



Details of Research work on Environmental Sustainability

The faculty members and researchers of the university are engaged in research work on environmental sustainability and different departments offer courses/subjects on environmental sustainability. Faculty members in various departments carry out research on green nanotechnology, green extraction, preservation of different flora and fauna. University departments strive to deal with the solution based forestry education and research through a number of research/ developmental projects and grant-in aids sanctioned by various government agencies. The research deals with the emerging issues in the forest sciences, including global concerns such as global warming and climate change, forest genetic resource conservation, tree improvement, watershed management through remote sensing and GIS, bioprospecting of natural dyes, wood improvement, tree microbe interaction, wildlife biology, microbial technology, soil fertility management, bioremediation and sustainable development. The courses offered by some departments also consist of topics on environmental sustainability to encourage the researchers to work on this field of research.

The details can be verified with the help of the following pages in this pdf file and weblinks.

Details	Link to the document
Consultancy project from NTPC	Page Number 02 in this file
Consultancy project from SECL	Page Number 03-04 in this file
Consultancy project from SECL	Page Number 05-07 in this file
Consultancy project from Thriveni Sainik Mining Pvt Limited	Page Number 08-09 in this file
Consultancy project from Uttar Pradesh State Compensatory Afforestation Fund Management and Planning Authority	Page Number 10-12 in this file
Consultancy project from Thriveni Sainik Mining Pvt Limited	Page Number 13-14 in this file
Consultancy project from Shalimar Road Infrastructure Pvt Ltd	Page Number 15-16 in this file
Project from Central Mine planning & Design Institute Ltd	Page Number 17-18 in this file
PhD course work syllabus in Chemical Engineering	https://www.new.ggu.ac.in/attachments/attachments/course/Ph.D. Syllabus and Scheme.pdf
PhD course work syllabus in Forestry and Environmental Sciences	https://www.new.ggu.ac.in/attachments/attachments/course/Ph.D. in Forestry Environmental Sciences.pdf
PhD course work syllabus in Rural Technology	https://www.new.ggu.ac.in/attachments/attachments/course/RT_Ph_D_Syllabus_as_per_LOCF with POs PSOs COs.pdf
Few publication on environmental sustainability	https://link.springer.com/article/10.1007/s12649-024-02787-8 https://pubs.rsc.org/en/content/articlehtml/2024/fb/d4fb00177j https://www.sciencedirect.com/science/article/pii/S2949824425000011 https://link.springer.com/article/10.1007/s13399-024-05654-7



NTPC Limited
(A Government of India Enterprise)
SSC - Coal Mining(Ranchi)
Jallunga Road, Gharghoda
Rajgarh
Chhattisgarh- 496111, India
Telephone No. : Fax No. :

Service Purchase Order

PAN No. : AAACN0255D
CIN No. : L40101DL1975GOI007966

Purchase Order No. : 4600076688-108-1071 Date : 29.10.2023 (version : 0)

To
REGISTRAR GURU GHASIDAS UNIVERSITY
KONI
BILASPUR
Chhattisgarh
India - 495009
Tel: 7000591141
E-Mail : AKS.GGU@GMAIL.COM

Vendor Code : 1165082

Subject: : Consultancy work to study Land Use Land Cover study post mining activity at NTPC TLCMP.
NIT NO. : 9900266409/108/1074 Dated 20.10.2023
Your Offer No. :
Your Reference :
Our Reference : NIT No.: 9900266409

Dear Sir,

This has reference to our above mentioned NIT, Your offer and subsequent discussions. We are pleased to accept your offer opened on 20.10.2023 and confirm having awarded on you the work of Consultancy work to study Land Use Land Cover study post mining activity at NTPC TLCMP. of total value INR 200,000.00 (Rupee TWO LAKH ONLY) mentioned in the scope of works, special terms & conditions, Bill of quantities etc.

The duration of the service period shall be from 27.10.2023 to 26.01.2024. Though the duration of contract shall remain same, the actual date of commencement of the contract shall be as per the direction of EIC. DGM(EMG) shall be EIC for this work.

This service purchase order along with its annexure is being issued to you in duplicate. We request you to return the duplicate copy of this service purchase order, duly signed on each page by your authorised signatory in token of your unequivocal acknowledgment of the same within 15 days from the date of this service purchase order. If no communication is received within 15 days of receipt of Purchase Order, it will be treated that order has been accepted in entirety.

We thank you for the interest shown by you in our project and the cooperation extended to us. We expect to receive your continued cooperation in future also.

Thanking You,
For & on behalf of NTPC Limited.

DGM (C&M)

Enclosures :

No: SECL /GM /BSPR/ANO /E&F /2024/ 24

Date: 30.04.2024

To,

Prof. Subash Chandra Tiwari,
Dean, School of Natural Resources,
Dept. of Forestry, Wildlife & Environmental Sciences,
Guru Ghasidas Vishwavidyalaya,
Bilaspur -- 495009, Chhattisgarh.

Sub: Award of work to carry out "Need Based Assessment Survey" of CSR activities for core and buffer zone villages within 10 Kms of Gayatri UG Coal Mine (a subsidiary of Coal India Limited), Bishrampur Area, Surajpur District, Chhattisgarh.

Ref: Your proposal received via Mail Dated 16.02.2024.

Dear Sir,

With reference to the above, this is to communicate the award of subject work "Carrying out Need Based Assessment Survey of CSR activities for core and buffer zone villages within 10 Kms of Gayatri UG Coal Mine, Bishrampur Area, Surajpur District, Chhattisgarh" to Guru Ghasidas Vishwavidyalaya, amounting to Rs. 2,34,820.00 (Two Lakhs thirty four thousand eight hundred and twenty only) inclusive of GST @ 18% on the terms & conditions as indicated below with the following scope of work.

OBJECTIVES OF THE NEED ASSESSMENT STUDY

- To prepare a comprehensive target area profile of the villages including demography, quality of life, infrastructure available, education status, economic status, and others.
- To identify problems faced by the target area population and explore possible solutions.
- To make recommendations to Project Proponent (M/s South Eastern Coalfields Limited) regarding further community development work in the target areas.

SCOPE OF WORK

- To conduct door to door survey/interview and study in the Core Zone and Buffer zone (10 km radius) area of Gayatri UG Mine.
- To prepare a report, giving importance to the geographical area, society and cultural practices for the desired sectors / issues for fulfilment of long-term benefits to the beneficiaries.
- The report should include but not be limited to Promotion of Education; Gender equity & Women empowerment; Eradication of extreme hunger & poverty; Reducing child mortality & improving maternal health; Combating diseases; Environment Sustainability; Social business projects; Employment enhancing vocational skills; and any such other matters identified during the survey.
- Furnishing base records of survey for verification / records.

Registered Address: Office of the Area General Manager, SECL, Bishrampur Area,
PO - Bishrampur, Surajpur Dist (CG), Pin code - 497226
Phone: 07775264226, Fax: 07775264214

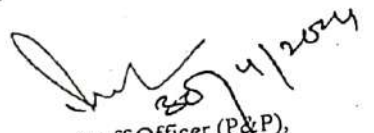
Website: www.secl.co.inemail: gmbpr.secl@coalindia.in

TERMS & CONDITIONS

- Total value of the work is Rs. 2,34,820.00 (Two Lakhs thirty four thousand eight hundred and twenty only) inclusive of GST @ 18%.
- Period of completion of the project is 120 days from the date of acceptance of the work order.
- 1st instalment - 75% advance payment (Rs.1,76,115.00 including 18% GST) shall be released on receipt of acceptance of work order and GST invoice. Balance 25% (Rs.58,705.00 including 18% GST) shall be released after completion of work and Final Report submission.
- The Date of commencement of work shall be reckoned from date of acceptance of work order.
- The copy of work order duly accepted on its body shall be sent back as a token of acceptance of the same.
- The period of completion of work will be 120 days. It shall include completion of all the activities, field work, report writing and submission.
- A draft report shall be submitted in soft copy after 90 days from commencement of work to review and suggestions & Final report shall be submitted in 3 nos hard copies and a soft copy presenting the survey finding data analysis and recommendations to the Area Nodal Officer (E&F), Environment & Forest Dept, SECL, Bishrampur Area.
- The proposal has been financially concurred vide BC No. 236 dated 25.04.2024 and the paying authority will be Area Finance Manager, SECL Bishrampur Area.

You are requested to contact Area Nodal Officer (E&F), SECL Bishrampur Area, Mob.No. 9425279600, (email – seclenvt.bspr@email.com) to start the work at earliest.

This is issued with the approval of Competent Authority.


Staff Officer (P&P),
SECL Bishrampur Area


Incharge

Copy to -

1. Area General Manager, SECL Bishrampur Area – for kind information.
2. General Manager (Envr.), SECL HQ Bilaspur.
3. General Manager (Oprn.), SECL Bishrampur Area
4. Area Finance Manager, SECL Bishrampur Area (BC No. 236 dated 25.04.2024 for Rs. 2.3482 Lakhs /-).
5. Sub Area Manager, RGK Sub Area.

Registered Address: Office of the Area General Manager, SECL, Bishrampur Area,
PO – Bishrampur, Surajpur Dist (CG), Pin code - 497226
Phone: 07775264226, Fax: 07775264214

email: embspr.secl@coalindia.in

Website: www.secl-cil.in



Under jurisdiction of District Court only
साउथ ईस्टर्न कोलफील्ड्स लिमिटेड
SOUTH EASTERN COALFIELDS LIMITED
(कोल इंडिया का एक अंग A Subsidiary of Coal India Ltd.)
"A MINI RATNA COMPANY"
कार्यालय महाप्रबंधक कुसमुण्डा क्षेत्र
OFFICE OF THE GENERAL MANAGER
KUSMUNDA AREA

Td : 07815-271233 (O)
Fax : 07815-271250

प. कुसमुण्डा कालरी
जिला - कोरबा (छ.ग.)
PO: KUSMUNDA COLLY.
DIST: KORBA (CG)

SECL/GM/KSM/ENV/24-25/119

Date: 15.06.2024

WORK ORDER

To,
Dr. S.C. Tiwari
Dean, School of Studies of Natural Resources,
Guru Ghasidas Vishwavidyalaya,
Bilaspur (C.G.)
Email id: set_in@yahoo.co

Subject: "Preparation of a Comprehensive Plan for Protection of Hasdeo River, its aquatic biodiversity & ecosystem services including Right Bank Canal" from mining & allied activities in the area of influence of Kusmunda Opencast Coal Mine Project of M/s South Eastern Coalfields Limited located in District Korba, Chhattisgarh".

Ref: 1. Notice for Quotation Enquiry No. SECL/GM/KSM/24-25/ENV/47 dated 29.04.2024
2. Your Offer Letter No. FO/SECL/KSM/01 dated 14.05.2024
3. Your Clarification vide email dated 05.06.2024 submitted to our additional queries sent to you vide our letter no. SECL/GM/KSM/24-25/ENV/86 dated 22.05.2024

Dear Sir,

With reference to the above, this is to communicate to you that the subject work is herewith awarded to Dr. S.C. Tiwari, Dean, School of Studies of Natural Resources, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) with a total financial outlay of Rs 27.73.000/- (Rupees Twenty Seven Lakh & Seventy Three Thousand Only) inclusive of GST@18% to be paid to you on terms & conditions as indicated below with the following scope of work:

I. SCOPE OF WORK

The Scope of work for "Preparation of Plan for Protection of Hasdeo River, its aquatic biodiversity & ecosystem services including Right Bank Canal in respect of Kusmunda Opencast Expansion Project of SECL Kusmunda Area" shall be in two parts:

1. Impact Assessment Studies: This shall include:

- Study of impact on Hydrological regime of Hasdeo River & its catchment due to mining & associated activities pertaining to Kusmunda OC Project.
- Study of impact on Right Bank Canal due to mining & associated activities related to Kusmunda OC Project.
- Study of impact on Aquatic biodiversity of Hasdeo River & its catchment area pertaining to Kusmunda OC Project
- Study of impact on other ecosystem services of Hasdeo River/Right Bank Canal due to mining & associated activities related to Kusmunda OC Project.

2. Preparation of Comprehensive Protection Plan along with appropriate budgetary allocation:

This shall include:

- i. Preparation of comprehensive plan for protection of Hasdeo River/Right Bank Canal & its catchment area pertaining to Kusmunda OC Project with inputs from Water Resource Department & Public Consultation.
- ii. Assessment of Soil & Moisture Conservation works to arrest silt flow into Hasdeo River & its catchment area pertaining to Kusmunda OC Project & recommendations for improvement of the same.
- iii. Recommendation of Surface Water Management Plan to maximise water conservation for the area of influence affected by mining operations pertaining to Kusmunda OC Project.
- iv. Recommendation of appropriate budget allocation in consultation with State Water Resource Department.
- v. Necessary modification of protection plan after incorporating suggestions of EAC committee of the MoEF&CC, if required.

The Study area shall involve the core area of ML area of 2991.943 Ha of Kusmunda Opencast Project & buffer area of project impact area including catchment area as decided by the MoEF&CC or Water Resource Department or 10km radius from the core area, as applicable.

The final protection plan submitted to SECL Kusmunda Area must include budgetary allocation & its justification along with methodology adopted for arriving at the expenditure amount & should be made in consultation with State Water Resource Department.

II. COST OF THE PROPOSED WORK

The total cost of the work will be as under:

1. Total Consultation Fees	=	₹23,50,000/-
2. GST Component@18%	=	₹4,23,000/-

Total Award Value including GST@18% payable through RTGS/NEFT to Bank A/c (TDS Certificate to be provided with the bill as applicable to the institution) = ₹27,73,000/-

III. DURATION OF THE WORK

1. Project duration shall include 45 days for submission of interim plan for inclusion in Draft EIA/EMP Report, five (05) months for submission of draft report of final plan, fifteen (15) days for submission of comments of SECL & fifteen (15) days for submission of the final report to SECL. Thus, the total period of project work will be 06 months after the commencement of work.
2. The copy of the work order duly accepted on its body along with the proforma invoice for release of 1st Advance payment should be sent back within three (03) working days as a token of acceptance for the same for earliest start of work.
3. Date of Commencement of work will be considered the date on which 1st advance payment is released to you by SECL Kusmunda Area.

PAYMENT TERMS

Total value of work shall be paid in three installments as follows:

1. ₹13,86,500/- (i.e. 50% of total value of work) as advance payment after award of work upon receipt of pre-receipted bill (GST Invoice) & GST Undertaking in original.
2. ₹6,93,250/- (i.e. 25% of total value of work) after submission of interim plan.
3. ₹6,93,250/- (i.e. 25% of total value of work) after submission of final plan & necessary acceptance of the plan from the MoEF&CC.

V. OTHER TERMS & CONDITIONS

1. Following additional expenditure/ responsibility will be borne by SECL Kusmunda Area:
 - a. All expenditure for travel including travel from Bilaspur to Kusmunda, local hospitality (lodging & Boarding) of the project personnel and local transport shall be borne by SECL Kusmunda Area.
 - b. The studies will be conducted with active participation from Water Resource Department for complying with the purpose of obtaining NOC as per Stage-I FC Conditions.
 - c. The final plan submitted to Kusmunda Area must include budgetary allocation & its justification along with methodology adopted for arriving at the expenditure amount.
2. Any additional scope of work shall be added to the study if imposed by the MoEF&CC/ Water Resource Department during the course of study. No additional cost shall be paid to you for any revision/addendum/corrigendum required in the study report / final plan.
3. The Final report shall be submitted in 7 copies along with soft copy compact disk to the General Manager, Kusmunda Area.
4. You are requested to cooperate with all the rules/procedures as declared by SECL Management/ State Govt. at the time of visit regarding protocol pertaining to COVID-19 pandemic etc from time to time.

All conditions as specified in this work order shall be accepted & duly complied for any release of amount by SECL Kusmunda Area. It is requested to contact the Nodal Officer (Env/Forest), SECL Kusmunda Area, Contact No. +91-9425279960, for early start of work & its completion within time frame.

The above work order is issued with approval from the competent authority.

Yours Faithfully,

Patil
General Manager (P&P)
Kusmunda Area

Distribution:

1. Director Tech (P&P), SECL Hq Bilaspur - for kind intimation please.
2. General Manager (Env), SECL Hq Bilaspur - for kind intimation please.
3. General Manager, Kusmunda Area - for kind intimation please.
4. General Manager (Min), Kusmunda OCP
5. Staff Officer (P&P), Kusmunda Area
6. Area Finance Manager, Kusmunda Area - this is with reference to BC/KA/R/2024-25/OTHER EXPENSES/ENVIRONMENT EXPENDITURE/302/08/ DI-15/06/2024 for Rs 13,86,500/- only
7. Nodal Officer (Env/Forest), Kusmunda Area - for earliest work completion

THRIVENI SAINIK MINING PRIVATE LIMITED

Project Office: C/o: NTPC Ltd., Langatu,
PO: Barkagaon, Dist.: Hazaribag-825311, Jharkhand, India
Phone: 06546-223115, Email: info@thrivenisainik.com



SERVICE ORDER

TSMPL/ENV/WO/2021-22/08
Date: 01.03.2022

To,
Department of Forestry, Wildlife & Environmental Sciences
Kind. Attn.- Dr. Ajay kumar singh, Assistant Professor
Guru Ghasidas VishwaVidyalaya (A Central university)
Bilaspur-495009, Chhattisgarh
Mob: 7879721224, 7000591141

Sub: Service Order for Scientific Study (Satellite Image & digitization for Land use Land Cover Pre and Post Mining for year 2019 & 2022) at Pakri Barwadih Coal Mining Project NTPC (PBCMP) situated at Barkagaon, Hazaribagh, Jharkhand.

Ref: Your mail dated 25.01.2022 @ 3:58 PM.

Dear Sir,

With reference to the above, we are pleased to entrust this formal order on the subject to you with the scope, deliverables, and conditions as stipulated hereunder. Henceforth Guru Ghasidas VishwaVidyalaya is called as 'Consultant' and M/s Thriveni Sainik Mining Pvt. Ltd. is called 'TSMPL'.

A. SCOPE OF WORK

1. The scope of services for carrying out the "Scientific Study (Satellite Image & digitization for Land use Land Cover Pre and Post Mining for year 2019 & 2022) as per **Environmental clearance Specific Condition No.- xxi of PBCMP** (For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1: 5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series) the "Agency for Pakri Barwadih Coal Mining Project, NTPC LTD.

- Compilation of spectral bands to generate composite satellite image, extraction of subset image and analysis of satellite data.
- Generation of LULC maps of 10 Km and 2 Km radial buffer using recent satellite data for two periods - April / May 2019 and April / May 2022.
- Extraction of land use information within the Core Zone for both periods.
- NDVI analysis of 2 Km buffer area using 2019 and 2022 temporal satellite data to identify changes in vegetative pattern.
- Transformation of interpreted LULC maps, Area computation and Compilation of report.
- Comparative Temporal analysis of LULC for 2022 (2Km and CZ).

2. Scope of TSMPL:

- Lodging and Boarding for visiting the Department of Forestry, Wildlife & Environmental Sciences, Guru Ghasidas VishwaVidyalaya team.
- One competent person to accompany the visiting team and providing workmen to help the visiting team in handling the instruments during the measurement.

3. The Consultant shall perform the Services as described under the scope of works abiding by the terms as defined in this Agreement.

Regd. Office: 7th Floor, Corporate Towers, Ambience Mall, NH-8, Gurgaon-122002, Haryana, India
Phone: 0124-2719000, Fax: 0124-2719100, Email: ho@thrivenisainik.com, Web: www.thrivenisainik.com

4. The Consultant shall ensure that the above mentioned Services to be rendered as per this agreement are performed:

- a) To the degree of skill, care and diligence normally exercised by consultants in similar circumstances.
- b) strictly as per the agreed time schedule.
- c) in accordance with the terms of this Agreement
- d) In accordance with best industry practice.
- e) In coordination with Environment Dept. PBCMP for above services.
- f) At all stages of report - formal developments shall be intimated to TSMPL.

5. Time is the essence of the contract and the consultant shall adhere to the timelines mentioned/agreed upon.

6. Quality: The Consultant shall ensure that its Services/work shall be carried out in line with highest professional standards.

- The Consultant shall take note of the observations and suggestions made by TSMPL & NTPC and ensure corrections of suggestions / recommendations in the work pointed out by TSMPL & NTPC at any time while providing the services.
- The Consultant shall take responsible of any quarry raised by any Govt. Authority at any time.

7. Report Submission: The Consultant shall ensure that final report (soft copy) need to be submitted approximately within 90 (Ninety) days from the date of payment of the first installment.

B. RATE/ORDER VALUE

1. Prices: INR 2,00,000/- (Indian Rupees Two Lakhs Rupees) + GST extra, as applicable.

2. The Prices are Firm & binding and no other payment will be made in respect of this Service order (including any submission of reports in format(s) as applicable. No escalation is tenable throughout the Contract duration except for clause E.9 - Change in Law.

C. VALIDITY & TERMINATION

1. Effective Date of Contract: 01.03.2022

2. Contract Validity period: 01.03.2022 to 30.05.2022

I. The Contract can be foreclosed/terminated with a notice of 07 days for:

- a. Statutory Non-compliance
- b. Willful default/breach of Contractual obligations.

II. Upon such foreclosure, the Consultant shall be paid the fees for the Work completed till such date and all the study reports/documentation in this regard, shall be duly handed over to TSMPL; the same shall remain the property of TSMPL and cannot be reproduced without prior written consent of TSMPL.

D. PAYMENT TERMS

1. The payment shall be released as follows:

- I. 50% along with Work Order.
- II. 50% after submission of final report.

2. TDS: as per Govt. Norms.

3. Address:

Thriveni Sainik Mining Private Ltd, Project Office, Langatu
Barkagaon, Hazaribag Dist, Jharkhand, PIN: 825311.

**कार्यालय मुख्य कार्यपालन अधिकारी,
छत्तीसगढ़ प्रतिकरात्मक वनरोपण निधि प्रबंधन
और योजना प्राधिकरण**

अरण्य भवन, नार्थ ब्लॉक, कैपिटल कॉम्प्लेक्स, नवारायपुर, अटल नगर, रायपुर -492002

Tele.: 0771-2512820, E-mail : campa.forest@gmail.com

क्रमांक/कैम्पा-02/एस.ओ./13/2022/1907 रायपुर, दिनांक/ 31/03/2022
प्रति,

Head of Department & Project Investigator,
Forestry, Wildlife & Environmental Sciences,
Guru Ghasidas Central University, Bilaspur (CG)

विषय: कैम्पा मद के ए.पी.ओ. वर्ष 2018-19 से कराये गये कार्यों का बाह्य अनुश्रवण एवं मूल्यांकन कार्य सौंपने बाबत।

संदर्भ: इस कार्यालय का पत्र क्रमांक/कैम्पा-02/13/2021/1833 दिनांक 26.03.2021।

कैम्पा मद के ए.पी.ओ. 2018-19 से कराये गये कार्यों का बाह्य अनुश्रवण एवं मूल्यांकन कार्य हेतु दिनांक 30.03.2022 को गुरु घासीदास केंद्रीय विश्वविद्यालय (वानिकी संकाय) बिलासपुर एवं छत्तीसगढ़ कैम्पा के मध्य एम.ओ.यू. निष्पादित किया गया है, जिसकी एक प्रति संलग्न है। निष्पादित एम.ओ.यू. की शर्त अनुसार बाह्य अनुश्रवण एवं मूल्यांकन कार्य समयावधि में पूर्ण कर मूल्यांकन प्रतिवेदन प्रस्तुत करें।

(प्रधान मुख्य वन संरक्षक एवं वन बल प्रमुख तथा
अध्यक्ष, कियान्वयन समिति द्वारा अनुमोदित)

(श्री. श्रीनिवास राव)
मुख्य कार्यपालन अधिकारी (कैम्पा)
छत्तीसगढ़, नवारायपुर, अटलनगर
रायपुर, दिनांक 31/03/2022

पृ.क्रमांक/कैम्पा 02/एस.ओ./13/2022/1940
प्रतिलिपि :-

1. प्रधान मुख्य वन संरक्षक (वन्यप्राणी) छत्तीसगढ़ की ओर सूचनार्थ प्रेषित।
2. समस्त वन मंडल प्रभारी अपर प्रधान मुख्य वन संरक्षक, छत्तीसगढ़, अरण्य भवन, नवारायपुर की ओर सूचनार्थ प्रेषित।
3. समस्त मुख्य वन संरक्षक (क्षेत्रीय/वन्यप्राणी)/वन संरक्षक (वन्यप्राणी) एवं क्षेत्र संचालक, हाथी रिजर्व, सरगुजा की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु अग्रेषित।
4. समस्त वन मंडलाधिकारी (क्षेत्रीय/अनु.विस्तार) छत्तीसगढ़ की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु अग्रेषित।
5. समस्त संचालक/उप संचालक, राष्ट्रीय उद्यान, अभ्यारण्य, टायगर रिजर्व, हाथी रिजर्व, सरगुजा, जंगल सफारी, नवारायपुर की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु अग्रेषित।
6. संयुक्त मुख्य कार्यपालन अधिकारी (कैम्पा)-1 एवं 2/उप वन संरक्षक (कैम्पा) की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु अग्रेषित।

मुख्य कार्यपालन अधिकारी (कैम्पा)
छत्तीसगढ़, अटल नगर, रायपुर

कार्यालय मुख्य वन संरक्षक/मुख्य कार्यकारी अधिकारी, उ०प्र० कैम्पा, लखनऊ

पत्रांक- 746 /2-37-2 दिनांक, लखनऊ

मार्च: 15, 2024

सेवा में,

1. Dr. Brijendra Pratap Singh (PI-1),
Assistant Professor,
Department of Forestry, Wildlife and Environmental Sciences,
Guru Ghasidas Vishwavidyalaya (A Central University),
Koni, Bilaspur, Chattisgarh-495009
(p.brijendra@gmail.com)
2. Dr. Chandresh Kumar Singh (PI-2),
Assistant Professor,
Department of Forestry, Wildlife and Environmental Sciences,
Guru Ghasidas Vishwavidyalaya (A Central University),
Koni, Bilaspur, Chattisgarh-495009
(dr.chandreshsingh@gmail.com)
3. Dr. Atul Kumar Bhardwaj (Co-PI-1),
Assistant Professor,
Department of Forestry, Wildlife and Environmental Sciences,
Guru Ghasidas Vishwavidyalaya (A Central University),
Koni, Bilaspur, Chattisgarh-495009
(akvkrb@gmail.com)
4. Dr. Chowhani Manpoong (Co-PI-2),
Assistant Professor,
Department of Forestry, Wildlife and Environmental Sciences,
Guru Ghasidas Vishwavidyalaya (A Central University),
Koni, Bilaspur, Chattisgarh-495009
(chowhani18@gmail.com)

विषय:- उ०प्र० कैम्पा अन्तर्गत वर्ष 2011-12 से 2022-23 तक कराये गये क्षतिपूरक/गैर क्षतिपूरक वृक्षारोपण, सहायतित प्राकृतिक पुनरोत्पादन एवं एन०पी०वी० मद के अन्तर्गत अन्य विभिन्न कार्यों की तृतीय पक्ष निगरानी (Third Party Monitoring) कराये जाने हेतु दिनांक 15.03.2024 को हुये Contract Agreement के क्रियान्वयन के सम्बन्ध में।

महोदय,

प्रधान मुख्य वन संरक्षक और विभागाध्यक्ष (वन बल के प्रमुख), उ०प्र०, लखनऊ एवं अन्य उच्चाधिकारियों की उपस्थिति में दिनांक 15.03.2024 को उ०प्र० कैम्पा के अन्तर्गत वर्ष 2011-12 से 2022-23 तक कराये गये क्षतिपूरक/गैर क्षतिपूरक वृक्षारोपण, सहायतित प्राकृतिक पुनरोत्पादन एवं एन०पी०वी० मद के अन्य विभिन्न कार्यों की तृतीय पक्ष निगरानी (Third Party Monitoring) किये जाने हेतु Contract Agreement पर Additional Principal Chief Conservator of Forests/CEO, Uttar Pradesh State Compensatory Afforestation Fund Management and Planning Authority, CAMPA, Lucknow एवं Dean, School of Natural Resources, Guru Ghasidas Vishwavidyalaya, Principal Investigator-1 and 2, Department of Forestry, Wildlife & Environmental Sciences Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh के मध्य संयुक्त रूप से हस्ताक्षर किये गये हैं।

उ०प्र० कैम्पा के अन्तर्गत वर्ष 2011-12 से 2022-23 तक कराये गये क्षतिपूरक/गैर क्षतिपूरक वृक्षारोपण, सहायतित प्राकृतिक पुनरोत्पादन एवं एन०पी०वी० मद के अन्य विभिन्न कार्यों की तृतीय पक्ष निगरानी (Third Party Monitoring) 02 वर्षों में Contract Agreement के पृष्ठ संख्या-16 पर दिये गये Time frame के अनुसार पूर्ण कर अनुश्रवण एवं मूल्यांकन रिपोर्ट अधोहस्ताक्षरी के कार्यालय को उपलब्ध कराया जाना है, जिस हेतु

कुल अनुबन्ध की धनराशि रू0 33474280.00 + जी0एस0टी0 प्राविधानित है, जिसका भुगतान Contract Agreement के Appendix-D (Cost Estimates and Terms of Payment) के अनुसार समय-समय पर 04 किश्तों में किया जायेगा।

मा0 सर्वोच्च न्यायालय एवं भारत सरकार द्वारा जारी CAF Act, 2016 एवं CAF Rules, 2018 में दिये गये प्राविधानों के अनुसार उ0प्र0 कैम्पा अन्तर्गत कराये गये कार्यों की Third Party Monitoring यथाशीघ्र कराकर प्रस्तुत किया जाना है। तत्क्रम में Contract Agreement दिनांक 15.03.2024 के अनुसार उ0प्र0 कैम्पा के अन्तर्गत वर्ष 2011-12 से 2022-23 तक कराये गये क्षतिपूरक/गैर क्षतिपूरक वृक्षारोपण, सहायतित प्राकृतिक पुनरोत्पादन एवं एन0पी0वी0 मद के अन्य विभिन्न कार्यों की गुणवत्तायुक्त तृतीय पक्ष निगरानी (Third Party Monitoring) तत्काल प्रारम्भ किये जाने का कष्ट करें।

भवदीय,
15/03/24
(पी0पी0 सिंह)
अपर प्रधान मुख्य वन संरक्षक/
मुख्य कार्यकारी अधिकारी,
(उ0प्र0 कैम्पा), लखनऊ

संख्या-746 /तद दिनांकित।

प्रतिलिपि निम्नलिखित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित :-

1. पी0एस0-कुलपति, गुरु घासीदास विश्वविद्यालय, बिलासपुर, कोनी, छत्तीसगढ़ (vcpaggu@yahoo.com)।
2. रजिस्ट्रार, गुरु घासीदास विश्वविद्यालय, बिलासपुर, कोनी, छत्तीसगढ़ (ggv.registrar@gmail.com)।
3. डीन, Natural Resources, गुरु घासीदास विश्वविद्यालय, बिलासपुर, कोनी, छत्तीसगढ़ (sct_in@yahoo.com)।
4. Head, Department of Forestry, Wildlife and Environmental Sciences, गुरु घासीदास विश्वविद्यालय, बिलासपुर, कोनी, छत्तीसगढ़ (kkckvk@gmail.com)।

15/03/24
(पी0पी0 सिंह)
अपर प्रधान मुख्य वन संरक्षक/
मुख्य कार्यकारी अधिकारी,
(उ0प्र0 कैम्पा), लखनऊ

THRIVENI SAINIK MINING PRIVATE LIMITED

Project Office: C/o: NTPC Ltd., Langatu,
PO: Barkagaon, Dist: Hazaribag-825311, Jharkhand, India
Phone: 06546-223115, Email: Info@thrivenisainik.com



SERVICE ORDER

TSMPL/ENV/WO/2023-24/01
Date: 25.04.2023

To,
Department of Forestry, Wildlife & Environmental Sciences
Kind. Attn.- Dr. Ajay kumar singh, Assistant Professor
Guru Ghasidas VishwaVidyalaya (A Central university)
Bilaspur-495009, Chhattisgarh
Mob: 7879721224, 7000591141

Sub: Service Order for Scientific Biodiversity assessment study, organize awareness/training program related to environment and training on sustainable forestry by using Miyawaki Method at Pakri Barwadih Coal Mining Project NTPC (PBCMP) situated at Barkagaon, Hazaribagh, Jharkhand.

Ref: Ltr. no. - Forestry/GGV/A(RP)/49 and mail dated 29.03.2023 @ 2:14 PM.

Dear Sir,

With reference to the above, we are pleased to entrust this formal order on the subject to you with the scope, deliverables, and conditions as stipulated hereunder. Henceforth Guru Ghasidas VishwaVidyalaya is called as 'Consultant' and M/s Thriveni Sainik Mining Pvt. Ltd. is called 'TSMPL'.

A. SCOPE OF WORK

1. The scope of services for carrying out the "Scientific Study on Biodiversity assessment study, organize awareness/training program related to environment and training on sustainable forestry by using Miyawaki Method as per Stage-II Forest clearance Condition No.- 2C of PBCMP (Wherever possible and technically feasible, the user Agency shall undertake afforestation measures in the blanks within the lease area, as well as along the roads outside the lease area diverted under this approval, in consultation with the state Forest Department at the Project Cost) the "Agency for Pakri Barwadih Coal Mining Project, NTPC LTD.

- Identifying the forest types coming in project area of core and buffer area.
- Documentation of plant species richness, diversity and composition using standard methods.
- Identify the conditions for the forest cover namely open, moderate and dense in the region.
- Identify wildlife species/ population for the region.
- Identification of soil types and soil nutrient status.
- Identification of water bodies coming in core and buffer area for the site with aquatic biodiversity.
- Documenting ecosystem services (Aquatic & Terrestrial) of the region.
- Identifying areas for restoration and conservation area.
- Organize Awareness/Training Program related to environment activity.
- Development of greenbelt in a patch by using the Miyawaki Method and training program on it.

2. Scope of TSMPL:

- Lodging and Boarding for visiting the Department of Forestry, Wildlife & Environmental Sciences, Guru Ghasidas VishwaVidyalaya team.
- One competent person to accompany the visiting team and providing workmen to help the visiting team in handling the instruments during the measurement.

3. The Consultant shall perform the Services as described under the scope of works abiding by the terms as defined in this Agreement.

Regd. Office: 7th Floor, Corporate Towers, Ambience Mall, NH-8, Gurgaon-122002, Haryana, India
Phone: 0124-2719000, Fax: 0124-2719100, Email: ho@thrivenisainik.com, Web: www.thrivenisainik.com

THRIVENI SAINIK MINING PRIVATE LIMITED

Project Office: C/o: NTPC Ltd., Langatu,
PO: Barkagaon, Dist.: Hazaribag-825311, Jharkhand, India
Phone: 06546-223115, Email: info@thrivenisainik.com



4. The Consultant shall ensure that the above mentioned Services to be rendered as per this agreement are performed:
- To the degree of skill, care and diligence normally exercised by consultants in similar circumstances.
 - strictly as per the agreed time schedule.
 - in accordance with the terms of this Agreement
 - In accordance with best industry practice.
 - In coordination with Environment Dept. PBCMP for above services.
 - At all stages of report - formal developments shall be intimated to TSMPL.
5. Time is the essence of the contract and the consultant shall adhere to the timelines mentioned/agreed upon.
6. Quality: The Consultant shall ensure that its Services/work shall be carried out in line with highest professional standards.
- The Consultant shall take note of the observations and suggestions made by TSMPL and ensure corrections of suggestions / recommendations in the work pointed out by TSMPL at any time while providing the services.
 - The Consultant shall take responsible of any quarry raised by any Govt. Authority at any time.
7. Report Submission: The Consultant shall ensure that final report (soft & hard copy) need to be submitted within the validity period.

B. RATE/ORDER VALUE

1. Prices: INR 1,300,000/- (Indian Rupees Thirteen Lakhs Rupees) + GST extra, as applicable.
2. The Prices are Firm & binding and no other payment will be made in respect of this Service order (including any submission of reports in format(s) as applicable. No escalation is tenable throughout the Contract duration except for clause E.8 - Change in Law.

C. VALIDITY & TERMINATION

1. Effective Date of Contract: 01.05.2023
2. Contract Validity period: 01.05.2023 to 30.04.2024
- I. The Contract can be foreclosed/terminated with a notice of 07 days for:
- Statutory Non-compliance
 - Willful default/breach of Contractual obligations.

II. Upon such foreclosure, the Consultant shall be paid the fees for the Work completed till such date and all the study reports/documentation in this regard, shall be duly handed over to TSMPL; the same shall remain the property of TSMPL and cannot be reproduced without prior written consent of TSMPL.

D. PAYMENT TERMS

1. The payment shall be released as follows:
- 50% along with Work Order.
 - 20% completion of six months of the study.
 - 30% after submission of final report.
2. TDS: as per Govt. Norms.
3. Address:
Thriveni Sainik Mining Private Ltd, Project Office, Langatu
Barkagaon, Hazaribag Dist, Jharkhand, PIN: 825311.

Regd. Office: 7th Floor, Corporate Towers, Ambience Mall, NH-8, Gurgaon-122002, Haryana, India
Phone: 0124-2719000, Fax: 0124-2719100, Email: ho@thrivenisainik.com, Web: www.thrivenisainik.com

SHALIMAR
ROAD INFRASTRUCTURES
PVT. LTD.

Ref. No. SCL/NHAI/MISC/CG/01/Plant/2024/25/220

Dated: 06th June, 2024

Prof. KK Chandra,
Dr. Bhawana Dixit
Department of Forestry
Wildlife and Environmental Sciences
Guru Ghasidas University, Bilaspur, CG.

Subject: Jhanki- Sargi section of NH-130-CD road from Km 00+000 to Km 42+800 under Raipur-Visakhapatnam Economic Corridor (Package-CG-1). - Payment Confirmation of Consultancy Services Charges proposal for Avenue & Median Tree Plantation - Reg.

Ref:

1. Concessionaire Letter No. SCL/NHAI/PD/CG/01/2024/25/193 dated 15.04.2024.
2. Authority Letter No. PD/DMT/Jhanki-Sargi/Cont./EHT/7400 dated 23.04.2024.
3. Email dated of 30.04.2024 of Dr. Bhavana Dixit, Assistant Professor, Department of Forestry, Wildlife and Environmental Sciences, Guru Ghasidas University, Bilaspur, Chhattisgarh.
4. Concessionaire Letter No. SCL/NHAI/CG/01/Plant/2024/25/212 dated 16.05.2024.
5. Email dated of 17.05.2024 of Dr. Bhavana Dixit, Assistant Professor, Department of Forestry, Wildlife and Environmental Sciences, Guru Ghasidas University, Bilaspur, Chhattisgarh.

Dear Sir/Ma'am,

Please refer to the letters cited above, The Concessionaire is infrom to Prof. KK Chandra and Dr. Bhawana Dixit, Assistant Professor, Department of Forestry, Wildlife and Environmental Sciences, Guru Ghasidas University, Bilaspur, Chhattisgarh and confirm that the payment of Rs. 5,40,000/- (inclusive of GST) for the Consultancy Services Charges proposal for Avenue & Median Tree Plantation has been successfully processed. The payment was made through Bank of India, Account No. 947410110001063, UTR No. PUNBZ24150080249 on 29.05.2024.

The Payment Calculation details mentioned below:

Description	Amount
Basic Amount	5,00,000
GST @ 18%	90,000
Gross Amount	5,90,000
Less: TDS @ 10% Sanction (194J) Professional Services	50,000
Net Payable Amount	5,40,000

In this regard, Concessionaire is requesting to Prof. KK Chandra and Dr. Bhawana Dixit, kindly confirm the same.

Thanking you and assuring our best service always,

Yours faithfully,
For and on behalf of Shalimar Road Infrastructures Pvt Ltd


Authorized Signatory
Copy to: *

1. The Project Director, NHAI, PIU Unit Dhamtari, CG, for kind information please.
2. Team Leader (IE), M/s Theme Engineering Services Pvt Ltd Site Office: Kurud, Distr; Dhamtari, (C.G.) for information please

SHALIMAR ROAD INFRASTRUCTURES PRIVATE LIMITED

A - Registered Office : A-2/3, FF, Safdarjung Enclave, New Delhi, India, 110029

P - 0522 4030444 | E - roads@shalimar.org | W - shalimarcorp.com | CIN: U45309DL2022PTC392501

Carbon stock and Carbon sequestration potential of forest growing stock around National Thermal Power Plant, Bilaspur, Chhattisgarh, Central India

Harshita Singh^{1*} and Subhash Chandra Tiwari²

^{1,2} Department of Forestry, Wildlife & Environmental Sciences, Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh, India.. Corresponding Author Email: harshita938@gmail.com

Abstract:

The present study is an attempt to determine the carbon stock and carbon sequestration potential of forest growing stocks around a thermal power plant near Bilaspur smart city in Chhattisgarh, Central India. The non-destructive sampling method is used to estimate Above-ground biomass and Below-ground biomass. The height and diameter at breast height (DBH) is measured for each individual tree. The allometric equation was made for estimation of carbon storage of tree species. Thirty-five tree species were recorded around the national thermal power plant at a radius of 30 km in four different directions (east, west, north & south). The results revealed that *Ficus benghalensis* was the species that found the maximum amount of carbon storage, followed by *Ficus religiosa*. According to the present study, the allometric models developed can further estimate carbon stocks in forest vegetation in and around NTPC power plants, and other tropical deciduous forests.

Keywords: Carbon Storage, Carbon Sequestration Potential, Biomass, Growing Stock, Allometric equations, Thermal Power Plant.

Introduction:

Growing stock is widely recognized as a vital indicator of a forest's health and productivity. Forest inventory is used to estimate the growing stock of a forest by recording both qualitative and quantitative parameters (Zhou et al., 2023). These measurements are then used to assess the overall health of the forest. Assessing growing stock is a crucial and integral part of managing forest resources at the local level, and it is considered an essential component of the working plan exercise.

Global warming and climate change are major issues due to the emission of various greenhouse gases (Li et al., 2014). Carbon sequestration is the natural process of absorbing CO₂ from the atmosphere and storing it in diverse pools such as Oceans, Forest ecosystems, Soil Organic Matter (SOM), and so on (Sundquist et al., 2008; Kirschbaum, 2003). The protection and management of forest ecosystems was first time proposed by some countries and subsequently signed the U.N. Framework Convention on Climate Change in 1997, which later became the "Kyoto Protocol" (Stationery Office et al., 2005). The Paris climate accords played a crucial role in reducing greenhouse gas emissions. Natural forests have a high tendency for carbon sequestration (Joshi et al., 2013), making them the most important carbon sinks influencing atmospheric carbon dioxide concentrations (Zhou et al., 2006). Forests play a significant part in the research on climate change in terms of not zero- net zero emission for carbon neutrality (Terakunpisut et al., 2007) because forests absorb carbon dioxide through photosynthesis (Valentini et al., 2000; Vashum, et al., 2012; Dhruw et al., 2009). The carbon sequestration rate is influenced by the growing stock of vegetation and the area's location (Han et al., 2010, Ragula et. al. 2020). In this regard, trees and other vegetation planted in and around thermal power plants and industries and in urban areas could be beneficial for landscape planning and carbon sequestration (Beckett et al., 2000). Carbon stock refers to the amount of carbon that is accumulated and stored different type of forest species. Different tree



cmpdi
A Tata Steel Company

सेन्ट्रल माईन प्लानिंग एण्ड डिजाइन इन्स्टीट्यूट लिमिटेड
(कोल इण्डिया लिमिटेड की अनुबंधी कंपनी / भारत सरकार का एक लोक उद्योग)
गोन्दवाना प्लेस, कान्के रोड, रांची - 834 008, झारखंड (भारत)
Central Mine Planning & Design Institute Limited
(A Subsidiary of Coal India Limited / Govt. of India Public Sector Undertaking)
Gondwana Place, Kanke Road, Ranchi - 834 008, Jharkhand (INDIA)
CORPORATE IDENTITY NUMBER - U14292JH1975GOI001223

An ISO 9001: 2015 & ISO 37001: 2016 Certified Company

क्रमांक सीएमपीडीआई/क्षे.सं5/बीएसपी/ENV/2024-25/918

दिनांक: 12.10.2024

प्रति,

Dr S C Tiwari,
Dean, School of Natural resources
Department Forestry, Wildlife & Environmental Science
Guru Ghasidas Vishawavidhyalaya,
Bilaspur, C.G -495009.

Work Order

Sub: Vetting of Baseline study related to Flora & Fauna for Coal Mining Projects

Ref No:-1)- Our letter no CMPDI/RI-5/ENV/2024/192 dt 24.09.2024

Ref.: i) Your offer no FO/CMPDI/01 Date: 27.09.2024

Dear Sir,

The competent authority is pleased to accept your offer for "Carrying of Vetting of Baseline study related to Flora & Fauna for Coal Mining Projects" for the following 14 Mines mentioned in the table below as per the stipulated scope of work & Terms & conditions.

The scope of work includes the following:-

Carrying of the study & submission of the report for 14 below listed Mines.

S.No	NAME OF MINES	S.No	NAME OF MINES
1	Rehar UG	8	Jagannathpur OC
2	Rajgamar UG	9	Damini UG
3	Katkona UG Expansion	10	Dhelwadih UG
4	Amadand & Kewai UG	11	Dipka OC
5	Rajnagar UG RO	12	Kurasia UG-
6	Amgaon OC	13	Surakchhar UG
7	Jamuna UG	14	Shivani UG

*- The list can be changed as per our requirement



फोन नम्बर/Phone No. :
फैक्स नम्बर/Fax No. :
ई-मेल/E-mail:
वेब साईट/Website: www.cmpdi.co.in



cmpdi
A Mini Ratna Company

सेन्ट्रल माइन प्लानिंग एण्ड डिजाइन इन्स्टीट्यूट लिमिटेड
(कोल इण्डिया लिमिटेड की अयुक्ती कम्पनी / भारत सरकार का एक लोक उद्योग)
गोन्दवाना प्लेस, कान्के रोड, राँची - 834 008, झारखंड (भारत)
Central Mine Planning & Design Institute Limited
(A Subsidiary of Coal India Limited / Govt. of India Public Sector Undertaking)
Gondwana Place, Kanke Road, Ranchi - 834 008, Jharkhand (INDIA)
CORPORATE IDENTITY NUMBER - U14292JH1975GOI001223

An ISO 9001: 2015 & ISO 37001: 2016 Certified Company

Scope of work & Study Charges

Scope of work- Vetting of Baseline study related to Flora & Fauna for Coal Mining Projects. CMPDI will communicate Priority of Project for Vetting from time to time

SIN	Type of Test	Vetting Charges		
		Rate in Rs	Nos.	Total
1	Consultancy Fees	50,000/-	14	700000/-
2	SGST @ 9%	4500/-	14	63000/-
3	CGST @ 9%	4500/-	14	63000/-
4	GST Total			126000/-
5	Grand Total			826000/-

The total value of the work for 14 projects including GST shall be Rs.826000/- (Eight lakh twenty six thousand only) which includes the GST @ 18 %.

Terms and conditions:

The work is being assigned subject to following conditions: -

- 1) The above vetting of all 14 Mines to be completed within 60 days of issue of work order. Any extension to the above deadline will be agreed with proper justification.
- 2) CMPDI RI-5 will provide the baseline report & other relevant data & will assist in site visit & stay as per requirement.
- 3) The rates for above vetting shall be same as have been offered by you and approved by Competent Authority.
- 4) GST: GST will be paid as applicable. The GST invoice should clearly consist your GST Number _____ (if applicable) and our GST number 22AAACC7475N1ZE. You are required to upload your invoices in your GSTR-I before claiming bills from RI V, CMPDI. The amount of CGST & SGST or IGST and GST Cess, as indicated in the Tax Invoice shall be paid only when they appear in GSTR 2A of CMPDI and you have filed the valid return in accordance with the provisions of the GST Act and the rules made there under.
- 5) Paying authority: - The HOD (Finance), Regional Institute-V, CMPDI, Bilaspur (CG). The following payment terms shall be applicable: -