**WITNESS**

1. ....  
(Signature)

Name .....

Designation.....

2. ....  
(Signature)

Name .....

Designation.....

**Note:**

- (1) The mode of execution of the power of attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and the same should be under common seal of the executant affixed in accordance with the applicable procedure. Further, the person whose signatures are to be provided on the power of attorney shall be duly authorized by the executant(s) in this regard.
- (2) Also, wherever required, the executant(s) should submit for verification the extract of the chartered documents and documents such as a Board resolution / power of attorney, in favour of the Person executing this power of attorney for delegation of power hereunder on behalf of the executant(s).

**Format 2: Power of attorney to be provided by each of the other Members of the Consortium in favour of the Lead Member**

**WHEREAS** the BPC have issued Request For Qualification dated **April 23, 2015** ('RFQ') and Request For Proposal dated **October 08, 2015** ('RFP') for inviting the bids in respect of selection of a TSP to build, own, operate and maintain a Transmission System associated with "**Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha**" and to provide Transmission Services therefrom to the Long Term Transmission Customer(s) on the terms and contained in the RFP and the RFP Project Documents (as defined in RFP);

**AND WHEREAS** ....., ....., ..... and ..... [Insert names of all Members of Consortium] the Members of the Consortium are desirous of submitting a Bid in response to the RFP, and if selected, set up the Project as per the terms of RFP and RFP Project Documents;

**AND WHEREAS** all the Members of the Consortium have agreed under the Joint Deed Agreement dated ..... [Insert Date of the Consortium Agreement] entered into between all the Members and submitted to the BPC in response to the RFQ, to appoint ..... [Insert name of the Lead Member] as Lead Member to represent all the other Member(s) of the Consortium for all matters regarding the Bid;

**AND WHEREAS** pursuant to the terms of the RFP, we, ..... [Insert Name of the Consortium Member(s) hereby designate M/s \_\_\_\_\_ [Insert name of the Lead Member] as the Lead Member to represent us in all matters regarding the Bid and the RFP, in the manner stated below:-

Know all men by these presents, We..... (name and address of the registered office of the executant) do hereby constitute, appoint and authorize .....[name and registered office address of the Lead Member], which is one of the Members of the Consortium, to act as the Lead Member and our true and lawful attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to submission of Consortium's Bid for the Project in response to the RFP dated ..... [Insert date of RFP] issued by the BPC, including signing and submission of the Bid and all documents related to the Bid, including, undertakings, letters, certificates, acceptances, clarifications, guarantees, etc, making representations to the BPC, and providing information / responses to the BPC, representing us and the Consortium in all matters before the BPC, and generally dealing with the BPC in all matters in connection with our Bid for the said Project, till completion of the bidding process in accordance with the RFP and signing of the Share Purchase Agreement by all the parties thereto.

We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this power of attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

All the terms used herein but not defined shall have the meaning ascribed to such terms under the RFP.

**Signed by the within named:**

..... [Insert the name of the executant company]

through the hand of

Mr .....

duly authorized by the Board to issue such Power of Attorney

Dated this ..... day of .....

**Accepted:**

.....(signature of Attorney)

(Name, designation and Address of the Attorney)

**Attested:**

(Signature of executant)

(Name, designation and Address of the executant)

Signature and stamp of Notary of the place of execution

**Common seal of ..... has been affixed in my/our presence pursuant to Board of Director's Resolution dated.....**

**WITNESS**

1. ....

**(Signature)**

Name .....

Designation.....

2. ....

**(Signature)**

Name .....

Designation.....

**Note:**

- (1) The mode of execution of the power of attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and the same should be under common seal of the executant affixed in accordance with the applicable procedure. Further, the person whose signatures are to be provided on the power of attorney shall be duly authorized by the executant(s) in this regard.

## ANNEXURE 10A

### FORMAT OF UNDERTAKING

[On the Letter Head of the Technically / Financially Evaluated Entity // Ultimate Parent Company]

Date: \_\_\_\_\_

Name: .....

Full Address: .....

Telephone No.: .....

E-mail address: .....

Fax / No.: .....

To.

**PFC Consulting Limited**

(A wholly owned subsidiary of Power Finance Corporation Ltd.)

1<sup>st</sup> Floor, “Urjanidhi”, 1, Barakhambha Lane,

Connaught Place,

New Delhi – 110 001

**Sub: Undertaking for equity investment**

Dear Sir,

We refer to the Request For Qualification dated April 23, 2015 ('RFQ') and Request For Proposal dated October 08, 2015 ('RFP') issued by you regarding setting up of **“Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha”** Project on build, own, operate and maintain basis.

We have carefully read and examined in detail the RFQ and the RFP, including in particular, Clause 2.1.4 of the RFQ and Clauses 2.14.1.1 and 2.14.4 of the RFP, regarding submission of an undertaking regarding the investment in the equity share capital of **“Odisha Generation Phase II Transmission Limited”** and provisions for minimum equity holding and equity lock-in. We have also noted the amount of the equity investment required to be made in **“Odisha Generation Phase II Transmission Limited”** by the ..... [Insert the name of the Bidder or the Consortium Member] for the Project.



In view of the above, we hereby undertake to you and confirm that in the event of failure of .....[Insert the name of the Bidder or the Consortium Member] to invest in full or in part, in the equity share capital of “**Odisha Generation Phase II Transmission Limited**” as specified in the Bid, we shall invest the said amount not invested by .....[Insert the name of the Bidder or the Consortium Member] in “**Odisha Generation Phase II Transmission Limited**” by purchase of existing shares or subscribing to the new shares of “**Odisha Generation Phase II Transmission Limited**”, as stipulated by you.

We have attached hereto certified true copy of the Board resolution whereby the Board of Directors of our Company has approved issue of this Undertaking by the Company.

All the terms used herein but not defined, shall have the meaning as ascribed to the said terms under the RFP.

**Certified as True**

-----  
**Signature of Any Whole-Time Director / Manager** (refer Note-1 below)  
**(supported by a specific Board Resolution)**

**The above undertaking should be signed and certified as true by Any Whole-Time Director /Manager** (refer Note-1 below) **of the Bidding Company or of the Member, in case of a Consortium (supported by a specific Board Resolution).**

Common seal of ..... has been affixed in my/our presence pursuant to Board of Director’s Resolution dated.....

**WITNESS:**

1. ....  
**(Signature)**  
Name .....  
Designation.....

2. ....  
**(Signature)**  
Name .....  
Designation.....

**Note:**

1. In case of Manager, the Company should confirm through a copy of Board Resolution attested by Company Secretary that the concerned person is appointed as Manager as defined under the Companies Act, 1956 for the purpose in question.

The Company Secretary also certifies that the Company does not have a Managing Director or CEO.

2. Wherever required, extract of the chartered documents and documents such as a Board resolution should be submitted for verification.

## ANNEXURE 11

### Format for Contract Performance Guarantee

**(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution. Foreign entities submitting Bids are required to follow the applicable law in their country. To be provided separately in the name of each of the Long Term Transmission Customer(s), in proportion to their Allocated Project Capacity as provided in Clause 2.21 of this document)**

In consideration of the .....[Insert name of the Selected Bidder or Lead Member in case of the Consortium, with address] agreeing to undertake the obligations under the TSA dated ..... and the other RFP Project Documents and .....[Insert the name of the Long Term Transmission Customer], agreeing to execute the Share Purchase Agreement with the Selected Bidder, regarding setting up the Project, the ..... [Insert name and address of the bank issuing the guarantee and address of the head office] (hereinafter referred to as "Guarantor Bank") hereby agrees unequivocally, irrevocably and unconditionally to pay to .....[Insert Name of the Long Term Transmission Customer] at .....[Insert the Place from the address of the Long Term Transmission Customer indicated in the TSA] forthwith on demand in writing from .....[Name of the Long Term Transmission Customer] or any Officer authorized by it in this behalf, any amount up to and not exceeding Rupees ..... crores only [Insert the amount of the bank guarantee in respect of the Long Term Transmission Customer as per the terms of TSA separately to each Long Term Transmission Customer in the ratio of Allocated Project Capacities as on the date seven (7) days prior to the Bid Deadline] on behalf of M/s. .... [Insert name of the Selected Bidder].

This guarantee shall be valid and binding on the Guarantor Bank up to and including .....and shall not be terminable by notice or any change in the constitution of the Bank or the term of the TSA or by any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed with or without our knowledge or consent, by or between parties to the respective agreement.

Our liability under this Guarantee is restricted to Rs. .... crores (Rs. .... crores only). Our Guarantee shall remain in force until ..... [Insert the date of validity of the Guarantee as per Clause 2.21.1 of the RFP]. The Long Term Transmission Customer shall be entitled to invoke this Guarantee up to thirty (30) days of the last date of the validity of this Guarantee.

The Guarantor Bank hereby expressly agrees that it shall not require any proof in addition to the written demand from the Long Term Transmission Customer, made in any format, raised at the above mentioned address of the Guarantor Bank, in order to make the said payment to the Long Term Transmission Customer.

The Guarantor Bank shall make payment hereunder on first demand without restriction or conditions and notwithstanding any objection by **“Odisha Generation Phase II Transmission Limited”**, ..... [Insert name of the Selected Bidder] and/or any other person. The Guarantor Bank shall not require the Long Term Transmission Customer to justify the invocation of this BANK GUARANTEE, nor shall the Guarantor Bank have any recourse against the Long Term Transmission Customer in respect of any payment made hereunder.

**This BANK GUARANTEE** shall be interpreted in accordance with the laws of India.

The Guarantor Bank represents that this BANK GUARANTEE has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

**This BANK GUARANTEE** shall not be affected in any manner by reason of merger, amalgamation, restructuring, liquidation, winding up, dissolution or any other change in the constitution of the Guarantor Bank.

**This BANK GUARANTEE** shall be a primary obligation of the Guarantor Bank and accordingly the Long Term Transmission Customer shall not be obliged before enforcing this BANK GUARANTEE to take any action in any court or arbitral proceedings against **“Odisha Generation Phase II Transmission Limited”** or the Selected Bidder, to make any claim against or any demand on **“Odisha Generation Phase II Transmission Limited”** or the Selected Bidder or to give any notice to **“Odisha Generation Phase II Transmission Limited”** or the Selected Bidder or to enforce any security held by the Long Term Transmission Customer or to exercise, levy or enforce any distress, diligence or other process against **“Odisha Generation Phase II Transmission Limited”** or the Selected Bidder.

The Guarantor Bank acknowledges that this BANK GUARANTEE is not personal to the Long Term Transmission Customer and may be assigned, in whole or in part, (whether absolutely or by way of security) by Long Term Transmission Customer to any entity to whom the Lead Long Term Transmission Customer is entitled to assign its rights and obligations under the TSA.

The Guarantor Bank hereby agrees and acknowledges that the Long Term Transmission Customer shall have a right to invoke this Bank Guarantee either in part or in full, as it may deem fit.

Notwithstanding anything contained hereinabove, our liability under this Guarantee is restricted to Rs. .... crores (Rs. .... crores only) and it shall remain in force until .....[Date to be inserted on the basis of Article 3.1.2 of TSA], with an additional claim period of thirty (30) days thereafter. This BANK GUARANTEE shall be extended from time to time for such period, as may be desired

by ..... [Insert name of the Selected Bidder or Lead Member in case of the Consortium]. We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if the Long Term Transmission Customer serves upon us a written claim or demand.

**In witness where of:**

Signature .....

Name: .....

Power of attorney No.: .....

**For:**

..... [Insert Name of the Bank]

Banker's Seal and Full Address, including mailing address of the Head Office

**Notes:**

1. The Stamp Paper should be in the name of the Executing Bank.

## ANNEXURE 12

### LIST OF BANKS

#### LIST OF BANKS

##### 1. Scheduled Commercial Banks

###### **SBI and Associates**

1. State Bank of India
2. State Bank of Bikaner and Jaipur
3. State Bank of Hyderabad
4. State Bank of Indore
5. State Bank of Mysore
6. State Bank of Patiala
7. State Bank of Saurashtra
8. State Bank of Travancore

###### **Nationalised Banks**

1. Allahabad Bank
2. Andhra Bank
3. Bank of India
4. Bank of Maharashtra
5. Bank of Baroda
6. Canara Bank
7. Central Bank of India
8. Corporation Bank
9. Dena Bank
10. Indian Bank
11. Indian Overseas Bank
12. Oriental Bank of Commerce
13. Punjab National Bank
14. Punjab and Sind Bank

- 15. Syndicate Bank
- 16. Union Bank of India
- 17. United Bank of India
- 18. UCO Bank
- 19. Vijaya Bank

**2. Foreign Banks**

- 1 Banks of America NA
- 2 Bank of Tokyo Mitsubishi Ltd.
- 3 BNP Paribas
- 4 Calyon Bank
- 5 Citi Bank N.A.
- 6 Deutsche Bank A.G.
- 7 The Hongkong and Shanghai Banking Corporation Ltd.
- 8 Standard Chartered Bank
- 9 UFJ Bank Ltd.
- 10 Sumitomo Mitsui Banking Corporation
- 11 Societe Generale
- 12 Barclays Bank
- 13 ABN Amro Bank N.V.
- 14 Bank of Novascotia

**3. Scheduled Private Banks**

- 1 ING Vysya Bank Ltd.
- 2 ICICI Bank Ltd.
- 3 HDFC Bank Ltd.
- 4 IDBI Bank Ltd
- 5 Axis Bank

**Note:**

The above list of banks is indicative and can be modified by the BPC as required and any such change shall not be construed as a deviation from this document.

## **ANNEXURE 13**

**Illustration of the Bid Evaluation/Computation of Levelised  
Transmission Charges**

PROVIDED AS EXCEL FILE IN CD ENCLOSED HEREWITH

## ANNEXURE 13A

### Illustration for Applicable Board Resolution Requirements under Clause 2.14.1.1

Investor in the TSP	Entities (other than Bidder) whose credentials (financial and/or technical) used by the Bidder for meeting RFQ criteria	Applicable Board Resolutions	Requirement of Undertaking (Annexure 10A)
Bidder himself for 100% equity	None	a) Format 1 of Annexure 8 – Resolution* 1 and 4 from the Bidder	None
Bidder himself for 100% equity	Affiliate and/or Parent Company and/or Ultimate Parent	<p>a) Format 1 of Annexure 8 – Resolution* 1 and 4 from the Bidder</p> <p>b) Format 2 of Annexure 8 by either Technically / Financially Evaluated Entity(ies) whose credentials have been used, or Ultimate Parent.</p> <p>Provided, if the Bidder himself is the Ultimate Parent, then Format 2 need not be provided.</p>	<p>Yes, by either Technically / Financially Evaluated Entity(ies) Affiliate(s) whose credentials have been used, or Ultimate Parent.</p> <p>Provided, if the Bidder himself is the Ultimate Parent, then the undertaking need not be provided.</p>
Bidder himself + others (Affiliate and/or Parent Company and/or Ultimate Parent) in aggregate holding 100% equity	None	<p>a) Format 1 of Annexure 8 – Resolution* 1, 3 and 4 from the Bidder.</p> <p>b) Format 1 of Annexure 8 – Resolution* 1 from the Affiliate and/or Parent and/or Ultimate Parent investing in the equity</p>	None
Bidder himself + others (Affiliate and/or Parent Company and/or Ultimate	Affiliate and/or Parent Company and/or Ultimate Parent	<p>a) Format 1 of Annexure 8 – Resolution* 1, 3 and 4 from the Bidder.</p> <p>b) Format 1 of Annexure 8 –</p>	Yes, by either Parent/ Affiliate(s) whose credentials have been used, or Ultimate Parent



## RFP for Selection of Transmission Service Provider

Investor in the TSP	Entities (other than Bidder) whose credentials (financial and/or technical) used by the Bidder for meeting RFQ criteria	Applicable Board Resolutions	Requirement of Undertaking (Annexure 10A)
Parent) in aggregate holding 100% equity		<p>Resolution* 1 from the Affiliate and/or Parent and/or Ultimate Parent investing in the equity</p> <p>c) Format 2 of Annexure 8 by either Parent / Affiliate(s) whose credentials have been used and /or Ultimate Parent investing in the equity</p>	

<b>ANNEXURE 14</b>
<b>Format for Disclosure</b>

**[On the letter head of Bidding Company/Each Member in a Bidding Consortium]**

**Disclosure**

We hereby declare that the following companies with which we/ have direct or indirect relationship are also separately participating in this Bid process as per following details

S.No.	Name of the Company	Relationship
1.		
2.		
3.		

In case there is no such company, in the column “Name of the Company” write “Nil”

Further we confirm that we don’t have any Conflict of Interest with any other company participating in this bid process.

**Signature of Any Whole-Time Director / Manager  
(supported by a specific Board Resolution)**

The above disclosure should be signed and certified as true by Any Whole-Time Director / Manager (**refer Note below**) of the Bidding Company or of the Member, in case of a Consortium (supported by a specific Board Resolution).

**Note:**

1. In case of Manager, the Company should confirm through a copy of Board Resolution attested by Company Secretary that the concerned person is appointed as Manager as defined under the Companies Act, 1956 for the purpose in question.

The Company Secretary also certifies that the Company does not have a Managing Director or CEO.

## ANNEXURE 15

### Check List for response to RFP submission requirements

Response to RFP Submission Requirements		Response Yes / No
<b>A.</b>	<b>Envelope – I (Non-Financial Bid)</b>	<input type="checkbox"/>
	1. Bid Bond in the prescribed format at Annexure 2	<input type="checkbox"/>
	2. Board resolutions as per the prescribed formats enclosed in Annexure 8 (and as per the illustrations in Annexure-13 of this RFP)	
	<ul style="list-style-type: none"> <li>From the Bidding Company (and from any investing Affiliate / Parent / Ultimate Parent committing 100% in aggregate of the equity requirement for the Project as per format 1 of Annexure 8</li> </ul>	<input type="checkbox"/>
	<ul style="list-style-type: none"> <li>Board resolutions from each of the Consortium Member of the Bidding Consortium (and any investing Affiliate/Parent/Ultimate Parent) together committing to one hundred percent (100%) in aggregate of equity requirement for the Project, in case Bidder is a Bidding Consortium – Format-1 of Annexure-8</li> </ul>	<input type="checkbox"/>
	<ul style="list-style-type: none"> <li>Board resolutions as per Format 2 of Annexure 8 for total equity investment commitment from the Technically / Financially Evaluated Entity(ies) whose technical / financial credentials had been considered for the purpose of meeting Qualification Requirements as per the RFQ OR from the Parent Company or the Ultimate Parent Company (as applicable)</li> </ul>	<input type="checkbox"/>
	3. Bidder's Undertakings	
	<ul style="list-style-type: none"> <li>Bidder's undertaking as per format 1 of Annexure 6</li> </ul>	<input type="checkbox"/>
	<ul style="list-style-type: none"> <li>Details of Equity Investment in the Project as per format 2 of Annexure 6</li> </ul>	<input type="checkbox"/>
	4. Covering Letter as per the format at Annexure 9 of this RFP	<input type="checkbox"/>
	5. Power of Attorney	
	<ul style="list-style-type: none"> <li>Format 1 of Annexure 10 by the Bidding Company / Lead Member of the Bidding Consortium (as applicable) in favour of its representative</li> </ul>	<input type="checkbox"/>
	<ul style="list-style-type: none"> <li>Format 2 of Annexure 10 by each of the other Members of the Consortium (in case of the Bidding Company being a Consortium) in favour of the Lead Member</li> </ul>	<input type="checkbox"/>
	6. Format of Undertaking for Equity Investment	
	<ul style="list-style-type: none"> <li>by the Technically / Financially Evaluated Entity / Ultimate Parent Company (as applicable) for equity investment, in case of failure to invest in part or full, by the Bidder or the Consortium Member in case the Selected Bidder is a Consortium) in the prescribed format at</li> </ul>	<input type="checkbox"/>

## RFP for Selection of Transmission Service Provider

Response to RFP Submission Requirements		Response Yes / No
	Annexure 10A	
	7. Format for Disclosure by the Bidding Company or by each Member of the Consortium (as applicable)	<input type="checkbox"/>
<b>B.</b>	<b>Envelope – II (Financial Bid)</b>	<input type="checkbox"/>
	<ul style="list-style-type: none"><li>Financial Bid as per format at Annexure-4, duly signed as</li></ul>	<input type="checkbox"/>

**Name and signature of authorized person in whose name power of attorney / Board resolution as per Clause 2.14.1.1 is issued.**

-----  
**Signature of authorized person**

Name: .....

Designation: .....

Date: .....

**Company rubber stamp**

# **APPENDIX**

**SPECIFIC TECHNICAL REQUIREMENTS**

**FOR**

**TRANSMISSION LINES**

**And**

**SPECIFIC TECHNICAL REQUIREMENTS FOR  
COMMUNICATION**

**SPECIFIC TECHNICAL REQUIREMENTS FOR TRANSMISSION LINES**

- 1.0** The Tower shall be fully galvanized using mild steel or/and high tensile steel sections. Bolts and nuts with spring washer are to be used for connection.
- 2.0** IS Steel section of tested quality in conformity with IS 2062:2006, grade E 250 (Designated Yield Strength 250 Mpa) and/or grade E 350 (Designated Yield Strength 350 Mpa) are to be used in towers, extensions, gantry structures and stub setting templates. The contractor can use other equivalent grade of structural steel angle sections and plates conforming to latest International Standards. However, use of steel grade having designated yield strength more than that of EN 10025 grade S355 JR/JO (designated yield strength 355 Mpa) is not permitted. The steel used for fabrication of towers shall be manufactured by primary steel producers only.
- 3.0** Towers shall be designed as per latest revision of IS-802 considering wind zone as per IS-875. In addition to design conditions & stipulations in present IS-802, tower design wind pressure under security condition shall be 75 % of full wind pressure for suspension towers. As per CEA's technical standards for construction of lines Regulation 2010, Transmission Service Provider (TSP) may adopt any additional loading/ design criteria for ensuring reliability of the line, if so desired and/ or deemed necessary.
- 4.0** The conductor configuration shall be as follows:-

<b>Transmission line</b>	<b>ACSR Conductor specified</b>	<b>Equivalent AAAC conductor based on 53.5% conductivity of Al Alloy</b>	<b>Stranding details of AAAC Conductor</b>	<b>Sub-conductor Spacing</b>
400kV D/C (Triple Snowbird) transmission lines	Snowbird : Stranding 42/3.99 mm-Al + 7/2.21 mm-Steel, 525.2sqmm, Aluminium area, 30.56 mm diameter	31.95mm diameter; 604 sq.mm Aluminium alloy area	61/3.55mm	457 mm
765kV D/C (Hexa Zebra) transmission lines	Zebra : Stranding 54/3.18 mm-Al + 7/3.18 mm-Steel, 428 sq mm, Aluminium area, 28.62 mm diameter	28.71 mm diameter; 487.5 sq.mm Aluminium alloy area	61/3.19mm	457 mm

*Note: The transmission lines to be designed for a maximum operating conductor temperature of 85 deg C for both ACSR as well as AAAC.*

- 5.0** The required phase to phase spacing and horizontal spacing for 765 kV D/C line shall be governed by the tower design as well as minimum live metal clearances for 765kV voltage level respectively under different insulator swing angles.

**a) For 765 kV transmission lines:**

The minimum live metal clearances for 765 kV line may be considered as follows:

- (i) Under stationary conditions

From tower body: For 765 kV D/C: 6.1 m

For 765 kV S/C: 5.6 m

- (ii) Under swing conditions

Wind pressure Condition	Minimum electrical clearance
a) Swing angle corresponding to 2 years return period	4.4 mtrs
b) Swing angle corresponding to 50 years return period	1.3 mtrs

However the phase to phase spacing for 765kV line shall not be less than 15m

**b) For 400 kV transmission lines:**

The minimum live metal clearances for 400 kV D/C transmission lines shall be considered as follows:

- (i) Under stationary conditions

From tower body: 3.05m

- (ii) Under swing conditions

Wind pressure Condition	Minimum electrical clearance
a) Swing angle (22°)	3.05 mtrs
b) Swing angle (44°)	1.86 mtrs

However, the phase to phase spacing for 400 kV D/C Line shall not be less than 8 m.

- 6.0** The minimum ground clearance for 765 kV transmission lines shall be 15 m so that maximum electric field does not exceed 10kV/m within the ROW and does not exceed 5kV/m at the edge of the ROW as per international guidelines.
- 7.0** The minimum mid span separation between earthwire and conductor shall be 9.0 m for 765 kV D/C transmission lines. Shielding angle shall not exceed 10 deg for 765 kV D/C line and 20 deg for 765 kV S/C line.
- 8.0** The switching impulse withstands voltage (wet) for 765 kV line shall be 1550 kVp.

- 9.0** The Fault current for design of line shall be 50 kA for 1 sec for 765 kV.
- 10.0** The lines shall be designed for medium pollution level (creepage of 20mm/kV as per IEC-60815). For normal locations porcelain /glass insulators shall be used while for critical location coming in areas with higher pollution level, antifog type insulators with higher creepage distance or silicone rubber polymer insulators depending on level of pollution shall be used.



**Specific Technical Requirements for Communication**

In order to meet the requirement for grid management and operation of substations, Transmission Service Provider (TSP) shall conform to the following requirements.

**A. Jharsuguda (Sundargarh) – Raipur Pool 765kV D/C line (Hexa Zebra Conductor):**

- (i) On Jharsuguda (Sundargarh) – Raipur Pool 765kV D/C (Hexa Zebra Conductor) transmission line, one OPGW containing 24 Fibres is to be installed by the TSP in place of conventional earth wire during the construction of line for grid management and substation operation purpose by CTU. The installation of OPGW shall be done from gantry of Jharsuguda (Sundargarh) Substation up to gantry of 765kV Raipur Pool Substation and shall be terminated in a Joint Box by TSP at both the ends. These Joint Boxes shall be installed at a height of around 10m above ground and shall conform to IP66.
- (ii) All these fibres of the OPGW shall be utilized for grid management purpose. The maintenance of the OPGW shall be the responsibility of TSP.”

**B. OPGC – Jharsuguda (Sundargarh) 400kV D/c (Triple Snowbird Conductor):**

- (i) On OPGC – Jharsuguda (Sundargarh) 400kV D/C (Triple Snowbird Conductor) transmission line, one OPGW containing 24 Fibres is to be installed by the TSP in place of conventional earth wire during the construction of line for grid management and substation operation purpose by CTU. The installation of OPGW shall be done from gantry of Jharsuguda (Sundargarh) Substation up to gantry of 400kV OPGC Substation and shall be terminated in a Joint Box by TSP at both the ends. These Joint Boxes shall be installed at a height of around 10m above ground and shall conform to IP66.
- (ii) All these fibres of the OPGW shall be utilized for grid management purpose. The maintenance of the OPGW shall be the responsibility of TSP.”



Government of India  
Ministry of Power  
Central Electricity Authority  
System Planning & Project Appraisal Division  
Sewa Bhawan, R. K. Puram, New Delhi-110066  
Website: www.cea.nic.in



ISO :9001:2008

No. 68/ER/2015/1301

Dated: 03.06.2015

To,

✓ CEO,

PFC Consulting Ltd,  
First Floor, Urjanidhi, 1, Barakhamba Lane,  
New Delhi -110001 (Fax- 011-23456170)

**Subject: Prior approval of the Government under Section 68(1) of Electricity Act, 2003 for the Transmission Project "Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha" by PFC Consulting Limited.**

Reference: i) PFC letter no 03/ITPs/15-16/OPGTL/ dated 06.05.2015

Sir,

This has reference to PFC letter dated 06.05.2015 seeking prior approval of Government under section 68(1) of the Electricity Act, 2003 for the transmission project "Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC(1320 MW) Project in Odisha" with following scope of works.

- (i) Jharsuguda (Sundargarh) – Raipur Pool 765 kV D/C line (350 km)
  - (ii) OPGC- Jharsuguda (Sundargarh) 400 kV D/C line with Triple Snow bird conductor (50 km).
2. The scope of works mentioned above, has been agreed in the 1<sup>st</sup> - 2014 / 16<sup>th</sup> Standing Committee Meeting on Power System Planning of Eastern Region held on 02.05.2014 at NRPC, New Delhi.
  3. CEA conveys the prior approval of Government under Section 68(1) of Electricity Act, 2003 for the scheme "Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha" in favor of "Odisha Generation Phase II Transmission Limited" with above scope of works.

4. This approval is subject to compliance of
- (a) The requirement of the relevant provisions of the Electricity Act, 2003, as amended from time to time and the rules and regulations framed thereunder and
  - (b) CEA's (Measures relating to Safety and Electricity Supply) Regulations, 2010 framed under the Electricity Act, 2003.
5. The approval is also subject to the following conditions:
- (i) The implementing agency will commence construction of the project within three years, unless this term is extended by the Central Electricity Authority.
  - (ii) Central Electricity Authority may withdraw the approval before the expiry of the period of three years after giving a one month notice.
  - (iii) The implementing agencies shall abide by the provisions of Works of Licensee Rules, 2006 notified by the Government of India, Ministry of Power in the Gazette of India, extra-ordinary Part-II, Section 3(i) dated 18-04-2006 (vide GSR 217 (E) dated 18-04-2006).

  
416118  
**(P. D. Siwal)**  
**Secretary (CEA)**

Copy to: 1. JS (Trans), MOP, Shram Shakti Bhawan, New Delhi.  
2. Office of Secretary (CEA), Sewa Bhawan, R.K.Puram, New Delhi

जायरी संख्या 352 शे.का. (सं. ऑ०)  
दिनांक 07/02/14

F No. 11-488/2013-FC  
Government of India  
Ministry of Environment and Forests  
(FC Division)

Paryavaran Bhawan,  
CGO Complex, Lodhi Road,  
New Delhi - 110 510.  
Dated: 28<sup>th</sup> January, 2014

To

The Principal Secretary (Forests),

All States / Union Territory Governments except Jammu and Kashmir

Sub: Submission of Geo-referenced digital data for applications under Forest (Conservation) Act, 1980.

Sir,

I am directed to refer to this Ministry's letter No. 11-9/98-FC dated 8<sup>th</sup> July 2011 on the above-mentioned subject wherein this Ministry informed that applications seeking prior approval of Central Government under the Forest (Conservation) Act, 1980 for diversion of forest land for non-forest purpose must be accompanied with geo-referenced boundary in shape file. It was also informed that the application should also contain a digital map along with a hard copy duly authenticated by competent authority in the State Government, of the forest land proposed for diversion, prepared by using Total Station or differential GPS.

It was also stipulated in the said letter that in case the applicant desires, the above digital mapping of the area should be done by the respective State Forest Department by realizing appropriate cost from the user agency.

It has been brought to notice of this Ministry that preparation and authentication of geo-referenced maps is taking considerable time, resulting in delay in processing of proposals seeking prior approval of Central Government under the Forest (Conservation) Act, 1980.

Accordingly, I am directed to say that process of authentication of geo-referenced maps may be streamlined to expedite processing of proposals seeking prior approval of Central Government under the Forest (Conservation) Act, 1980.

Yours faithfully,

(H.C. Chaudhary)

Assistant Inspector General of Forests

Copy to:-

1. Principal Chief Conservator of Forests, all State/UT Governments except Jammu and Kashmir.

2. Nodal Officer, the Forest (Conservation) Act, 1980, all State/UT Governments except Jammu and Kashmir
3. All Regional Offices, Ministry of Environment & Forests.
4. All Assistant Inspector General of Forests/ Directors in Forest Conservation Division, MoEF.
5. Dy. Secretary, R.O. (HQ), Ministry of Environment & Forests, New Delhi.
6. Guard File.

25/01/2019  
(H.C. Chaudhary)

- Assistant Inspector General of Forests -

F. No. 11-9/ 98-FC  
Government of India  
Ministry of Environment and Forests  
(FC Division)

Paryavaran Bhawan,  
CGO Complex, Lodhi Road,  
New Delhi - 110 510.

Dated: 8<sup>th</sup> July, 2011

To

**The Principal Secretary (Forests),**  
All States / Union Territory Governments except Jammu and Kashmir

**Sub:** Submission of Geo-referenced digital data for applications under Forest (Conservation) Act, 1980.

Sir,

I am directed to say that to ensure accurate delineation of the forest area proposed to be diverted, in future all applications seeking prior approval of the Central Government under the Forest (Conservation) Act, 1980 for diversion of forest land for non-forest purpose must be accompanied with geo-referenced boundary in shape file. The application should also contain a digital map along with a hard copy duly authenticated by competent authority in the State Government, of the forest land proposed for diversion, prepared by using Total Station or differential GPS. In case the applicant desires, the above digital mapping of the area should be done by the respective State Forest Department by realizing appropriate cost from the user agency.

Yours faithfully,

s/l

(H.C. Chaudhary)

Assistant Inspector General of Forests

**Copy to:-**

- ✓ 1. Principal Chief Conservator of Forests, all State/UT Governments except Jammu and Kashmir.
2. Nodal Officer, the Forest (Conservation) Act, 1980, all State/UT Governments except Jammu and Kashmir
3. All Regional Offices, Ministry of Environment & Forests.
4. All Assistant Inspector General of Forests in Forest Conservation Division, MoEF.
5. Dy. Secretary, R.O. (HQ), Ministry of Environment & Forests, New Delhi.
6. Guard File.

08/07/2011

(H.C. Chaudhary)

Assistant Inspector General of Forests



# कार्यालय प्रधान मुख्य वन संरक्षक (छ.ग.)

प्रधान कार्यालय: अरण्य भवन मेडिकल कॉलेज रोड, फाफाडीह, रायपुर-492001

दूरभाष: 0771-2552221, फैक्स: 0771-2552210

ई-मेल: cgpcf.forest@gmail.com, वेबसाइट: www.cgforest.nic.in

राम प्रकाश

भा.व.से.

प्रधान मुख्य वन संरक्षक एवं

वन बल प्रमुख

क्र./भू-प्रबंध/विविध/115-30/

प्रति,

अ.शा.पत्र क्र./प्र.मु.व.सं/115-30/.....02.....

रायपुर, दिनांक.....11-11-2014.....

रायपुर, दिनांक 11/11/2014

समस्त वन मंडलाधिकारी (क्षेत्रीय)

छत्तीसगढ़

विषय: — वन संरक्षण अधिनियम — 1980 तहत व्यपवर्तन प्रस्तावों में आवेदित स्थल हेतु जियोरिकरेन्स डिजिटल बाउण्ड्री एवं डिजिटल नक्शा निर्माण के संबंध में।

संदर्भ: 1. छ.ग. शासन, वन विभाग मंत्रालय का पत्र क्रमांक/एफ 5-20/2007/10-2 दिनांक 08.08.2012 एवं इस संबंध में विभाग द्वारा जारी अधिसूचना दिनांक 30.06.2012

2. कार्यालयीन पत्र क्रमांक/ भू-प्रबंध/ विविध/ 115-30 /1922 दिनांक 02.11.2012

= 0 =

छ.ग. शासन के अधिसूचना दिनांक 30.06.2012 द्वारा वन संरक्षण अधिनियम — 1980 के तहत वन भूमि के व्यपवर्तन प्रस्तावों के आवेदित स्थल के लिए जियोरिकरेन्स डिजिटल डाटा एवं नक्शा प्रस्तुत करने हेतु वन मंडलाधिकारी, वन प्रबंधन सूचना प्रणाली, रायपुर को प्राधिकृत किया गया है। इस संदर्भ में तत्कालीन मुख्य वन संरक्षक (भू-प्रबंध) कार्यालय द्वारा भविष्य में गैर वानिकी कार्य हेतु व्यपवर्तित होने वाली वन भूमि के लिए निम्नानुसार जानकारी संलग्न किया जाना प्रावधानित किया गया है —

- Geo reference boundary in shape file.
- Digital map along with hard copy.
- Forest land proposed for diversion, prepared by using Total Station of differential GPS.

यहां यह विदित हो कि वन भूमि व्यपवर्तन से संबंधित सर्वे एवं डिजिटल डाटा निर्माण का कार्य एक महत्वपूर्ण प्रक्रिया है जिसको स्पष्ट रूप से परिभाषित किये जाने की आवश्यकता है। निर्धारित प्रक्रिया में भूमि की वैधानिक स्थिति, उसका स्वामित्व तथा क्षेत्रफल का क्षेत्रीय वन मंडल स्तर पर सत्यापन की व्यवस्था के साथ-साथ यह भी सुनिश्चित किया जाना आवश्यक है कि निर्मित डिजिटल डाटा प्रत्यावर्तित होने वाली भूमि का सही प्रतिनिधित्व करें। उपरोक्त पृष्ठभूमि के आलोक में वन भूमि व्यपवर्तन से संबंधित, सर्वे एवं डिजिटल डाटा निर्माण हेतु निम्नानुसार प्रक्रिया निर्धारित की जाती है —

1. आवेदक द्वारा आवेदन पत्र के साथ भूमि के संबंध में प्रस्तुत की जाने वाली जानकारी —

आवेदक द्वारा आवेदन पत्र के साथ इस अधिनियम अंतर्गत प्रेषित की जाने वाली अन्य जानकारी के साथ आवेदित क्षेत्र का विवरण निम्न प्रपत्र में प्रस्तुत की जावेगी:

## आवेदित क्षेत्र का विवरण

क्र	वनखण्ड का नाम	वन विभाग के अधिपत्य की भूमि		राजस्व वन भूमि	निजी / गैर वन भूमि
		कक्ष क्रमांक	क्षेत्रफल		

आवेदन के साथ सर्वे ऑफ इंडिया के 1:50,000 स्केल पर व्यपवर्तित होने वाली भूमि का नक्शा भी संलग्न होगा जिसके सभी vertices / nodes अर्थात् मोड़ों (turning points) के अक्षांश – देशान्तर भी अंकित होंगे।

## 2. आवेदन प्राप्त होने पर संबंधित वन मंडलाधिकारी द्वारा अपनाई जाने वाली प्रक्रिया:-

व्यपवर्तन से संबंधित आवेदन प्राप्त होने पर वन मंडलाधिकारी कार्यालयीन अभिलेख से व्यपवर्तित हेतु प्रस्तावित भूमि के क्षेत्रफल भूमि की वैधानिक स्थिति एवं उसके स्वामित्व के संबंध में जानकारी का मिलान कर इसकी पुष्टि करेंगे। आवेदित भूमि का स्थल निरीक्षण भी वन मंडलाधिकारी द्वारा किया जायेगा। आवेदन में प्रस्तुत जानकारी एवं अभिलेख परीक्षण में जानकारी में अंतर पाये जाने पर वन मंडलाधिकारी द्वारा त्रुटियों को अंकित करते हुए आवश्यक कार्यवाही हेतु पत्र आवेदक संस्थान को लिखा जावेगा एवं मुख्यालय को पत्र की प्रतिलिपि प्रदान की जावेगी। वन मंडलाधिकारी के स्तर से यह कदम आवश्यक होगा क्योंकि संबंधित भूमि का अभिलेख वन मंडल कार्यालय में उपलब्ध रहता है, तथा भूमि से संबंधित जानकारी देने हेतु वे वैधानिक दृष्टिकोण से सक्षम होते हैं। आवेदन का उपरोक्तानुसार परीक्षण उपरांत आवेदित भूमि का वन मंडलाधिकारी द्वारा डी.जी.पी.एस सर्वे कराया जावेगा। डी.जी.पी.एस सर्वे हेतु एजेन्सी वन मंडलाधिकारी द्वारा नियुक्त की जा सकेगी अथवा आवेदक द्वारा एजेन्सी उपलब्ध करायी जाएगी परन्तु डी.जी.पी.एस सर्वे का कार्य क्षेत्रीय वन मंडलाधिकारी के निर्देशन में सम्पन्न होगा तथा सर्वे पर हुआ व्यय भी एजेन्सी द्वारा वहन किया जावेगा। डी.जी.पी.एस सर्वे उपरांत क्षेत्रीय वन मंडलाधिकारी द्वारा डी.जी.पी.एस सर्वे रिपोर्ट का सत्यापित प्रतिवेदन निम्न प्रपत्रों में भरी हुई जानकारी के साथ वन प्रबंधन सूचना प्रणाली रायपुर को प्रस्तुत किया जावेगा:-

प्रपत्र – “क”

### आवेदित क्षेत्र का विवरण

क्र.	वनखण्ड का नाम	वन विभाग के अधिपत्य की भूमि		राजस्व वन भूमि	निजी / गैर वन भूमि
		कक्ष क्रमांक	क्षेत्रफल		

प्रपत्र – “ख”

### डी.जी.पी.एस सर्वे रिपोर्ट

अ. क्र.	पिलर / प्वाइंट आई.डी.	अक्षांश	देशांतर

प्रपत्र – “ग”

### डी.जी.पी.एस सर्वे रिपोर्ट के आधार पर क्षेत्रफल विवरण रिपोर्ट

क्र.	वन खण्ड का नाम	वन भूमि		राजस्व वन भूमि	निजी/ गैर वन भूमि
		कक्ष क्रमांक	क्षेत्रफल		

डी.जी.पी.एस. सर्वे के दौरान प्रत्येक मोड़ (Vertices) पर अस्थायी खूंटी लगाई जाएगी जिस पर सफेद पेन्ट से पुताई कर हरा पेन्ट से पिलर क्रमांक एवं डी.जी.पी.एस. से प्राप्त अक्षांश एवं देशांतर को अंकित किया जावेगा। प्रत्येक पिलर का फोटोग्राफ इस प्रकार लिया जावेगा कि फोटो ग्राफ में पिलर क्रमांक एवं उसका अक्षांश एवं



देशांतर स्पष्ट रूप से परिलक्षित हो। वन भूमि को प्रत्यावर्तन पर अंतिम स्वीकृति उपरांत उक्त लकड़ी के खूंटीयों को RCC के पिलर से प्रतिस्थापित किया जा सकेगा।

**3. क्षेत्रीय वन मंडलाधिकारी से जानकारी प्राप्त होने पर एफ.एम.आई.एस. द्वारा अपनाई जाने वाली प्रक्रिया —**

क्षेत्रीय वन मंडल से डी.जी.पी.एस. सर्वे रिपोर्ट की सत्यापित प्रति एवं तालिका क' 'ख' एवं 'ग' में जानकारी प्राप्त होने पर एफ.एम.आई.एस. द्वारा निम्नलिखित डिजिटल डेटा निर्माण का कार्य कराया जावेगा —

- Geo reference boundary in shape file.
- Preparation of digital map along with hard copy.
- Preparation of vegetation map at 1:50,000 scale of the area and providing it to the applicant.


**प्रस्तावित पद्धति से संभावित लाभ —**

(1) व्यपवर्तन हेतु आवेदित भूमि के क्षेत्रफल, वैधानिक स्थिति तथा स्वामित्व के संबंध में जानकारी की वन मंडलाधिकारी स्तर से पुष्टि होगी।

(2) आवेदन अनुसार मांग भूमि का क्षेत्र में हू-बहू सीमांकन सुनिश्चित होगा। आवेदन अनुसार मांग क्षेत्रफल तथा क्षेत्र पर वास्तविक सीमांकन अनुसार डी.जी.पी.एस. से प्राप्त क्षेत्रफल का मिलान हो सकेगा तथा यह सुनिश्चित किया जा सकेगा कि आवेदित क्षेत्रफल एवं डी.जी.पी.एस. से प्राप्त क्षेत्रफल में कोई आधारभूत अंतर नहीं है।

(3) क्षेत्र को व्यपवर्तन हेतु अंतिम स्वीकृति मिलने की स्थिति में क्षेत्र को पुनः सीमांकन नहीं कराना होगा तथा क्षेत्र को आवेदक संस्थान को हस्तांतरण कराना आसान होगा।

अतः उपरोक्तानुसार तालिका क' 'ख' एवं 'ग' में जानकारी एवं डी.जी.पी.एस. सर्वे रिपोर्ट की सत्यापित प्रति FMIS को उपलब्ध कराना सुनिश्चित करे। क्षेत्रीय वन मंडलाधिकारी से जानकारी प्राप्त होने पर FMIS कार्यालय द्वारा जानकारी का तकनीकी रूप से परीक्षण किया जाकर बिन्दु क्रमांक 3 में वर्णित डिजिटल डाटा का निर्माण किया जावेगा। तत्पश्चात् आवेदक संस्थान को FMIS द्वारा वनस्पति मानचित्र प्रदाय किया जायेगा जिसके लिए अधिकतम एक सप्ताह से अधिक समय नहीं लिया जावेगा।

  
(राम प्रकाश)


प्रधान मुख्य वन संरक्षक  
छत्तीसगढ़

पृ. क्र०/भू-प्रबंध/विविध/ 115-30/ 2577

रायपुर, दिनांक 11/11/2014

**प्रतिलिपि सूचनार्थ एवं आवश्यक कार्यवाही हेतु:**

- मुख्य वन संरक्षक, वन प्रबंधन सूचना प्रणाली कार्यालय, राजा तालाब, रायपुर, छत्तीसगढ़।
- मुख्य वन संरक्षक (क्षेत्रीय), रायपुर / बिलासपुर / दुर्ग / कांकेर / जगदलपुर एवं सरगुजा वृत्त।
- मुख्य वन संरक्षक (वन्यप्राणी) एवं क्षेत्र निदेशक, उदंती सीतानदी टाईगर रिजर्व, रायपुर / अचानकमार टाईगर रिजर्व, बिलासपुर / इन्द्रावती टाईगर रिजर्व, जगदलपुर।
- वन संरक्षक, हाथी रिजर्व (वन्य प्राणी) अंबिकापुर, (सरगुजा)।

  
प्रधान मुख्य वन संरक्षक  
छत्तीसगढ़

# AUSPOS GPS Processing Report

August 10, 2016

This document is a report of the GPS data processing undertaken by the AUSPOS Online GPS Processing Service (version: AUSPOS 2.2) . The AUSPOS Online GPS Processing Service uses International GNSS Service (IGS) products (final, rapid, ultra-rapid depending on availability) to compute precise coordinates in ITRF anywhere on Earth and GDA94 within Australia. The Service is designed to process only dual frequency GPS phase data.

An overview of the GPS processing strategy is included in this report.

Please direct any correspondence to [geodesy@ga.gov.au](mailto:geodesy@ga.gov.au)

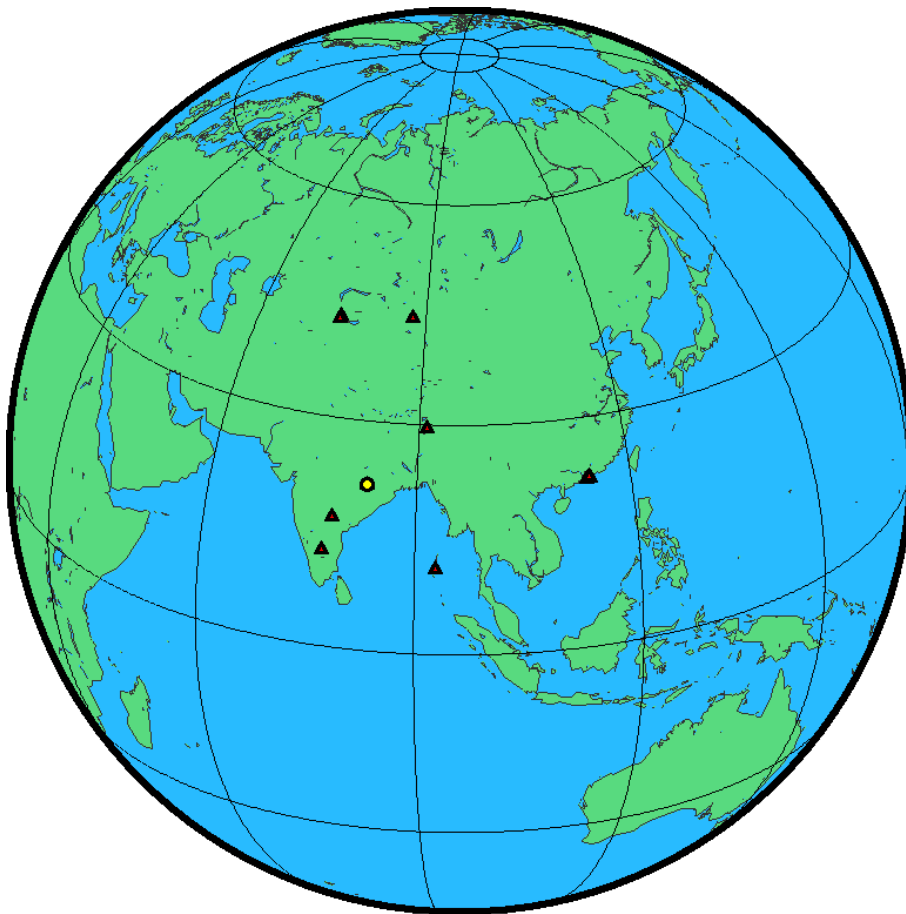
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Geoscience Australia  
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GPO Box 378, Canberra, ACT 2601, Australia  
Freecall (Within Australia): 1800 800 173  
Tel: +61 2 6249 9111. Fax +61 2 6249 9929  
Geoscience Australia  
Home Page: <http://www.ga.gov.au>

## 1 User Data

All antenna heights refer to the vertical distance from the Ground Mark to the Antenna Reference Point (ARP).

Station (s)	Submitted File	Antenna Type	Antenna Height (m)	Start Time	End Time
8850	88502171.16o	NONE NONE	1.200	2016/08/04 05:08:00	2016/08/04 10:05:00

## 2 Processing Summary



Date	User Stations	Reference Stations	Orbit Type
2016/08/04 05:08:00	8850	CHUM COAL DSMG FOMO HKNP HKSC HKSL HYDE IISC LHAZ PBRI POL2 URUM	IGS rapid

Remark: An IGS Rapid Orbit product has been used in this computation, IGS Rapid orbits are usually of very high quality. However, to ensure you achieve the highest quality coordinates please resubmit approximately 2 weeks after the observation session end to ensure the use of the IGS Final Orbit product.

### 3 Computed Coordinates, ITRF2008

All computed coordinates are based on the IGS realisation of the ITRF2008 reference frame. All the given ITRF2008 coordinates refer to a mean epoch of the site observation data. All coordinates refer to the Ground Mark.

#### 3.1 Cartesian, ITRF2008

Station	X (m)	Y (m)	Z (m)	ITRF2008 @
8850	716114.234	5874203.390	2371921.202	04/08/2016
CHUM	1228950.483	4508079.981	4327868.536	04/08/2016
COAL	-2363061.257	5418784.893	2386861.961	04/08/2016
DSMG	-2363102.334	5416972.300	2390767.986	04/08/2016
FOMO	-2359952.455	5416530.097	2394688.429	04/08/2016
HKNP	-2392360.804	5400226.057	2400094.266	04/08/2016
HKSC	-2414267.463	5386768.808	2407459.842	04/08/2016
HKSL	-2393382.959	5393860.961	2412592.217	04/08/2016
HYDE	1208444.097	5966805.990	1897077.267	04/08/2016
IISC	1337935.960	6070317.122	1427877.183	04/08/2016
LHAZ	-106941.973	5549269.794	3139215.170	04/08/2016
PBRI	-295635.882	6240848.759	1278178.482	04/08/2016
POL2	1239971.053	4530790.138	4302578.857	04/08/2016
URUM	193030.269	4606851.304	4393311.546	04/08/2016

#### 3.2 Geodetic, GRS80 Ellipsoid, ITRF2008

Geoid-ellipsoidal separations, in this section, are computed using a spherical harmonic synthesis of the global EGM2008 geoid. More information on the EGM2008 geoid can be found at <http://earth-info.nga.mil/GandG/wgs84/gravitymod/egm2008/>

Station	Latitude (DMS)	Longitude (DMS)	Ellipsoidal Height(m)	Derived Above Geoid Height(m)
8850	21 58 30.19019	83 02 58.07326	186.496	247.992
CHUM	42 59 54.60525	74 45 03.96870	716.344	759.334
COAL	22 07 14.46780	113 33 40.99173	169.427	173.848
DSMG	22 09 32.24497	113 34 07.59347	117.762	122.256
FOMO	22 11 50.69295	113 32 32.97422	56.637	61.322
HKNP	22 14 56.63109	113 53 37.97022	350.640	353.986
HKSC	22 19 19.81306	114 08 28.29654	20.221	22.677
HKSL	22 22 19.21119	113 55 40.75341	95.246	98.789
HYDE	17 25 02.14246	78 33 03.14498	441.690	518.495
IISC	13 01 16.21048	77 34 13.36939	843.696	929.617
LHAZ	29 39 26.40106	91 06 14.51124	3624.613	3659.304
PBRI	11 38 16.00959	92 42 43.69218	-22.493	38.441
POL2	42 40 47.17400	74 41 39.36803	1714.204	1754.270
URUM	43 48 28.61966	87 36 02.41392	858.895	922.274

### 3.3 Positional Uncertainty (95% C.L.) - Geodetic, ITRF2008

Station	Longitude(East) (m)	Latitude(North) (m)	Ellipsoidal Height(Up) (m)
8850	0.019	0.011	0.048
CHUM	0.009	0.006	0.015
COAL	0.012	0.008	0.026
DSMG	0.012	0.008	0.026
FOMO	0.012	0.008	0.026
HKNP	0.012	0.008	0.024
HKSC	0.012	0.008	0.025
HKSL	0.013	0.008	0.026
HYDE	0.010	0.006	0.016
IISC	0.010	0.007	0.017
LHAZ	0.009	0.006	0.017
PBRI	0.012	0.009	0.031
POL2	0.009	0.006	0.015
URUM	0.008	0.006	0.015



## 4 Ambiguity Resolution - Per Baseline

Baseline	Ambiguities Resolved	Baseline Length (km)
8850 - LHAZ	25.9 %	1171.215
CHUM - POL2	61.2 %	35.732
HYDE - PBRI	53.4 %	1649.361
CHUM - URUM	84.6 %	1042.674
HKNP - HKSC	76.5 %	26.744
COAL - HKNP	83.3 %	37.121
HKNP - URUM	21.4 %	3359.554
HKNP - HKSL	79.4 %	14.063
HKNP - PBRI	25.0 %	2522.221
COAL - DSMG	89.5 %	4.306
HYDE - LHAZ	53.4 %	1856.740
COAL - FOMO	80.6 %	8.718
HYDE - IISC	64.7 %	497.626
AVERAGE	61.4%	940.467

Please note for a regional solution, such as used by AUSPOS, ambiguity resolution success rate of 50% or better for a baseline formed by a user site indicates a reliable solution.

## 5 Computation Standards

### 5.1 Computation System

Software	Bernese GNSS Software Version 5.2.
GNSS system(s)	GPS only.

### 5.2 Data Preprocessing and Measurement Modelling

Data preprocessing	Phase preprocessing is undertaken in a baseline by baseline mode using triple-differences. In most cases, cycle slips are fixed by the simultaneous analysis of different linear combinations of L1 and L2. If a cycle slip cannot be fixed reliably, bad data points are removed or new ambiguities are set up. A data screening step on the basis of weighted postfit residuals is also performed, and outliers are removed.
Basic observable	Carrier phase with an elevation angle cutoff of $7^\circ$ and a sampling rate of 3 minutes. However, data cleaning is performed at a sampling rate of 30 seconds. Elevation dependent weighting is applied according to $1/\sin(e)^2$ where $e$ is the satellite elevation.
Modelled observable	Double differences of the ionosphere-free linear combination.
Ground antenna phase centre calibrations	IGS08 absolute phase-centre variation model is applied.
Tropospheric Model	A priori model is the GMF mapped with the DRY-GMF.
Tropospheric Estimation	Zenith delay corrections are estimated relying on the WET-GMF mapping function in intervals of 2 hours. N-S and E-W horizontal delay parameters are solved for every 24 hours.
Tropospheric Mapping Function	GMF
Ionosphere	First-order effect eliminated by forming the ionosphere-free linear combination of L1 and L2. Second and third effect applied.
Tidal displacements	Solid earth tidal displacements are derived from the complete model from the IERS Conventions 2010, but ocean tide loading is not applied.
Atmospheric loading	Applied
Satellite centre of mass correction	IGS08 phase-centre variation model applied
Satellite phase centre calibration	IGS08 phase-centre variation model applied
Satellite trajectories	Best available IGS products.
Earth Orientation	Best available IGS products.

### 5.3 Estimation Process

Adjustment	Weighted least-squares algorithm.
Station coordinates	Coordinate constraints are applied at the Reference sites with standard deviation of 1mm and 2mm for horizontal and vertical components respectively.
Troposphere	Zenith delay parameters and pairs of horizontal delay gradient parameters are estimated for each station in intervals of 2 hours and 24 hours.
Ionospheric correction	An ionospheric map derived from the contributing reference stations is used to aid ambiguity resolution.
Ambiguity	Ambiguities are resolved in a baseline-by-baseline mode using the Code-Based strategy for 180-6000km baselines, the Phase-Based L5/L3 strategy for 18-200km baselines, the Quasi-Ionosphere-Free (QIF) strategy for 18-2000km baselines and the Direct L1/L2 strategy for 0-20km baselines.

### 5.4 Reference Frame and Coordinate Uncertainty

Terrestrial reference frame	IGS08 station coordinates and velocities mapped to the mean epoch of observation.
Australian datum	GDA94 coordinates determined via Helmert transformation from ITRF using the Dawson and Woods (2010) parameters.
Derived AHD	For stations within Australia, AUSGeoid09 is used to compute AHD. AUSGeoid09 is the Australia-wide gravimetric quasigeoid model that has been a posteriori fitted to the Australian Height Datum.
Above-geoid heights	Earth Gravitational Model EGM2008 released by the National Geospatial-Intelligence Agency (NGA) EGM Development Team is used to compute above-geoid heights. This gravitational model is complete to spherical harmonic degree and order 2159, and contains additional coefficients extending to degree 2190 and order 2159.
Coordinate uncertainty	Coordinate uncertainty is expressed in terms of the 95% confidence level for both GDA94 and ITRF2008. Uncertainties are scaled using an empirically derived model which is a function of data span, quality and geographical location.



# AUSPOS GPS Processing Report

August 10, 2016

This document is a report of the GPS data processing undertaken by the AUSPOS Online GPS Processing Service (version: AUSPOS 2.2) . The AUSPOS Online GPS Processing Service uses International GNSS Service (IGS) products (final, rapid, ultra-rapid depending on availability) to compute precise coordinates in ITRF anywhere on Earth and GDA94 within Australia. The Service is designed to process only dual frequency GPS phase data.

An overview of the GPS processing strategy is included in this report.

Please direct any correspondence to [geodesy@ga.gov.au](mailto:geodesy@ga.gov.au)

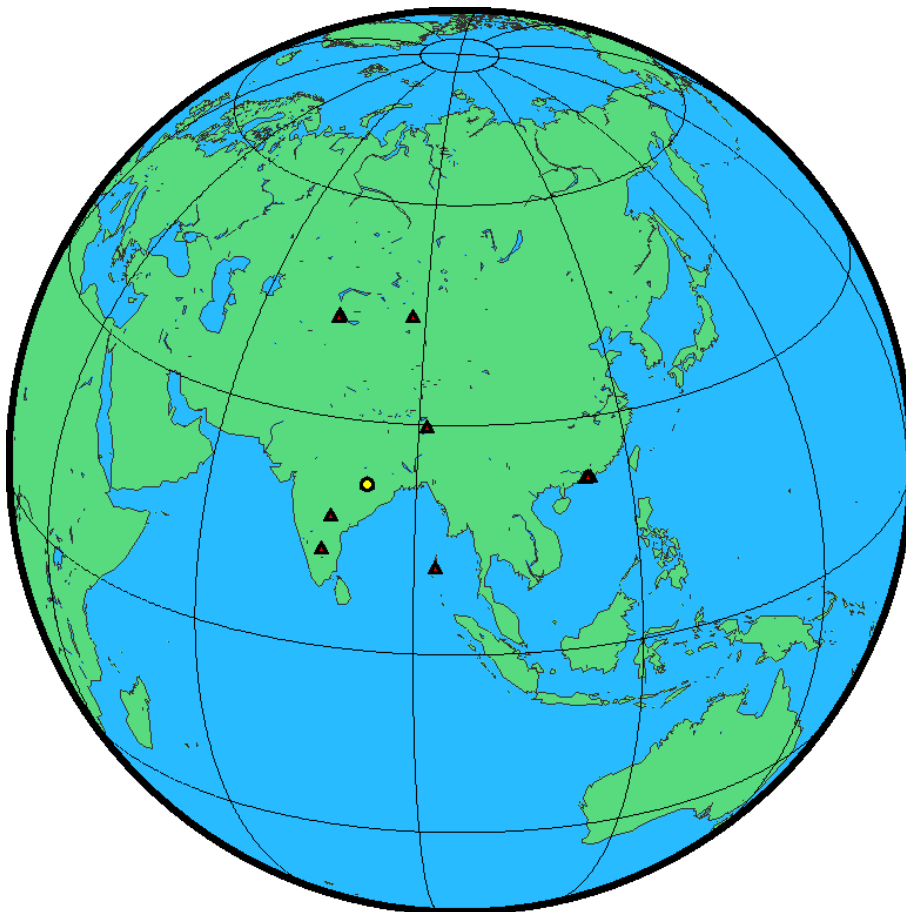
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Home Page: <http://www.ga.gov.au>

## 1 User Data

All antenna heights refer to the vertical distance from the Ground Mark to the Antenna Reference Point (ARP).

Station (s)	Submitted File	Antenna Type	Antenna Height (m)	Start Time	End Time
4851	48512180.16o	NONE NONE	1.500	2016/08/05 03:19:00	2016/08/05 09:27:00

## 2 Processing Summary



Date	User Stations	Reference Stations	Orbit Type
2016/08/05 03:19:00	4851	CHUM COAL FOMO HKNP HKOH HKSC HKSL HYDE IISC LHAZ PBRI POL2 URUM	IGS rapid

Remark: An IGS Rapid Orbit product has been used in this computation, IGS Rapid orbits are usually of very high quality. However, to ensure you achieve the highest quality coordinates please resubmit approximately 2 weeks after the observation session end to ensure the use of the IGS Final Orbit product.

### 3 Computed Coordinates, ITRF2008

All computed coordinates are based on the IGS realisation of the ITRF2008 reference frame. All the given ITRF2008 coordinates refer to a mean epoch of the site observation data. All coordinates refer to the Ground Mark.

#### 3.1 Cartesian, ITRF2008

Station	X (m)	Y (m)	Z (m)	ITRF2008 @
4851	699655.274	5874278.827	2376576.320	05/08/2016
CHUM	1228950.483	4508079.984	4327868.539	05/08/2016
COAL	-2363061.270	5418784.917	2386861.970	05/08/2016
FOMO	-2359952.471	5416530.107	2394688.434	05/08/2016
HKNP	-2392360.808	5400226.086	2400094.278	05/08/2016
HKOH	-2423817.442	5386056.906	2399883.181	05/08/2016
HKSC	-2414267.455	5386768.797	2407459.841	05/08/2016
HKSL	-2393382.968	5393860.939	2412592.209	05/08/2016
HYDE	1208444.095	5966805.988	1897077.269	05/08/2016
IISC	1337935.963	6070317.122	1427877.183	05/08/2016
LHAZ	-106941.974	5549269.787	3139215.166	05/08/2016
PBRI	-295635.881	6240848.759	1278178.485	05/08/2016
POL2	1239971.056	4530790.141	4302578.856	05/08/2016
URUM	193030.268	4606851.304	4393311.544	05/08/2016

#### 3.2 Geodetic, GRS80 Ellipsoid, ITRF2008

Geoid-ellipsoidal separations, in this section, are computed using a spherical harmonic synthesis of the global EGM2008 geoid. More information on the EGM2008 geoid can be found at <http://earth-info.nga.mil/GandG/wgs84/gravitymod/egm2008/>

Station	Latitude (DMS)			Longitude (DMS)			Ellipsoidal Height(m)	Derived Above Geoid Height(m)
4851	22	01	13.58013	83	12	28.04577	173.799	235.034
CHUM	42	59	54.60525	74	45	03.96874	716.348	759.338
COAL	22	07	14.46774	113	33	40.99182	169.454	173.875
FOMO	22	11	50.69292	113	32	32.97459	56.654	61.339
HKNP	22	14	56.63109	113	53	37.96992	350.671	354.017
HKOH	22	14	51.66740	114	13	42.80779	166.377	168.254
HKSC	22	19	19.81321	114	08	28.29646	20.208	22.664
HKSL	22	22	19.21117	113	55	40.75400	95.229	98.772
HYDE	17	25	02.14255	78	33	03.14501	441.689	518.494
IISC	13	01	16.21050	77	34	13.36929	843.697	929.618
LHAZ	29	39	26.40106	91	06	14.51131	3624.605	3659.296
PBRI	11	38	16.00970	92	42	43.69214	-22.492	38.442
POL2	42	40	47.17390	74	41	39.36793	1714.207	1754.273
URUM	43	48	28.61963	87	36	02.41395	858.893	922.272

### 3.3 Positional Uncertainty (95% C.L.) - Geodetic, ITRF2008

Station	Longitude(East) (m)	Latitude(North) (m)	Ellipsoidal Height(Up) (m)
4851	0.012	0.008	0.030
CHUM	0.009	0.006	0.015
COAL	0.012	0.008	0.026
FOMO	0.013	0.008	0.026
HKNP	0.011	0.008	0.024
HKOH	0.012	0.008	0.025
HKSC	0.012	0.008	0.025
HKSL	0.013	0.008	0.026
HYDE	0.010	0.006	0.017
IISC	0.010	0.007	0.018
LHAZ	0.009	0.006	0.017
PBRI	0.011	0.009	0.026
POL2	0.009	0.006	0.015
URUM	0.008	0.006	0.015

## 4 Ambiguity Resolution - Per Baseline

Baseline	Ambiguities Resolved	Baseline Length (km)
HKOH - HKSC	100.0 %	12.211
CHUM - POL2	94.1 %	35.732
CHUM - URUM	88.2 %	1042.674
4851 - HYDE	57.1 %	705.228
COAL - HKNP	83.3 %	37.121
HKNP - URUM	28.6 %	3359.554
HKNP - HKSL	72.2 %	14.063
HKNP - PBRI	23.1 %	2522.221
4851 - LHAZ	47.4 %	1156.654
HKNP - HKOH	100.0 %	34.501
LHAZ - PBRI	62.5 %	1994.328
HYDE - IIISC	77.8 %	497.626
COAL - FOMO	84.4 %	8.718
AVERAGE	70.7%	878.510

Please note for a regional solution, such as used by AUSPOS, ambiguity resolution success rate of 50% or better for a baseline formed by a user site indicates a reliable solution.



## 5 Computation Standards

### 5.1 Computation System

Software	Bernese GNSS Software Version 5.2.
GNSS system(s)	GPS only.

### 5.2 Data Preprocessing and Measurement Modelling

Data preprocessing	Phase preprocessing is undertaken in a baseline by baseline mode using triple-differences. In most cases, cycle slips are fixed by the simultaneous analysis of different linear combinations of L1 and L2. If a cycle slip cannot be fixed reliably, bad data points are removed or new ambiguities are set up. A data screening step on the basis of weighted postfit residuals is also performed, and outliers are removed.
Basic observable	Carrier phase with an elevation angle cutoff of $7^\circ$ and a sampling rate of 3 minutes. However, data cleaning is performed at a sampling rate of 30 seconds. Elevation dependent weighting is applied according to $1/\sin(e)^2$ where $e$ is the satellite elevation.
Modelled observable	Double differences of the ionosphere-free linear combination.
Ground antenna phase centre calibrations	IGS08 absolute phase-centre variation model is applied.
Tropospheric Model	A priori model is the GMF mapped with the DRY-GMF.
Tropospheric Estimation	Zenith delay corrections are estimated relying on the WET-GMF mapping function in intervals of 2 hours. N-S and E-W horizontal delay parameters are solved for every 24 hours.
Tropospheric Mapping Function	GMF
Ionosphere	First-order effect eliminated by forming the ionosphere-free linear combination of L1 and L2. Second and third effect applied.
Tidal displacements	Solid earth tidal displacements are derived from the complete model from the IERS Conventions 2010, but ocean tide loading is not applied.
Atmospheric loading	Applied
Satellite centre of mass correction	IGS08 phase-centre variation model applied
Satellite phase centre calibration	IGS08 phase-centre variation model applied
Satellite trajectories	Best available IGS products.
Earth Orientation	Best available IGS products.

### 5.3 Estimation Process

Adjustment	Weighted least-squares algorithm.
Station coordinates	Coordinate constraints are applied at the Reference sites with standard deviation of 1mm and 2mm for horizontal and vertical components respectively.
Troposphere	Zenith delay parameters and pairs of horizontal delay gradient parameters are estimated for each station in intervals of 2 hours and 24 hours.
Ionospheric correction	An ionospheric map derived from the contributing reference stations is used to aid ambiguity resolution.
Ambiguity	Ambiguities are resolved in a baseline-by-baseline mode using the Code-Based strategy for 180-6000km baselines, the Phase-Based L5/L3 strategy for 18-200km baselines, the Quasi-Ionosphere-Free (QIF) strategy for 18-2000km baselines and the Direct L1/L2 strategy for 0-20km baselines.

### 5.4 Reference Frame and Coordinate Uncertainty

Terrestrial reference frame	IGS08 station coordinates and velocities mapped to the mean epoch of observation.
Australian datum	GDA94 coordinates determined via Helmert transformation from ITRF using the Dawson and Woods (2010) parameters.
Derived AHD	For stations within Australia, AUSGeoid09 is used to compute AHD. AUSGeoid09 is the Australia-wide gravimetric quasigeoid model that has been a posteriori fitted to the Australian Height Datum.
Above-geoid heights	Earth Gravitational Model EGM2008 released by the National Geospatial-Intelligence Agency (NGA) EGM Development Team is used to compute above-geoid heights. This gravitational model is complete to spherical harmonic degree and order 2159, and contains additional coefficients extending to degree 2190 and order 2159.
Coordinate uncertainty	Coordinate uncertainty is expressed in terms of the 95% confidence level for both GDA94 and ITRF2008. Uncertainties are scaled using an empirically derived model which is a function of data span, quality and geographical location.

# AUSPOS GPS Processing Report

August 10, 2016

This document is a report of the GPS data processing undertaken by the AUSPOS Online GPS Processing Service (version: AUSPOS 2.2) . The AUSPOS Online GPS Processing Service uses International GNSS Service (IGS) products (final, rapid, ultra-rapid depending on availability) to compute precise coordinates in ITRF anywhere on Earth and GDA94 within Australia. The Service is designed to process only dual frequency GPS phase data.

An overview of the GPS processing strategy is included in this report.

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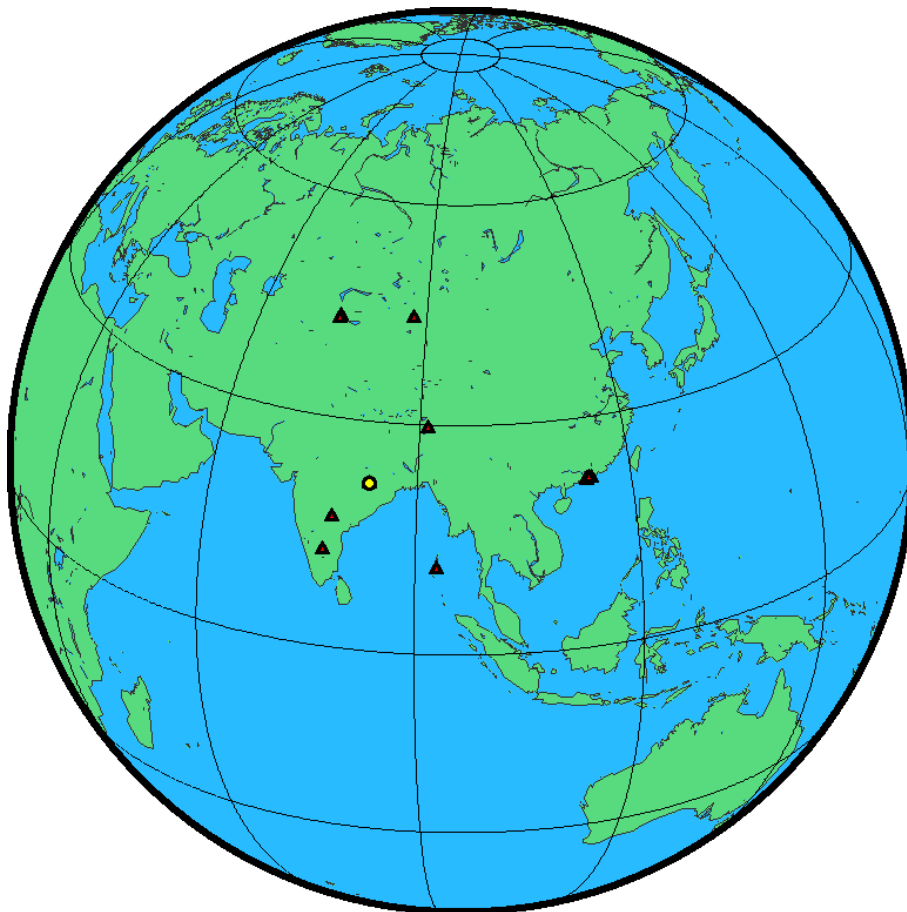


## 1 User Data

All antenna heights refer to the vertical distance from the Ground Mark to the Antenna Reference Point (ARP).

Station (s)	Submitted File	Antenna Type	Antenna Height (m)	Start Time	End Time
4851	48512190.16o	NONE NONE	1.500	2016/08/06 04:02:30	2016/08/06 05:14:30

## 2 Processing Summary



Date	User Stations	Reference Stations	Orbit Type
2016/08/06 04:02:30	4851	CHUM COAL FOMO HKNP HKOH HKSC HKSL HYDE IISC LHAZ PBRI POL2 URUM	IGS rapid

Remark: An IGS Rapid Orbit product has been used in this computation, IGS Rapid orbits are usually of very high quality. However, to ensure you achieve the highest quality coordinates please resubmit approximately 2 weeks after the observation session end to ensure the use of the IGS Final Orbit product.

### 3 Computed Coordinates, ITRF2008

All computed coordinates are based on the IGS realisation of the ITRF2008 reference frame. All the given ITRF2008 coordinates refer to a mean epoch of the site observation data. All coordinates refer to the Ground Mark.

#### 3.1 Cartesian, ITRF2008

Station	X (m)	Y (m)	Z (m)	ITRF2008 @
4851	691688.723	5874080.814	2379503.836	06/08/2016
CHUM	1228950.485	4508079.981	4327868.533	06/08/2016
COAL	-2363061.253	5418784.881	2386861.965	06/08/2016
FOMO	-2359952.458	5416530.092	2394688.438	06/08/2016
HKNP	-2392360.807	5400226.070	2400094.277	06/08/2016
HKOH	-2423817.438	5386056.900	2399883.186	06/08/2016
HKSC	-2414267.459	5386768.786	2407459.842	06/08/2016
HKSL	-2393382.958	5393860.977	2412592.226	06/08/2016
HYDE	1208444.094	5966805.986	1897077.268	06/08/2016
IISC	1337935.962	6070317.119	1427877.185	06/08/2016
LHAZ	-106941.977	5549269.789	3139215.168	06/08/2016
PBRI	-295635.879	6240848.759	1278178.488	06/08/2016
POL2	1239971.056	4530790.141	4302578.858	06/08/2016
URUM	193030.265	4606851.303	4393311.536	06/08/2016

#### 3.2 Geodetic, GRS80 Ellipsoid, ITRF2008

Geoid-ellipsoidal separations, in this section, are computed using a spherical harmonic synthesis of the global EGM2008 geoid. More information on the EGM2008 geoid can be found at <http://earth-info.nga.mil/GandG/wgs84/gravitymod/egm2008/>

Station	Latitude (DMS)	Longitude (DMS)	Ellipsoidal Height(m)	Derived Above Geoid Height(m)
4851	22 02 55.62848	83 17 03.10047	221.344	282.425
CHUM	42 59 54.60516	74 45 03.96861	716.343	759.333
COAL	22 07 14.46809	113 33 40.99180	169.417	173.838
FOMO	22 11 50.69327	113 32 32.97438	56.637	61.322
HKNP	22 14 56.63126	113 53 37.97012	350.656	354.002
HKOH	22 14 51.66762	114 13 42.80773	166.373	168.250
HKSC	22 19 19.81335	114 08 28.29673	20.201	22.657
HKSL	22 22 19.21129	113 55 40.75313	95.264	98.807
HYDE	17 25 02.14254	78 33 03.14504	441.686	518.491
IISC	13 01 16.21058	77 34 13.36928	843.695	929.616
LHAZ	29 39 26.40110	91 06 14.51140	3624.607	3659.298
PBRI	11 38 16.00978	92 42 43.69209	-22.492	38.442
POL2	42 40 47.17393	74 41 39.36793	1714.208	1754.274
URUM	43 48 28.61947	87 36 02.41408	858.887	922.266

### 3.3 Positional Uncertainty (95% C.L.) - Geodetic, ITRF2008

Station	Longitude(East) (m)	Latitude(North) (m)	Ellipsoidal Height(Up) (m)
4851	0.318	0.141	0.778 *
CHUM	0.006	0.005	0.012
COAL	0.010	0.006	0.019
FOMO	0.010	0.006	0.018
HKNP	0.010	0.005	0.017
HKOH	0.010	0.005	0.018
HKSC	0.010	0.005	0.018
HKSL	0.010	0.005	0.017
HYDE	0.007	0.005	0.013
IISC	0.008	0.005	0.013
LHAZ	0.007	0.005	0.013
PBRI	0.009	0.006	0.019
POL2	0.006	0.005	0.012
URUM	0.006	0.005	0.011

**\*WARNING:**

The estimated coordinates have precision outside of the boundary of 0.085 m  
Please use this solution with caution

## 4 Ambiguity Resolution - Per Baseline

Baseline	Ambiguities Resolved	Baseline Length (km)
HKOH - HKSC	100.0 %	12.211
CHUM - POL2	70.0 %	35.732
HYDE - PBRI	70.5 %	1649.361
CHUM - URUM	87.5 %	1042.674
4851 - HYDE	0.0 %	713.000
HKNP - URUM	6.7 %	3359.554
HKNP - HKSL	97.2 %	14.063
HKNP - PBRI	21.4 %	2522.221
HKNP - HKOH	100.0 %	34.501
FOMO - HKNP	93.8 %	36.679
LHAZ - PBRI	86.7 %	1994.328
HYDE - IISC	76.4 %	497.626
COAL - FOMO	96.9 %	8.718
AVERAGE	69.8%	916.974

Please note for a regional solution, such as used by AUSPOS, ambiguity resolution success rate of **50%** or better for a baseline formed by a user site indicates a reliable solution.

**\*WARNING:**

**This solution has not resolved any ambiguities for your submitted data. Please use this solution with caution.**

## 5 Computation Standards

### 5.1 Computation System

Software	Bernese GNSS Software Version 5.2.
GNSS system(s)	GPS only.

### 5.2 Data Preprocessing and Measurement Modelling

Data preprocessing	Phase preprocessing is undertaken in a baseline by baseline mode using triple-differences. In most cases, cycle slips are fixed by the simultaneous analysis of different linear combinations of L1 and L2. If a cycle slip cannot be fixed reliably, bad data points are removed or new ambiguities are set up. A data screening step on the basis of weighted postfit residuals is also performed, and outliers are removed.
Basic observable	Carrier phase with an elevation angle cutoff of $7^\circ$ and a sampling rate of 3 minutes. However, data cleaning is performed at a sampling rate of 30 seconds. Elevation dependent weighting is applied according to $1/\sin(e)^2$ where $e$ is the satellite elevation.
Modelled observable	Double differences of the ionosphere-free linear combination.
Ground antenna phase centre calibrations	IGS08 absolute phase-centre variation model is applied.
Tropospheric Model	A priori model is the GMF mapped with the DRY-GMF.
Tropospheric Estimation	Zenith delay corrections are estimated relying on the WET-GMF mapping function in intervals of 2 hours. N-S and E-W horizontal delay parameters are solved for every 24 hours.
Tropospheric Mapping Function	GMF
Ionosphere	First-order effect eliminated by forming the ionosphere-free linear combination of L1 and L2. Second and third effect applied.
Tidal displacements	Solid earth tidal displacements are derived from the complete model from the IERS Conventions 2010, but ocean tide loading is not applied.
Atmospheric loading	Applied
Satellite centre of mass correction	IGS08 phase-centre variation model applied
Satellite phase centre calibration	IGS08 phase-centre variation model applied
Satellite trajectories	Best available IGS products.
Earth Orientation	Best available IGS products.



### 5.3 Estimation Process

Adjustment	Weighted least-squares algorithm.
Station coordinates	Coordinate constraints are applied at the Reference sites with standard deviation of 1mm and 2mm for horizontal and vertical components respectively.
Troposphere	Zenith delay parameters and pairs of horizontal delay gradient parameters are estimated for each station in intervals of 2 hours and 24 hours.
Ionospheric correction	An ionospheric map derived from the contributing reference stations is used to aid ambiguity resolution.
Ambiguity	Ambiguities are resolved in a baseline-by-baseline mode using the Code-Based strategy for 180-6000km baselines, the Phase-Based L5/L3 strategy for 18-200km baselines, the Quasi-Ionosphere-Free (QIF) strategy for 18-2000km baselines and the Direct L1/L2 strategy for 0-20km baselines.

### 5.4 Reference Frame and Coordinate Uncertainty

Terrestrial reference frame	IGS08 station coordinates and velocities mapped to the mean epoch of observation.
Australian datum	GDA94 coordinates determined via Helmert transformation from ITRF using the Dawson and Woods (2010) parameters.
Derived AHD	For stations within Australia, AUSGeoid09 is used to compute AHD. AUSGeoid09 is the Australia-wide gravimetric quasigeoid model that has been a posteriori fitted to the Australian Height Datum.
Above-geoid heights	Earth Gravitational Model EGM2008 released by the National Geospatial-Intelligence Agency (NGA) EGM Development Team is used to compute above-geoid heights. This gravitational model is complete to spherical harmonic degree and order 2159, and contains additional coefficients extending to degree 2190 and order 2159.
Coordinate uncertainty	Coordinate uncertainty is expressed in terms of the 95% confidence level for both GDA94 and ITRF2008. Uncertainties are scaled using an empirically derived model which is a function of data span, quality and geographical location.

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August 10, 2016

This document is a report of the GPS data processing undertaken by the AUSPOS Online GPS Processing Service (version: AUSPOS 2.2) . The AUSPOS Online GPS Processing Service uses International GNSS Service (IGS) products (final, rapid, ultra-rapid depending on availability) to compute precise coordinates in ITRF anywhere on Earth and GDA94 within Australia. The Service is designed to process only dual frequency GPS phase data.

An overview of the GPS processing strategy is included in this report.

Please direct any correspondence to [geodesy@ga.gov.au](mailto:geodesy@ga.gov.au)

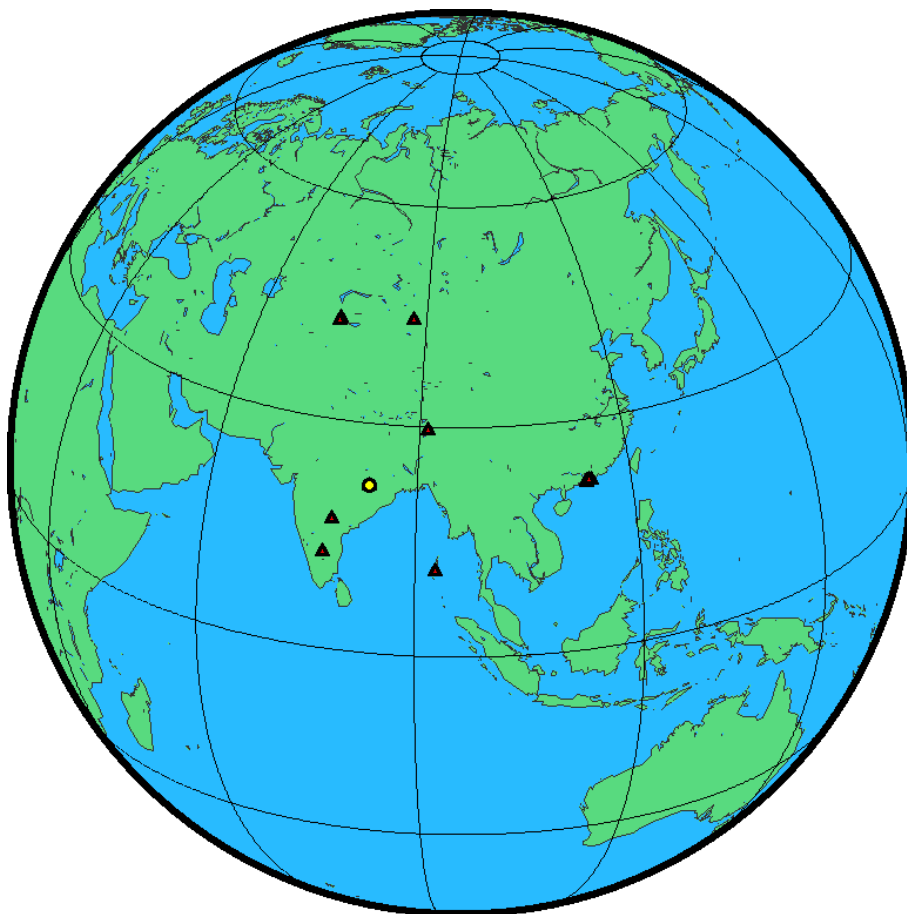
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Geoscience Australia  
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## 1 User Data

All antenna heights refer to the vertical distance from the Ground Mark to the Antenna Reference Point (ARP).

Station (s)	Submitted File	Antenna Type	Antenna Height (m)	Start Time	End Time
4851	48512200.16o	NONE NONE	1.500	2016/08/07 04:24:30	2016/08/07 10:06:00

## 2 Processing Summary



Date	User Stations	Reference Stations	Orbit Type
2016/08/07 04:24:30	4851	CHUM COAL FOMO HKNP HKOH HKSC HKSL HYDE IISC LHAZ PBRI POL2 URUM	IGS rapid

Remark: An IGS Rapid Orbit product has been used in this computation, IGS Rapid orbits are usually of very high quality. However, to ensure you achieve the highest quality coordinates please resubmit approximately 2 weeks after the observation session end to ensure the use of the IGS Final Orbit product.



### 3 Computed Coordinates, ITRF2008

All computed coordinates are based on the IGS realisation of the ITRF2008 reference frame. All the given ITRF2008 coordinates refer to a mean epoch of the site observation data. All coordinates refer to the Ground Mark.

#### 3.1 Cartesian, ITRF2008

Station	X (m)	Y (m)	Z (m)	ITRF2008 @
4851	685764.609	5874074.026	2381290.956	07/08/2016
CHUM	1228950.483	4508079.978	4327868.535	07/08/2016
COAL	-2363061.260	5418784.875	2386861.967	07/08/2016
FOMO	-2359952.449	5416530.079	2394688.417	07/08/2016
HKNP	-2392360.813	5400226.074	2400094.273	07/08/2016
HKOH	-2423817.446	5386056.893	2399883.176	07/08/2016
HKSC	-2414267.462	5386768.779	2407459.832	07/08/2016
HKSL	-2393382.959	5393860.967	2412592.206	07/08/2016
HYDE	1208444.095	5966805.988	1897077.270	07/08/2016
IISC	1337935.961	6070317.123	1427877.185	07/08/2016
LHAZ	-106941.978	5549269.795	3139215.168	07/08/2016
PBRI	-295635.883	6240848.732	1278178.475	07/08/2016
POL2	1239971.057	4530790.145	4302578.863	07/08/2016
URUM	193030.269	4606851.308	4393311.544	07/08/2016

#### 3.2 Geodetic, GRS80 Ellipsoid, ITRF2008

Geoid-ellipsoidal separations, in this section, are computed using a spherical harmonic synthesis of the global EGM2008 geoid. More information on the EGM2008 geoid can be found at <http://earth-info.nga.mil/GandG/wgs84/gravitymod/egm2008/>

Station	Latitude (DMS)	Longitude (DMS)	Ellipsoidal Height(m)	Derived Above Geoid Height(m)
4851	22 03 57.98003	83 20 28.27375	246.849	307.847
CHUM	42 59 54.60529	74 45 03.96866	716.341	759.331
COAL	22 07 14.46817	113 33 40.99208	169.415	173.836
FOMO	22 11 50.69284	113 32 32.97426	56.615	61.300
HKNP	22 14 56.63107	113 53 37.97027	350.660	354.006
HKOH	22 14 51.66737	114 13 42.80808	166.365	168.242
HKSC	22 19 19.81310	114 08 28.29693	20.192	22.648
HKSL	22 22 19.21079	113 55 40.75332	95.247	98.790
HYDE	17 25 02.14257	78 33 03.14501	441.690	518.495
IISC	13 01 16.21053	77 34 13.36934	843.698	929.619
LHAZ	29 39 26.40100	91 06 14.51144	3624.613	3659.304
PBRI	11 38 16.00955	92 42 43.69226	-22.521	38.413
POL2	42 40 47.17395	74 41 39.36793	1714.215	1754.281
URUM	43 48 28.61953	87 36 02.41394	858.896	922.275

### 3.3 Positional Uncertainty (95% C.L.) - Geodetic, ITRF2008

Station	Longitude(East) (m)	Latitude(North) (m)	Ellipsoidal Height(Up) (m)
4851	0.012	0.008	0.030
CHUM	0.008	0.006	0.015
COAL	0.012	0.008	0.025
FOMO	0.012	0.008	0.026
HKNP	0.012	0.008	0.023
HKOH	0.012	0.008	0.024
HKSC	0.012	0.008	0.024
HKSL	0.012	0.008	0.024
HYDE	0.010	0.006	0.016
IISC	0.010	0.007	0.017
LHAZ	0.008	0.006	0.016
PBRI	0.011	0.009	0.028
POL2	0.008	0.006	0.015
URUM	0.008	0.006	0.015

## 4 Ambiguity Resolution - Per Baseline

Baseline	Ambiguities Resolved	Baseline Length (km)
HKOH - HKSC	85.0 %	12.211
CHUM - POL2	77.8 %	35.732
CHUM - URUM	81.2 %	1042.674
4851 - HYDE	50.0 %	718.510
COAL - HKNP	73.7 %	37.121
HKNP - URUM	13.3 %	3359.554
HKNP - HKSL	84.2 %	14.063
HKNP - PBRI	20.0 %	2522.221
4851 - LHAZ	40.9 %	1143.823
HKNP - HKOH	73.7 %	34.501
LHAZ - PBRI	70.5 %	1994.328
HYDE - IIISC	76.4 %	497.626
COAL - FOMO	87.5 %	8.718
AVERAGE	64.2%	878.545

Please note for a regional solution, such as used by AUSPOS, ambiguity resolution success rate of 50% or better for a baseline formed by a user site indicates a reliable solution.

## 5 Computation Standards

### 5.1 Computation System

Software	Bernese GNSS Software Version 5.2.
GNSS system(s)	GPS only.

### 5.2 Data Preprocessing and Measurement Modelling

Data preprocessing	Phase preprocessing is undertaken in a baseline by baseline mode using triple-differences. In most cases, cycle slips are fixed by the simultaneous analysis of different linear combinations of L1 and L2. If a cycle slip cannot be fixed reliably, bad data points are removed or new ambiguities are set up. A data screening step on the basis of weighted postfit residuals is also performed, and outliers are removed.
Basic observable	Carrier phase with an elevation angle cutoff of $7^\circ$ and a sampling rate of 3 minutes. However, data cleaning is performed at a sampling rate of 30 seconds. Elevation dependent weighting is applied according to $1/\sin(e)^2$ where $e$ is the satellite elevation.
Modelled observable	Double differences of the ionosphere-free linear combination.
Ground antenna phase centre calibrations	IGS08 absolute phase-centre variation model is applied.
Tropospheric Model	A priori model is the GMF mapped with the DRY-GMF.
Tropospheric Estimation	Zenith delay corrections are estimated relying on the WET-GMF mapping function in intervals of 2 hours. N-S and E-W horizontal delay parameters are solved for every 24 hours.
Tropospheric Mapping Function	GMF
Ionosphere	First-order effect eliminated by forming the ionosphere-free linear combination of L1 and L2. Second and third effect applied.
Tidal displacements	Solid earth tidal displacements are derived from the complete model from the IERS Conventions 2010, but ocean tide loading is not applied.
Atmospheric loading	Applied
Satellite centre of mass correction	IGS08 phase-centre variation model applied
Satellite phase centre calibration	IGS08 phase-centre variation model applied
Satellite trajectories	Best available IGS products.
Earth Orientation	Best available IGS products.

### 5.3 Estimation Process

Adjustment	Weighted least-squares algorithm.
Station coordinates	Coordinate constraints are applied at the Reference sites with standard deviation of 1mm and 2mm for horizontal and vertical components respectively.
Troposphere	Zenith delay parameters and pairs of horizontal delay gradient parameters are estimated for each station in intervals of 2 hours and 24 hours.
Ionospheric correction	An ionospheric map derived from the contributing reference stations is used to aid ambiguity resolution.
Ambiguity	Ambiguities are resolved in a baseline-by-baseline mode using the Code-Based strategy for 180-6000km baselines, the Phase-Based L5/L3 strategy for 18-200km baselines, the Quasi-Ionosphere-Free (QIF) strategy for 18-2000km baselines and the Direct L1/L2 strategy for 0-20km baselines.

### 5.4 Reference Frame and Coordinate Uncertainty

Terrestrial reference frame	IGS08 station coordinates and velocities mapped to the mean epoch of observation.
Australian datum	GDA94 coordinates determined via Helmert transformation from ITRF using the Dawson and Woods (2010) parameters.
Derived AHD	For stations within Australia, AUSGeoid09 is used to compute AHD. AUSGeoid09 is the Australia-wide gravimetric quasigeoid model that has been a posteriori fitted to the Australian Height Datum.
Above-geoid heights	Earth Gravitational Model EGM2008 released by the National Geospatial-Intelligence Agency (NGA) EGM Development Team is used to compute above-geoid heights. This gravitational model is complete to spherical harmonic degree and order 2159, and contains additional coefficients extending to degree 2190 and order 2159.
Coordinate uncertainty	Coordinate uncertainty is expressed in terms of the 95% confidence level for both GDA94 and ITRF2008. Uncertainties are scaled using an empirically derived model which is a function of data span, quality and geographical location.

## **NATIONAL MAP POLICY - 2005**

### **1. PREAMBLE**

All socio-economic developmental activities, conservation of natural resources, planning for disaster mitigation and infrastructure development require high quality spatial data. The advancements in digital technologies have now made it possible to use diverse spatial databases in an integrated manner. The responsibility for producing, maintaining and disseminating the topographic map database of the whole country, which is the foundation of all spatial data vests with the Survey of India (SOI). Recently, SOI has been mandated to take a leadership role in liberalizing access of spatial data to user groups without jeopardizing national security. To perform this role, the policy on dissemination of maps and spatial data needs to be clearly stated.

### **2. OBJECTIVES**

- To provide, maintain and allow access and make available the National Topographic Database (NTDB) of the SOI conforming to national standards.
- To promote the use of geospatial knowledge and intelligence through partnerships and other mechanisms by all sections of the society and work towards a knowledge-based society.

### **3. TWO SERIES OF MAPS**

To ensure that in the furtherance of this policy, national security objectives are fully safeguarded, it has been decided that there will be two series of maps namely

- (a) Defence Series Maps (DSMs)- These will be the topographical maps (on Everest/WGS-84 Datum and Polyconic/UTM Projection) on various scales (with heights, contours and full content without dilution of accuracy). These will mainly cater for defence and national security requirements.

This series of maps (in analogue or digital forms) for the entire country will be classified, as appropriate, and the guidelines regarding their use will be formulated by the Ministry of Defence.



(b) Open Series Maps (OSMs) – OSMs will be brought out exclusively by SOI, primarily for supporting development activities in the country. OSMs shall bear different map sheet numbers and will be in UTM Projection on WGS-84 datum. Each of these OSMs (in both hard copy and digital form) will become “Unrestricted” after obtaining a one-time clearance of the Ministry of Defence. The content of the OSMs will be as given in **Annexure ‘B’**. SOI will ensure that no civil and military Vulnerable Areas and Vulnerable Points (VA’s/VP’s) are shown on OSMs.

The SOI will issue from time to time detailed guidelines regarding all aspects of the OSMs like procedure for access by user agencies, further dissemination/sharing of OSMs amongst user agencies with or without value additions, ways and means of protecting business and commercial interests of SOI in the data and other incidental matters. Users will be allowed to publish maps on hard copy and web with or without GIS database. However, if the international boundary is depicted on the map, certification by SOI will be necessary.

In addition, the SOI is currently preparing City Maps. These City Maps will be on large scales in WGS-84 datum and in public domain. The contents of such maps will be decided by the SOI in consultation with Ministry of Defence.

#### **4. NATIONAL TOPOGRAPHICAL DATA BASE (NTDB)**

SOI will continue to create, develop and maintain the National Topographical Data Base (NTDB) in analogue and digital forms consisting of following data sets:

- (a) National Spatial Reference Frame,
- (b) National Digital Elevation Model,
- (c) National Topographical Template,
- (d) Administrative Boundaries, and
- (e) Toponymy (place names).

Both the DSMs and OSMs will be derived from the NTDB.

#### **5. MAP DISSEMINATION AND USAGE**

Open Series Maps of scales larger than 1:1 million either in analogue or digital formats can be disseminated by SOI by sale or through an agreement to any agency for specific end use. This transaction will be registered in the Registration database with details of the receiving agency, end use etc.

- Through the agreement, SOI will allow a user to add value to the maps obtained (either in analogue or digital formats) and prepare his own value-added maps.
- The user should be able to share these maps with others – the information of all such sharing will also require to be logged in the Map Transaction Registry.

**6. APPLICABILITY OF PREVIOUS INSTRUCTIONS:**

The Ministry of Defence has from time to time issued detailed guidelines on various aspects of map access and use. These instructions shall continue to hold good but for the modifications cited herein..



## CONTENTS OF OSM

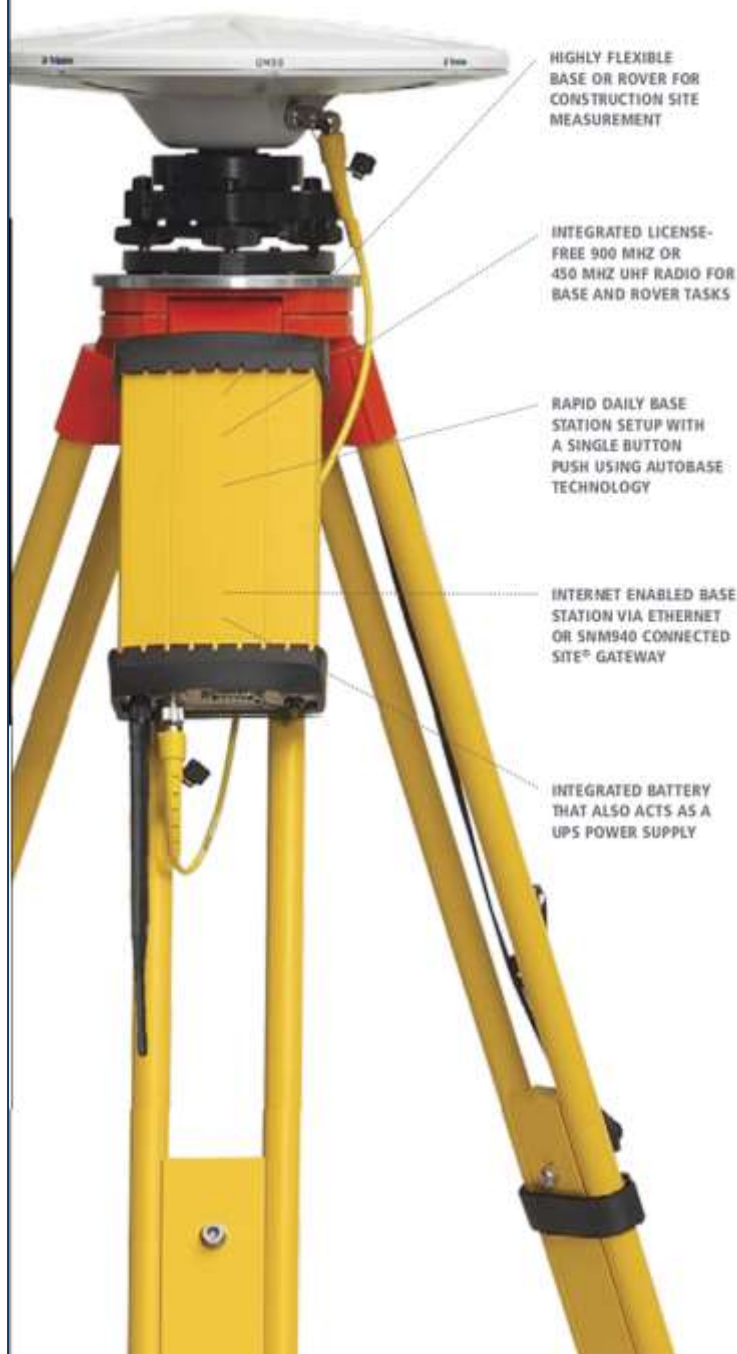
### Annexure 'B'

Sl.NO	CATEGORY/LAYER		SUB DETAILS
1.	GENERAL		Latitude/Longitude Name of State/District/Administrative index Topo sheet Number/Year of Survey/Edition No./Index to topo sheets Magnetic variation from true North direction Map reference Bar scale/Representative Factor
2.	ADMINISTRATIVE BOUNDARIES	Names Boundary Boundary Pillars	Administrative/Locality or tribal International to village, Forest, all boundary pillars, village trijunctions
3.	COMMUNICATIONS/ ROADS	Roads Tracks Railways Embankments Other Lines	All Roads All Tracks, pass, footpath All gauges with stations, tunnels Light railways or tramway, All embankments, Road/rail/tank
4.	HYDROLOGY	Stream/Canals Dams Rivers & Banks Wells, Water Features	All streams/canals All earthwork dams All rivers with details, banks, islands All wells/tube wells/springs  All Tanks (excluding overhead tanks), Lightship, buoys, anchorages
5.	SETTLEMENT/ CULTURAL DETAILS	Towns or Villages Offices Settlements	Village inhabited, deserted and forts Huts, Tower, Antiquities Religious places, tombs/grave All post/telegraphic/Police stations hut All Bungalows
6.	TRANSMISSION LINE		
7.	RELIEF/HYPSOGRAPHY	Contours Sand Features Ice Forms Heights Benchmarks	Contours with sub features All sand features Ice forms (all features) Spot height, Approximate height Bench marks (Geodetic tertiary, canal)
8.	VEGETATION	Plantations, Trees	All trees, Vine on trellis, grass, scrub.
9.	FOREST		Reserved/Protected

\* Contours & heights will not be available in restricted zones as per MOD's instructions.

# DATASHEET

## TRIMBLE SP5855 GNSS MODULAR RECEIVER



HIGHLY FLEXIBLE  
BASE OR ROVER FOR  
CONSTRUCTION SITE  
MEASUREMENT

INTEGRATED LICENSE-  
FREE 900 MHZ OR  
450 MHZ UHF RADIO FOR  
BASE AND ROVER TASKS

RAPID DAILY BASE  
STATION SETUP WITH  
A SINGLE BUTTON  
PUSH USING AUTOBASE  
TECHNOLOGY

INTERNET ENABLED BASE  
STATION VIA ETHERNET  
OR 5NM940 CONNECTED  
SITE® GATEWAY

INTEGRATED BATTERY  
THAT ALSO ACTS AS A  
UPS POWER SUPPLY

### FLEXIBLE RECEIVER FOR JOBSITE MEASUREMENT

Whether you need a reliable GNSS base station or a rugged rover, the Trimble® SP5855 GNSS Modular Receiver gives you the flexibility to perform all of your construction site measurements. As a permanent or semi-permanent base station, it provides GNSS corrections for site measurements and machine control. As a rover, it can move easily from a site supervisor truck to a pole mount for grade checking, site measurement and stakeout.

The versatile SP5855 receiver is available in a range of options to suit your jobsite or marine construction performance requirements. Simply purchase the receiver that you need today, and upgrade as your needs change.

### Secure and Easy to Use

The Trimble SP5855 is comprised of an integrated GNSS receiver and radio plus a choice of external antenna. The receiver can be placed in a secure environment such as the job trailer or boat cabin where it is protected from theft and weather. The less expensive antenna can be placed in a location with clear visibility to the sky and maximum radio coverage.

You don't have to be a GNSS expert to use the SP5855. Integrated 450 or 900 MHz license-free radio and interface with Trimble SC5900 Site Controller Software make the SP5855 easy to use, fast to setup and more productive on the job. Trimble Autbase™ technology means anyone on the jobsite can perform daily base station set up with one button push.

For more advanced troubleshooting, the receiver's web interface allows your GNSS manager to remotely monitor base station performance, availability, and configuration. No need for time-consuming and costly visits to the base station to set up each day or diagnose issues that may arise.

The fully upgradable SP5855 GNSS Modular Receiver can be configured in a variety of ways. For example:

- As a base station only
- As a rover only with SBAS, Location, or Precision Real-Time Kinematic (RTK) accuracy
- As a flexible base or rover with Precision RTK accuracy

The SP5855 can be combined with the Trimble SP5555H Heading Add-on Receiver, for applications on cranes, construction vessels, and dredges where real-time position and orientation are important.



The Construction Technology Standard  
[www.trimble.com](http://www.trimble.com)

## TRIMBLE SPS855 GNSS MODULAR RECEIVER

### GENERAL

Keyboard and display ..... Vacuum fluorescent display 16 characters by 2 rows  
Dimmable, On/Off key for one-button startup  
Dimensions (L x W x D) ..... 24 cm x 12 cm x 5 cm (9.4 in x 4.7 in x 1.9 in)  
Weight ..... 1.65 kg (3.64 lb) receiver with internal battery and radio  
1.55 kg (3.42 lb) receiver with internal battery and no radio

### ANTENNA OPTIONS

GA530 ..... L1/L2/L2C GPS, SBAS, and OmniSTAR  
GA810 ..... GPS, Glonass, OmniSTAR, SBAS, Galileo (optimized for OmniSTAR)  
Zephyr™ 2 Models ..... L1/L2/L2C/L5 GPS, Glonass, OmniSTAR,  
SBAS, Galileo, BeiDou

### ENVIRONMENTAL

Operating<sup>1</sup> ..... -40 °C to +65 °C (-40 °F to +149 °F)  
Storage ..... -40 °C to +80 °C (-40 °F to +176 °F)  
Humidity ..... MIL-STD-883C, Method 508.4  
Waterproof ..... IP67 for submersion to depth of 1 m (3.3 ft), dustproof  
Pole drop ..... Designed to survive a 1 m (3.3 ft) pole drop onto a hard surface

### MEASUREMENTS<sup>2</sup>

#### MEASUREMENTS<sup>3</sup>

- 440-channel L1C/A, L1/L2/L2C GPS and QZSS. Upgradable to L5 and GLONASS L1/L2C/A, L1/L2P Full Cycle Carrier
- Galileo
- BeiDou
- OmniSTAR
- Trimble EVEREST™ multipath signal rejection
- 4-channel SBAS (WAS/EGNOS/MSAS/QZSS)

#### CODE DIFFERENTIAL GPS POSITIONING<sup>4</sup>

Horizontal accuracy ..... 0.25 m + 1 ppm RMS (0.8 ft + 1 ppm RMS)  
Vertical accuracy ..... 0.50 m + 1 ppm RMS (1.6 ft + 1 ppm RMS)

#### REAL-TIME KINEMATIC (RTK UP TO 30 KM) POSITIONING<sup>5</sup>

Horizontal accuracy ..... 8 mm + 1 ppm RMS (0.026 ft + 1 ppm RMS)  
Vertical accuracy ..... 15 mm + 1 ppm RMS (0.05 ft + 1 ppm RMS)

#### TRIMBLE X-PILL

Horizontal accuracy ..... RTK + 10mm/minute RMS  
Vertical accuracy ..... RTK + 20mm/minute RMS

#### INITIALIZATION TIME

Initialization reliability<sup>6</sup> ..... >99.9%

#### POWER

Internal ..... Integrated internal battery 7.2 V, 7800 mA-hr, Lithium-ion  
External ..... Power input on 7-pin G-shell Lemo connector is optimized for lead acid batteries with a cut-off threshold of 11.5 V  
Power input on the 26-pin D-sub connector is optimized for Trimble Lithium-ion battery input with a cut-off threshold of 10.5 V  
Power consumption ..... 6.0 W in rover mode with internal receive radio  
8.0 W in base mode with internal transmit radio

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PN 023462-01BNA-03112

### OPERATION TIME ON INTERNAL BATTERY

Rover ..... 13 hours; varies with temperature  
Base station  
450 MHz systems ..... Approximately 11 hours; varies with temperature<sup>8</sup>  
900 MHz systems ..... Approximately 9 hours; varies with temperature

### REGULATORY APPROVALS

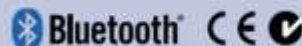
- FCC Part 15 Subpart B (Class B Device) and Subpart C, Part 90
- Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
- Canadian RSS-310, RSS-210, and RSS-119.
- Cet appareil est conforme à la norme CNR-310, CNR-210, et CNR-119 du Canada.
- ACMA: AS/NZS 4295 approval
- CE mark compliance
- Ctick mark compliance
- UN ST/SG/AC.10.1/Rev.3, Amend. 1 (Lithium-ion Battery)
- UN ST/SG/AC.10/27/Add. 2 (Lithium-ion Battery)
- RoHS compliant
- WEEE compliant
- WEEE compliant

### COMMUNICATIONS

Lemo (Serial) ..... 7-pin 05 Lemo, Serial 1, 3-wire RS-232  
Modem 1 (Serial) ..... 26-pin D-sub, Serial 2, Full 9-wire RS-232, using adaptor cable  
Modem 2 (Serial) ..... 26-pin D-sub, Serial 3, 3-wire RS-232, using adaptor cable  
1PPS (1 Pulse-per-second) ..... Available on Marine versions  
Ethernet ..... Through a multi-port adaptor  
Bluetooth wireless technology ..... Fully integrated,  
fully-sealed 2.4 GHz Bluetooth module<sup>7</sup>  
Integrated radios (optional) ..... Fully integrated, fully-sealed  
Internal 450 MHz (UHF) Tx/Rx; Internal 900 MHz Tx/Rx  
External GSM/GPRS, cell phone support ..... For internet-based  
correction streams  
Receiver position update rate ..... 1 Hz, 2 Hz, 5 Hz, 10 Hz, and 20 Hz positioning  
Correction data input/output ..... CMR™, CMR+, CMR+, RTCM v 2.x & 3.x  
Data outputs ..... NMEA, GSD, 1PPS Time Tags (Marine version)

- 1 Receiver will operate normally to -40 °C. Internal batteries are rated to -20 °C.
- 2 The Trimble SPS855 GNSS Modular Receiver is capable of supporting existing and planned GNSS satellite signals, including GPS, GLONASS, Galileo, Quasi-Zenith Satellite System and BeiDou, and existing and planned augmentations to these GNSS systems. Support for the Galileo system is developed under a license of the European Union and the European Space Agency.
- 3 Accuracy and reliability may be subject to anomalies such as multipath, obstructions, satellite geometry, and atmospheric conditions. Always follow recommended practices.
- 4 RTK refers to the last reported precision before the correction source was lost and re-locked.
- 5 May be affected by atmospheric conditions, signal multipath, and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.
- 6 For receivers with the 2.0W upgrade, reduced battery performance should be expected compared to the 0.5W version.
- 7 Bluetooth type approval are country specific. For more information, contact your local Trimble office or representative.

Specifications subject to change without notice.



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मंत्रालय  
महानदी भवन, नया रायपुर-492002

// अधिसूचना //

10 NOV 2014

रायपुर, दिनांक नवम्बर, 2014

क्रमांक एफ 7-14/2013/12:: राज्य शासन एतद् द्वारा चीफ कन्ट्रोलर ऑफ माइन्स, भारतीय खान ब्यूरो नागपुर के परिपत्र क्रमांक 2/2010, दिनांक 06.4.2010 के पैरा-2 के बिन्दु-2 के तारतम्य में समस्त खनिजों के खनिज रियायतों के सीमा स्तम्भ का Differential Global Positioning System (डीजीपीएस) का उपयोग करते हुए सर्वेक्षण करने के लिए तालिका में दर्शित संस्थानों को अधिमान्यता प्रदान करता है:-

क्र.	एजेंसी का नाम एवं पता
1.	2
1	M/S SHREERAM GEMICON (PVT.) LIMITED GEOLOGICAL AND MINING CONSULTANTS L-09, Songanga Colony Seepat Road, Bilaspur (Chhattisgarh)
2	M/S SINELA MINING CONSULTANCY, GOA Office No. 9, D.Costa Commercial Apartment, Near Old Railway Station Gate, Malbhat, Margo - 403601, Goa-India
3	M/S SPATIAL PLANNING AND ANALYSIS RESEARCH CENTRE PVT. LTD. E/11, Infocity, Chandaka Industrial Estate, Bhubaneswar, Orissa, India, Pin - 751024
4	M/S SIDDHARTH GEO CONSULTANTS, 21/3, First Floor Ramkund, Santa Colony. Behind Lifeworth Hospital, Raipur (Chhattisgarh) 492001
5	M/S SOHAM FERRO MANGANESE PVT. LTD. Block No. 16,17 Ground Floor N.K.T. Tower, Anjani S.I. Wardha Road, Nagpur (Maharashtra)
6	M/S SAN SURVEY ENGINEERING, HOOGHLY(WB) Regd. Off. - 465, Jiban Pal Bagan, Karbala (West), P.O. & Dist. - Hooghly, West Bengal, Pin - 712103 Contact Office - Anjali Complex, Bankim Kanan, Chinsurah Station Road, Chinsurah, Hooghly, West Bengal -712102
7	M/S GEOTRAX INTERNATIONAL SERVICES, HYDERABAD (TELANGANA) Plate No 156 & 157, Lokayuta Colony, Badangpet Nadargul, Hyderabad 500058, Telangana
8	M/S RAFT CONTRACTORS AND DESIGNERS, Plot No. D-36, Ground Floor, Koelnagar, Raurkela, Dist. Sundargarh, Orissa, Pin No. - 769014
9	M/S MICRONET SOLUTION, Bisesar House, Opp. HSSC Board Office, (P.B. 85 G.P.O.) Civil Line, Nagpur, Maharashtra - 440001
10	M/S BHARAT ALUMINIUM COMPANY LIMITED (BALCO) P.O. Balco Nagar Korba(C.G.), India, Pin 495684

2/ अधिमान्यता प्राप्त संस्थानों के लिए शर्त:-

- 2.1. The Survey Agency Shall Be responsible for the accuracy of the data collected and Survey.
- 2.2. Coordinates of boundary pillars shall be established in the World Geodetic System 1984 (WGS-84) Datum.
- 2.3. Each boundary pillar shall be surveyed using DGPS, at least 2 Hours observation for its ground position.

- 2.4 The maximum distance between any two successive pillars should not be more than 100 meter.
- 2.5 All corner pillar should be of pyramid shaped whith base of 1 meter and height of 2 meter and should be placed 1 meter above the ground and 1 meter below the ground.
- 2.6 Distance and bearing to the forward and backward pillars and latitudes and longitudes should be marked on all the corner pillars.
- 2.7 डीजीपीएस सर्वे कार्य हेतु पारिश्रमिक का निर्धारण अधिमान्य प्राप्त संस्थान एवं खनिज रियायतधारी के मध्य आपसी समन्वय से किया जाएगा। किसी भी प्रकार का आपसी विवाद होने पर राज्य शासन उत्तरदायी नहीं होगा।
- 2.8 डीजीपीएस सर्वे कार्य के गुणवत्ता में कमी पाये जाने पर या किसी भी प्रकार की कार्य संबंधी शिकायत पाये जाने पर जांच उपरांत राज्य शासन को यह अधिकार होगा कि उक्त अधिकृत एंजेसी की मान्यता किसी भी समय समाप्त की जा सकती है।
- 2.9 डीजीपीएस सर्वे के संबंध में भारतीय खान ब्यूरो/राज्य शासन द्वारा समय-समय पर जारी निर्देशों का पालन अधिमान्यता प्राप्त संस्थान को करना होगा।
- 2.10 राज्य शासन द्वारा जारी यह अधिमान्यता 03 वर्ष के लिए होगी। समयावधि समाप्ति से 03 माह पूर्व अधिकृत एंजेसी नवीनीकरण हेतु आवेदन कर सकेगा।
- 2.11 भारत सरकार एवं राज्य शासन द्वारा डीजीपीएस सर्वे के संबंध में समय-समय पर जारी निर्देशों का पालन किया जाना होगा।
- 3/ यह अधिमान्यता अधिसूचना के जारी होने की तिथि से 03 वर्ष के लिए होगी।

छत्तीसगढ़ के राज्यपाल के नाम से  
तथा आदेशानुसार,

(सुबोध कुमार सिंह)

सचिव

छत्तीसगढ़ शासन  
खनिज साधन विभाग

पृ. क्रमांक एफ 7-14/2013/12

प्रतिलिपि:-

रायपुर, दिनांक नवम्बर, 2014

10 NOV 2014

1. सचिव, भारत सरकार, खान मंत्रालय, शास्त्री भवन, नई दिल्ली,
2. कंट्रोलर जनरल, भारतीय खान ब्यूरो, सेकण्ड फ्लोर, ए-ब्लॉक, इन्दरा भवन, सिविल लाईन, नागपुर (महाराष्ट्र)
3. चीफ कंट्रोलर ऑफ माईन्स, भारतीय खान ब्यूरो, सेकण्ड फ्लोर, ए-ब्लॉक, इन्दरा भवन, सिविल लाईन, नागपुर (महाराष्ट्र)
4. क्षेत्रीय खान नियंत्रक, भारतीय खान ब्यूरो, छटवां तल, बी एवं सी -ब्लॉक, इन्दरा भवन, सिविल लाईन, नागपुर (महाराष्ट्र)
- ✓ 5. संचालक, भौमिकी तथा खनिकर्म, छत्तीसगढ़ ब्लॉक-4, द्वितीय तल, इन्द्रावती भवन, नया रायपुर,
6. समस्त कलेक्टर, जिला ----- छत्तीसगढ़

7. समस्त संबंधित -----
- की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु
8. संचालक, शासकीय मुद्रणालय, गौन्दवारा, भनपुरी, रायपुर(छत्तीसगढ़) की ओर राजपत्र में प्रकाशनार्थ।
9. श्री श्रीकांत राव, सहायक भौमिकी विद्, संचालनालय भौमिकी तथा खनिकर्म, द्वितीय फ्लौर, इन्द्रावती भवन, नया रायपुर। कृपया उक्त आदेश/अधिसूचना को संचालनालय की वेबसाईट में अपलोड करने का कष्ट करें।
10. गार्ड फाईल रजिस्टर

सचिव

छत्तीसगढ़ शासन  
खनिज सांघन विभाग



छत्तीसगढ़ शासन  
खनिज साधन विभाग  
मंत्रालय  
महानदी भवन, नया रायपुर-492002

// अधिसूचना //

22 NOV 2014

रायपुर, दिनांक नवम्बर, 2014

क्रमांक एफ 7-14/2013/12:: राज्य शासन एतद्वारा चीफ कन्ट्रोलर ऑफ माइन्स, भारतीय खान ब्यूरो नागपुर के परिपत्र क्रमांक 2/2010, दिनांक 06.4.2010 के पैरा-2 के क्रमांक-2 द्वारा प्रदत्त शक्तियों को प्रयोग में लाते हुए इस विभाग की समसंख्यक अधिसूचना दिनांक 10.11.2014 में निम्नानुसार संशोधन करता है :-

// संशोधन //

उक्त अधिसूचना के पैरा-01 के सरल क्रमांक-10 में शब्द M/S BHARAT ALUMINIUM COMPANY LIMITED (BALCO) P.O. Balco Nagar Korba(C.G.), India, Pin 495684 के पश्चात शब्द (राज्य में स्थित स्वयं के खनिज रियायतों से संबंधित डीजीपीएस कार्य हेतु) अन्तः स्थापित किया जाय।

छत्तीसगढ़ के राज्यपाल के नाम से  
तथा आदेशानुसार,

(सुबोध कुमार सिंह)  
सचिव

छत्तीसगढ़ शासन  
खनिज साधन विभाग

पृ. क्रमांक एफ 7-14/2013/12  
प्रतिलिपि:-

रायपुर, दिनांक नवम्बर, 2014

22 NOV 2014

1. सचिव, भारत सरकार, खान मंत्रालय, शास्त्री भवन, नई दिल्ली,
2. कंट्रोलर जनरल, भारतीय खान ब्यूरो, सेकण्ड फ्लोर, ए-ब्लॉक, इन्दरा भवन, सिविल लाईन, नागपुर (महाराष्ट्र)
3. चीफ कन्ट्रोलर ऑफ माइन्स, भारतीय खान ब्यूरो, सेकण्ड फ्लोर, ए-ब्लॉक, इन्दरा भवन, सिविल लाईन, नागपुर (महाराष्ट्र)
4. क्षेत्रीय खान नियंत्रक, भारतीय खान ब्यूरो, छट्वां तल, बी एवं सी -ब्लॉक, इन्दरा भवन, सिविल लाईन, नागपुर (महाराष्ट्र)
5. संचालक, भौमिकी तथा खनिकर्म, छत्तीसगढ़ द्वितीय तल, इन्द्रावती भवन, नया रायपुर,
6. समस्त कलेक्टर, जिला ----- छत्तीसगढ़
7. मेसर्स भारत एल्युमिनियम कंपनी लिमिटेड, बाल्को नगर, कोरबा की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु
8. (क) संचालक, शासकीय मुद्रणालय, गोन्दवारा, भनपुरी, रायपुर(छत्तीसगढ़) की ओर राजपत्र में प्रकाशनार्थ।
9. श्री श्रीकांत राव, सहायक भौमिकी विद्व, संचालनालय भौमिकी तथा खनिकर्म, द्वितीय फ्लोर, इन्द्रावती भवन, नया रायपुर। कृपया उक्त आदेश/अधिसूचना को संचालनालय की वेबसाईट में अपलोड करने का कष्ट करें।
10. गार्ड फाईल रजिस्टर

सचिव

छत्तीसगढ़ शासन  
खनिज साधन विभाग

एजेन्सी का नाम एवं पता		
	शासकीय संस्थान	अधिमान्यता का विवरण
1	सेन्ट्रल माईन प्लानिंग एण्ड डिजाईनिंग इंस्टीट्यूट गोण्डवाना प्लेस, कॉक रोड, राँची (झारखण्ड) 834031 Fax 91-051-223000372231447 www.cmpdi.co.in	खनिज कोयला की खनि रियायतों से संबंधित डीजीपीएस सर्वे कार्य ।
2	नेशनल मिनरल डेव्हलमेंट कार्पोरेशन खनिज भवन 10-3-311/ए, मासाब टैंक, कैसल हिल्स, हैदराबाद (आंध्रप्रदेश) Telex-09481-00848 Fax 07857-255226,255227	खनिज कोयला को छोड़कर अन्य खनिजों की खनि रियायतों से संबंधित डीजीपीएस सर्वे कार्य ।
3	मौलाना आजाद राष्ट्रीय प्रौद्योगिकी संस्थान भोपाल (मध्यप्रदेश) 462051 Mo.No. 9827200561 Fax 91-0755-2670562,2670802 mail id-skatiyar7@rediffmail.com	खनिज कोयला को छोड़कर अन्य खनिजों की खनि रियायतों से संबंधित डीजीपीएस सर्वे कार्य ।
4	छत्तीसगढ़ विज्ञान एवं प्रौद्योगिकी परिषद् एमआईजी 25, इन्द्रावती कालोनी, रायपुर (छ.ग.) 492001 Fax No.0771-2434093 mail id- dgccost@gmail.com	राज्य में समस्त खनिजों की खनि रियायतों संबंधित डीजीपीएस सर्वे कार्य ।
5	स्टील अथॉरिटी ऑफ इंडिया लिमिटेड भिलाई इस्पात संयंत्र, भिलाई, जिला दुर्ग 490001 Fax No.0788-2222890,2223491 mail id- sailbsp@sancharnet.in	राज्य में स्थित स्वयं की खनि रियायतों से संबंधित डीजीपीएस सर्वे कार्य ।
6	भारतीय सर्वेक्षण विभाग छत्तीसगढ़ जियो-स्पेशल डाटा सेंटर, सर्वे ऑफ इंडिया, रीना अपार्टमेंट, तीसरा फ्लोर, पचपेड़ी नाका, धमतरी रोड रायपुर (छ.ग.) 492001 Fax No.0771-2411135 Email id- dirgdc-cg@nic.in	राज्य में समस्त खनिजों की खनि रियायतों संबंधित डीजीपीएस सर्वे कार्य ।
निजी संस्थान		
1	मे. श्रीराम जेमीकोन (प्रा.) लिमिटेड जियोलॉजिकल एण्ड मायनिंग कन्सलटेंट एल.09, सोनगंवा कालोनी, सीपत रोड, बिलासपुर (छ.ग.) Email : kpsshreeram@gmail.com Phone No. - 07752-258203, 655194 Fax No. - 258203	राज्य में समस्त खनिजों की खनि रियायतों संबंधित डीजीपीएस सर्वे कार्य ।
2	मे. सिन्हा मायनिंग कन्सलटेन्सी, गोवा ऑफिस नं. 9, डी. कोस्टा कामर्शियल अपार्टमेंट, पुराना रेल्वे स्टेशन गेट के पास, मालभाट, मार्गो, गोवा 403601 Email : sinha.goa@gmail.com Mob. No. - +91-9822067769	राज्य में समस्त खनिजों की खनि रियायतों संबंधित डीजीपीएस सर्वे कार्य ।
3	मे. स्पेशीयल प्लानिंग एण्ड एनालिसिस रिसर्च सेन्टर प्रा. लि., ई-11, इन्फोसिटी, चाण्डाका इण्डस्ट्रीयल एस्टेट, भुवनेश्वर, ओडिशा 751024 Email : info@sparcindia.com Tel. No. - +91 674-6629301, 9302, 9303 Fax No. - +91 674-6629304	राज्य में समस्त खनिजों की खनि रियायतों संबंधित डीजीपीएस सर्वे कार्य ।



4	मे. सिद्धार्थ जियोकन्सलटेन्ट्स 21/3, प्रथम तल रामकुण्ड, समता कालोनी, लाईफवर्थ हास्पिटल के पीछे, रायपुर (छ.ग.) 492001 Email : sgc_rai@yahoo.co.in Phone No. - 0771-4070731 Fax No.- 0771-4281072	राज्य में समस्त खनिजों की खनि रियायतों संबंधित डीजीपीएस सर्वे कार्य।
5	मे. सोहम फेरो मेगनीज प्रा.लि. ब्लाक नंबर 16, 17 भूतल, एन.के.वाय. टावर, अंजनी स्ववेयर वर्धा रोड़, नागपुर (महाराष्ट्र) Email : soham.feromagnese@gamil.com Phone No. - +91-712-6544174, 2252221 Fax No. - +91-712-2239964	राज्य में समस्त खनिजों की खनि रियायतों संबंधित डीजीपीएस सर्वे कार्य।
6	मे. सन सर्वे इंजीनियरिंग, हूगली (प.ब.) रजिस्टर्ड कार्यालय: 465, जिवन पाल बगान, करबला (पश्चिम), पो.आ. एवं जिला हूगली, पश्चिम बंगाल - 712103 संपर्क कार्यालय: अंजली काम्पलेक्स, बंकिम कानन, चिन्सुराह स्टेशन रोड़, चिन्सुराह, हूगली, पश्चिम बंगाल - 712102 Email : sansurvey@gmail.com sansurvey@rediffmail.com Phone & Fax No. - 033-26860820 09433281788, 09433524683	राज्य में समस्त खनिजों की खनि रियायतों संबंधित डीजीपीएस सर्वे कार्य।
7	मे. जियोट्रेक्स इंटरनेशन सर्विसेज, हैदराबाद (तेलंगाना) प्लॉट नंबर 156 एवं 157, लोकायुक्त कालोनी, बादंगपेट नादेरगुल, हैदराबाद 500058, तेलंगाना Email : info@geotrax.in Phone No. - +91-4065606088	राज्य में समस्त खनिजों की खनि रियायतों संबंधित डीजीपीएस सर्वे कार्य।
8	मे. राफ्ट कान्ट्रेक्टर्स एण्ड डिजाईनर्स प्लॉट नंबर डी-36, भूतल, कोइलनगर, राऊरकेला, जिला सुन्दरगढ़, ओडिशा 769014 Email : rcd.odisha@gmail.com rcd.2009@rediffmail.com Tel. Fax No. - 0661-2472641 Mob. No. - 09437212363	राज्य में समस्त खनिजों की खनि रियायतों संबंधित डीजीपीएस सर्वे कार्य।
9	मे. माईक्रोनेट सॉलुशन बिसेसर हाऊस, एचएसएससी बोर्ड आफिस के सामने, (पो.बा. 85 जीपीओ), सिविल लाईन, नागपुर, महाराष्ट्र 440001 Email : info.micronet@gmail.com info@micronetsolutions.in Phone No. - +91-712-6463560 Fax No. - +91-712-2570055	राज्य में समस्त खनिजों की खनि रियायतों संबंधित डीजीपीएस सर्वे कार्य।
10	मे. भारत एल्युमिनियम कंपनी लिमिटेड (बालको) पो.आ. बालको नगर, कोरबा (छ.ग.) 495684 Phone No. - 07759-242005, 242001 Fax No. - 07759-242169	राज्य में स्थित स्वयं की खनि रियायतों से संबंधित डीजीपीएस सर्वे कार्य।



## ORISSA SPACE APPLICATIONS CENTRE (ORSAC)

Department of Science & Technology, Government of *Odisha*

No.: 124

Date : 11/01/2012

To

M/s Spatial Planning &  
Analysis Research Centre Pvt. Ltd.  
E/11, Infocity, Chandaka Industrial Estate  
Chandrasekharapur, Bhubaneswar

Sub: Empanelment in Remote Sensing/GIS/Web GIS & Software at ORSAC

Sir/Madam,

With reference to your application against ORSAC Advt. No.07/2011 and subsequent technical evaluation, I have the pleasure to inform you that your firm is empanelled at Orissa Space Applications Centre for two years w.e.f. 01.12.2011 under the following categories.

- A) Georeferencing of Satellite Image
- B) DGPS/ETS survey, contour generation
- C) DEM generation and orthoimage generation
- D) Satellite image based thematic information extraction
- E) GIS based database generation, analysis & modeling,  
Socio-economic survey
- F) Web GIS/Open source GIS

The terms and conditions as mentioned in the information brochure with reference to the ORSAC Advt. No.07/2011 will be maintained during allotment of any project by ORSAC to your firm.

Besides, you have to function as authorized agent of ORSAC for Remote Sensing, GIS, Web GIS & Software development to scout projects from different offices relating to your areas of specialization as mentioned below. Allotment such scouted projects will be decided on the basis of evidence of your role in scouting such project and other terms and conditions. In that respect, you have to sign a general MOU with ORSAC before you function as an authorized agent of ORSAC.

- A) Georeferencing of Satellite Image
- B) DEM generation and orthoimage generation
- C) Satellite image based thematic information extraction
- D) GIS based database generation, analysis & modeling,  
Socio-economic survey
- E) Web GIS/Open source GIS

Yours faithfully,

Encl: Format of MOU

  
CHIEF EXECUTIVE

## Experiences in DGPS Survey for Forest Clearances as per MoEF circular, including certification of state nodal agency (ORSAC)

### A. Linear Projects: Power lines, Pipelines, Roads, Belt Conveyors, etc.

Sl.	Organisation	Project (preparation of geo-referenced forest land map through DGPS survey)
1	ORSAC-Powergrid Corporation of India Ltd.	Transmission line corridors in Jahrsuguda and Sundergarh Districts
2	ORSAC- Indian Oil Corp. Ltd.	IOCL Pipeline corridor
3	Essel Mining & Industries Ltd.	Conveyor Route corridor.
4	Jindal Steel & Power Ltd	Conveyor Belt & Rail Corridor
5	Odisha Industrial Infrastructure Development Corporation	OMC 132KV line from Bamanipal to Daitari.
6	Essel Mining & Industries Ltd.	Kasia Water Pipeline corridor
7	Brahmani River Pellets Ltd.	Slurry Pipeline and water pipeline corridor
8	Empowertrans	400 KV Transmission line of Monnet Power Company Limited, Anugul
9	Indian Metal and Ferro Alloys (IMFA)	Rail (siding) corridor
10	Indian Metal and Ferro Alloys (IMFA)	Approach road for prospecting in Chormalda project
11	FERNAS Construction Pvt. Ltd.	IOCL South Jetty Pipeline Project
12	Essar Steel India Limited	Slurry Pipe line
13	ORSAC- R&B	Koraput - Laxmipur Road
14	Monnet Power Company	Pipe line & coal conveyor gallery for Power Plant Project at Malibrahmani, Angul



## B. Industries, Mines, Projects:

Sl.	Organisation	Project (preparation of geo-referenced forest land map through DGPS survey)
1	National Aluminum Co. Ltd.	Panchpatmali bauxite Mine (Central & North Block ML)
2	NALCO	Panchpatmali bauxite Mine (South Block)
3	Mahanadi Coalfields Ltd. (MCL)	Ananta Open cast Extn. Project (Phase - III)
4	MNH Sakti Ltd (MCL-Aditya Aluminum)	Talabira II & III coal blocks
5	TATA Steel	West Bokaro Coal mines, Jharkhand
6	TATA Sasol	CTL Plant site
7	Tata Sasol	Arkhapal Coal Block
8	Tata Sponge Iron Limited	Radhikapur – East coal block
9	Tata Sponge Iron Limited	Compensatory Afforestation area
10	Essel Mining & Industries Ltd.	Koira Iron Ore Mines
11	Essel Mining & Industries Ltd.	Kasia Iron & Dolomite Mines
12	Essel Mining & Industries Ltd.	Jilling Langalota Iron & Manganese Mines
13	Essel Mining & Industries Ltd.	Koira Pellet Plant
14	Essel Mining & Industries Ltd.	Unchabali mines.
15	ORSAC-MNH Sakti	Mine lease boundary in Talabira I, II and III coal blocks of MNH Sakti (MCL)
16	ORSAC-NALCO	Lease Boundary Survey of NALCO Mines
17	ORSAC-Mandakini Coal Company	Lease Boundary survey of Mandakini Coal Block
18	Adani Mining Pvt. Ltd.	Chhendipada Coal block in Talcher Coalfields
19	Adani Mining Pvt. Ltd.	Macchakata Coal block Talcher Coalfields

20	Monnet Power Company Ltd.	Preparation of geo-referenced forest land map of Utkal B2 coal block through DGPS survey
21	Monnet Ispat & Energy Limited	Compensatory afforestation area at Nukhuripada, Angul
22	Monnet Ispat & Energy Limited	Compensatory afforestation area at Katada, Angul
23	Rampia Coal Mine & Energy Pvt. Ltd	Topographic survey including ground demarcation for Rampia & Dip side of Rampia coal blocks.
24	Rampia Coal Mine & Energy Pvt. Ltd.	Rampia Coal Mine Project
25	Indian Metal and Ferro Alloys	Coal block of Utkal Coal Ltd.
26	Indian Metal and Ferro Alloys	Safety Zone map of Mahagiri Chromite Mines
27	Brahmani River Pellets Ltd.	Plant, Tailing Dam & Compensatory afforestation site
28	OCL India Limited	Limestone & Dolomite Mines in Sundergarh.
29	Mandakini Coal Company Limited.	Mandakini- A Coal Block
30	Salijanga Mines	Salijanga Mines
31	Jindal Steel & Power Ltd	Forest land survey in Ramchandi Coal block
32	Radhikapur Coal Mining Pvt.Ltd	Radhikapur (West) Coal Block.
33	Dhamra Port Company Ltd.	Project boundary and Sanctuary boundary survey

## Experiences in Documentation and Processing of Forest Diversion Proposals

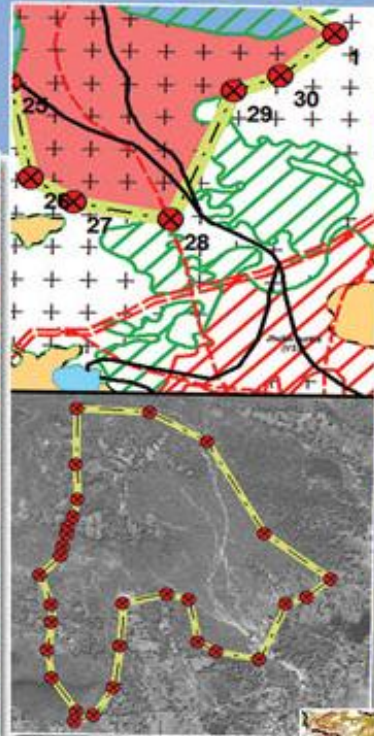
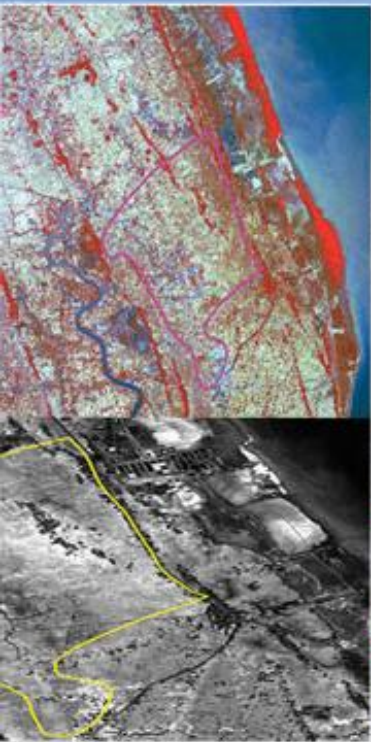
Sl.	Organisation	Project
1	IDCO	Documentation and Processing of Forest Diversion proposal for Autocomplex at Choudwar, Odisha
2	Arcelor Mittal India Ltd	Processing of Forest Diversion Proposal for 12MTPA steel plant and township of ArcelorMittal India Limited at Keonjhar, Odisha
3	Maithan Ispat Limited	Preparation and Processing of FDP for plant at Kalinga Nagar Industrial Complex, Odisha
4	KVK Nilachal Power Pvt.Ltd	Documentation & filling of FDP including its recommendation from DFO for Power Plant of Nilachal Power Pvt. Ltd. in Cuttack, Odisha
5	POSCO-INDIA	Documentation and mapping for Forest Clearance including vegetation analysis, CAF survey, etc.

## Experiences in DGPS Survey of Forest Areas

Sl.	Organisation	Project
1	PCCF, Odisha	<p>Providing technical assistance to DFOs for DGPS survey of Notified Forest Blocks (260 nos) in</p> <ul style="list-style-type: none"> <li>• Keonjhar forest division</li> <li>• Keonjhar (Wildlife) division</li> <li>• Dhenkanal forest division</li> <li>• Bonai forest division and</li> <li>• Baripada forest division</li> </ul>
2	Odisha Forestry Sector Development Project	<p>DGPS Survey and Preparation of 1:5000 scale maps of about 800 Joint Forest Management Areas (treatment areas) in</p> <ul style="list-style-type: none"> <li>• Phulbani forest division</li> <li>• Baliguda forest division</li> <li>• Parlakhemundi forest division</li> <li>• Angul forest division and</li> <li>• Rayagada forest division</li> </ul>
3	Odisha Forestry Sector Development Project	<p>GIS mapping and GPS survey for the proposed Hadgarh-Kuladiha-Similipal Conservation Reserve-cum-Elephant Corridor</p>
4	CF & WPO , Bhubaneswar	<p>GIS mapping for Working Plan preparation of Phulbani Forest Division</p>
5	PCCF (Wild Life) & Chief Wildlife Warden	<p>Preparation of thematic Geo-reference maps of Satkosia Gorge- Baisipalli sanctuaries in digitised GIS format</p>
6	Parlakhemundi Forest Division	<p>Preparation of geo-spatial knowledgebase of Parlakhemundi Forest Division</p>
7	Rayagada Forest Division	<p>Development of GIS for Rayagada Forest Division</p>



# Spatial Planning & Analysis Research Centre Pvt. Ltd.





## SPARC offers services in

- Survey and map preparation using DGPS and ETS
- Remote sensing mapping and studies
- Thematic mapping, geo-database and GIS development
- Development of GIS and MIS applications
- Managed services of geo-spatial information
- Conversion of maps and drawings to digital form
- Socio-economic surveys and social audits
- Consulting services in land management, forestry, environment, urban planning, industrial planning, water & waste water management, irrigation, drainage, social sector planning, etc.

## Human Resources

The experienced and multi-disciplinary team at SPARC offer robust solutions to meet complex client demands.

The collective skill profile comprises of:

- Survey, data collection, database development, software development, GIS and remote sensing data interpretation
- Planning and project engineering
- Project/scheme formulation, monitoring, management and documentation

Our personnel are constantly trained and exposed to the latest technologies to keep awareness and motivations levels high.

## Infrastructure

SPARC's geo-informatics facility houses state-of-the-art infrastructure for map preparation using DGPS/ ETS survey, GIS mapping, satellite image analysis, geo-database development, application development, web application developments, etc.

The ultra-modern Differential GPS survey infrastructure is further supported by a network based permanent reference station at SPARC's headquarter.

## Advantages @ SPARC

- A leading geo-informatics solution provider in Eastern India
- Rich experience through successful execution of more than 200 projects
- Experienced and qualified workforce
- State-of-the-art infrastructure
- Quality and time bound delivery

## Our Vision

Be amongst India's forerunning geo-informatics solution providers

## Our Mission

- Be recognised as the innovator in map based solutions
- Work towards application of geo-spatial technology in various meaningful development programs
- Drive long term growth
- Co-create customer growth
- Create an enthusiastic and happening work place
- Achieve market and thought leadership



## About Geo-informatics

Geoinformatics is the science and technology dealing with the structure and character of spatial information, its capture, its classification and qualification, its storage, processing, portrayal and dissemination, including the infrastructure necessary to secure optimal use of this information. Geoinformatics is an important technology to decision-makers across a wide range of disciplines, government departments, survey and mapping organizations, engineering organizations, industries, environmental agencies, emergency services, research and academia, etc.





Markets	Key Practice Areas
Survey and map preparation	<ul style="list-style-type: none"> <li>• Cadastral surveys , boundary surveys and land records preparation</li> <li>• Land administration using DGPS, ETS, high resolution satellite data and GIS</li> </ul>
Forest and Environment	<ul style="list-style-type: none"> <li>• Boundary surveys using DGPS: Forest blocks, compartments, protected areas, DLC land, plantations, diversion areas, CAF land , etc.</li> <li>• Location based data collection and mapping: Forest infrastructure, forest headquarters, hotspots, forest tracks, etc.</li> <li>• RS based mapping: Land use, vegetation, drainage &amp; water bodies, forest cover/density, stock estimation</li> <li>• Thematic Mapping: Soil, topography, watersheds, village boundaries/ settlements/ VSS, road &amp; rail, etc</li> <li>• Data integration, analysis &amp; visualization: Slope analysis, 3D modeling, remote sensing - DGPS-thematic data integration in GIS</li> <li>• Delineation of wildlife habitat/ corridors, formulation of conservation plans for soil, water, wildlife, etc.</li> <li>• GIS based environmental monitoring, EIA/ EMP studies</li> <li>• Training &amp; capacity building</li> </ul>
Urban and Regional planning	<ul style="list-style-type: none"> <li>• Formulation of development plans (CDP, Master Plan, Zonal Plan)</li> <li>• Formulation of DPRs on slum free city plans, water supply, sewerage, drainage, transport, environmental conservation, etc.</li> <li>• GIS based Property Tax monitoring systems</li> <li>• GIS based urban Information Systems for development management</li> <li>• GIS based urban utility and urban assets management system</li> <li>• Training and capacity building</li> </ul>
Industry and Mining	<ul style="list-style-type: none"> <li>• Industrial Site Selection using GIS</li> <li>• Land acquisition documentation and monitoring using GIS</li> <li>• DGPS survey of lease hold boundaries</li> <li>• DGPS survey of forest diversion, CAF areas and documentation for forest diversion proposals</li> <li>• Feasibility studies for industrial water drawal</li> <li>• Land use mapping for mines using GIS &amp; RS</li> <li>• Digital archival of maps/drawings</li> <li>• GIS based Industrial utility/ facility mapping and monitoring</li> </ul>
Water Resources and Agriculture	<ul style="list-style-type: none"> <li>• GIS and RS based water Balance Studies for river basins</li> <li>• Command area information system and water use efficiency studies</li> <li>• Hydropower potential studies</li> <li>• Remote sensing based Reservoir Sedimentation Studies</li> <li>• Survey and planning of irrigation schemes</li> <li>• Formulation agricultural land use action plan using GIS</li> <li>• Ground water potential mapping</li> </ul>
Governance and Land Administration	<ul style="list-style-type: none"> <li>• GIS for infrastructure planning and monitoring</li> <li>• Planning and Monitoring of Rural Development schemes using GIS</li> <li>• Connectivity planning using GIS</li> <li>• Education facility planning &amp; management using GIS</li> <li>• GIS based healthcare facility management</li> <li>• Delimitation planning of administrative units</li> <li>• Transport and logistic management using GIS</li> <li>• Disaster response planning using GIS</li> </ul>





Spatial Planning & Analysis Research Centre (SPARC) is a leading IT Enabled Service provider, specializing in end-to-end Geo-informatics solutions.

Established in 1997, SPARC is a well equipped company providing it's customers the information and expertise they need to make intelligent decisions. The solutions range from basic services of mapping, DGPS/ ETS survey, remote sensing data interpretation, GIS development, Internet mapping solutions to consultancy and research.

An ISO 9001: 2008 company, SPARC serves a wide array of Government and Corporate clients for their geo-spatial information need in a broad range of vertical markets.



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