



## **Bharat Heavy Electricals Limited**

(A Govt. of India Undertaking)

### **Power Sector, Western Region**

2x660 MW, NTPC- Talcher Thermal Power Project Site,  
Talcher, District Angul, Odisha -759101

**NIT No.: BHEL/PSWR/TTPP/Drone-System/2023/1001**

**Dated: 12.03.2023**

### **CORRIGENDUM NO.2**

**Subject: NIT No.:-72354-Tender enquiry for Engagement of an agency for providing Drone based Monitoring and Visualization system services to BHEL, 2X660 MW NTPC Talcher Thermal Project Site, Talcher, District Angul, Odisha on monthly rental basis for a period of 48 months**

Following Annexure-A is appended to the NIT Floated Earlier on captioned subject.

***To provide clarity on scope of work/deliverables of NIT, a Pre-bid meeting/conference was conducted on 10th March 2023 through online mode in line with prior intimation through Corrigendum-01.***

***Queries sought by prospective bidders and clarification provided are enclosed herewith at Annexure-01.***

Also, Tender/Bid submission due date is extended as per following details.

**Bid Submission due Date: 23rd March 2023- 14:00 Hrs.**

**Bid Opening Date: 23rd March 2023- 17:00 Hrs.**

All interested Bidders shall make note of the above and submit their Offers by stipulated timelines.

**The Project Director  
2X660 MW BHEL Talcher Site Office  
NTPC Talcher Thermal Power Project Site  
Talcher, District Angul  
Odisha 759101**

On behalf of BHEL PSWR Talcher Site

Signature of the bidder with seal



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## Annexure-"A"

| ANNEXURE- A "PRE-BID QUERIES CLARIFICATIONS FOR BHEL Tender No: 2023_BHEL_702028" |                     |                                                                                                                                                                                                                                                                                                                                                                                                                               |                |
|-----------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| SI No                                                                             | Page No             | Contents and Queries requiring clarification                                                                                                                                                                                                                                                                                                                                                                                  | Clarification  |
| 1                                                                                 | Introduction, Pg: 3 | Earnest Money Deposit (EMD): 3,40,000/- (Rupees Three Lakh Forty Thousand Only)<br><br><b>Query:</b> Request you to kindly include the MSME exemption for EMD as per rule 170 of GFR public procurement policy.                                                                                                                                                                                                               | As per Tender. |
| 2                                                                                 | -                   | <b>Query:</b> DGCA Drone Rules 2021 states:<br>1. No person shall operate an unmanned aircraft system in India unless such unmanned aircraft system conforms to a type certificate or is exempted from the requirement of a type certificate under these rules.<br>2. Pilot:<br>Request you to kindly include these critical statutory requirements pertaining to use of only type-certified drones by DGCA certified pilots. | As per Tender. |
| 3                                                                                 | Introduction, Pg: 2 | Tenders must be submitted in a sealed envelope in the manner described in the NIT, at BHEL site office Talcher, District Angul, Odisha.<br><br><b>Query:</b> The tender submissions requested to me were made offline. Request you to kindly consider taking the tender submission online.                                                                                                                                    | As per Tender. |

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| 4 | Scope of Work, Pg: 5 | <p>Supply, installation &amp; commissioning of Drone Based Project Monitoring &amp; Visualization System with all associated viewing and monitoring platforms &amp; its integration with Integrated Online Project Monitoring Software (IOPMS) including configuration &amp; generation of customized reports. [Input data to be provided by Bidder through Application Programming Interface (API) or other suitable means]</p> <p><b>Query:</b> Request you to kindly clarify the following:</p> <ol style="list-style-type: none"> <li>1. The API integration is conducted by the IOPMS implementer or the integration is to be done by the successful bidder.</li> <li>2. How many API are to be provided.</li> <li>3. What is the Architecture of the IOPMS platform?</li> </ol> | <ol style="list-style-type: none"> <li>1. API integration will be done by IOPMS vendor and API will have to be provided &amp; maintained by the successful bidder.</li> <li>2. The No. of APIs will depend upon the complexity involved with the data source</li> <li>3. The API will use the industry standard and prevalent formats will be used for data transfer through API</li> </ol> |
| 5 | Scope of Work, Pg: 5 | <p>Periodic (monthly) Construction Progress Monitoring through Orthomosaic mapping, 3D Modelling and visualization with time lapse photography and 2D Video comparison to be done for the entire duration of contract. Progress Monitoring to be done with photogrammetry techniques taking high resolution Drone images from a calibrated camera.</p> <p><b>Query:</b> the output of time-lapsed photography will be submitted as a hyperlapse video, Kindly confirm the same.</p> <p>Request you to kindly mention how the 2D video comparison is to be implemented.</p>                                                                                                                                                                                                            | <p>Requirement is to compare the Construction progress over 02 dates through these hyperlapse Videos/Time Lapse Videos and images.</p>                                                                                                                                                                                                                                                      |

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| 6 | Scope of Work, Pg: 6 | <p>Time-lapse photography and 2D Video comparison of major elevated structures like Boiler, Main Power House, Chimney, Cooling Towers etc. through fixed DSLR Cameras (Approx. 8-10 cameras)</p> <p><b>Query:</b>The following requirement is not in line with the drone based use case. Request you to kindly clarify if we have to deploy DSLR cameras, if yes do we have to fix the DSLR permanently or it is to be placed only during the capture phase. Kindly specify the frequency of image capture by DSLR camera.</p>                                                                                                                                                                 | As per Tender.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 7 | Scope of Work, Pg: 6 | <p>All the photographs should be precisely geo referenced by GPS, Glonass etc. for accurate aerial triangulation process for generation of orthomosaic and 3D data.</p> <p><b>Query:</b>Request you to kindly mention the required GPS accuracy</p>                                                                                                                                                                                                                                                                                                                                                                                                                                            | As per prevalent in industry.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 8 | Scope of Work, Pg: 6 | <p>The agency shall install 3D Platform for viewing relevant data to be generated during the survey as well as in further phases of the project parallel to initiating the reconnaissance survey. The agency shall install the platform both in the staging and the production environment.</p> <p><b>Query:</b>The 3D data can be viewed on the provided drone monitoring and visualization cloud based platform. Request you to confirm the same.</p> <p>The cloud based platform will be provided in the Software as a service model (SaaS), hence the software will be in the Bidder production environment. Request you to kindly clarify the requirement of the staging environment.</p> | <p>The 3D model data generated from drone monitoring &amp; visualization shall reside in cloud based platform (PaaS) provided by the bidder with authorized access only to BHEL/NTPC. Necessary licenses for cloud access to be provided by the bidder. The entire data shall be provided to BHEL/NTPC server on completion of the contract/project. A Non Disclosure Agreement shall be signed with the successful bidder to maintain confidentiality of BHEL Data/information. As such regarding the requirement of the staging environment, a call will be taken along with the successful bidder after award of contract.</p> |

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|----|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9  | Scope of Work, Pg: 6   | <p>The platform shall provide capabilities to view and analyze the data submitted during the reconnaissance survey phase.</p> <p><b>Query:</b>Request you to kindly clarify what kind of analysis is to be done on the platform</p>                                                                                                                                                                                                                                                                                                                                         | Analysis pertaining to progress of project in terms of various areas, building and other structure erection progress quantity and quality, over the project schedule.                                                                                                    |
| 10 | Scope of Work, Pg: 6   | <p>Start date of the work would be reckoned as 10 days from the Date of Award. Hence, the successful bidder shall depute the implementation team within that period under intimation to BHEL.</p> <p><b>Query:</b>Currently as per DGCA airspace map the Talcher power plant falls in the green zone. In future if red zone (no fly zone) is implemented in the area of interest, request you to kindly consider timelines for seeking drone flying approvals from central and state government agencies. From our experience it takes 1 - 3 months to get permissions.</p> | In case DGCA Airspace of Talcher is changed to red zone, the successful bidder and BHEL will mutually discuss and decide further course of action for expeditious compliance.                                                                                            |
| 11 | Scope of Work, Pg: 6   | <p>For connecting the internal system of BHEL/NTPC suitable hardware / software for secured access is to be provided and configured by the agency in consultation with BHEL/NTPC.</p> <p><b>Query:</b>Request you to kindly clarify if the integration has to be done for both IOPMS platform and BHEL/NTPC internal system, if yes what kind of integration is required. Please share the system architecture of the existing BHEL/NTPC and IOPMS platforms.</p>                                                                                                           | Based on the fields (including videos & photographs) and analysis (which will be decided during execution from time to time), Vendor will be required to share API (web based) to be integrated to IOPMS System and data fetching shall be as per the decided frequency. |
| 12 | Penalty Clause, Pg: 17 | <p>Bidder shall submit Monthly Progress Report of each month's event within 7 days of next calendar month.</p> <p><b>Query:</b>Request you to kindly provide the data acquisition start date of every month.</p>                                                                                                                                                                                                                                                                                                                                                            | Shall be mutually decided with the successful bidder.                                                                                                                                                                                                                    |

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|----|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| 13 | Key Deliverables, Pg: 7 | High resolution Geo-tagged images<br><br><b>Query:</b> Request you to kindly specify the resolution specification.                                                                                                           | For videos -- 4K (3840 × 2160 pixels)<br>42 MP camera resolution for 1cm accuracy.                         |
| 14 | Key Deliverables, Pg: 7 | 3-D Model<br><b>Query:</b> Request you to kindly clarify the level of detail of the required 3D Model                                                                                                                        | A drone 3D model refers to a digital spatial model that is created by using aerial images taken by a drone |
| 15 | Key Deliverables, Pg: 7 | Orthomosaic<br><b>Query:</b> Request you to kindly mention the GSD requirement for orthomosaic                                                                                                                               | As prevalent in industry                                                                                   |
| 16 | Key Deliverables, Pg: 7 | Contour Map at required scale and interval<br><br><b>Query:</b> Request you to kindly mention the scale and interval at which contour maps have to be generated.<br>Request you to confirm the data type (.shp) for the same | Horizontal scale is to be used for contour maps and it is generated on a monthly basis.                    |
| 17 | Key Deliverables, Pg: 7 | Profile Graph (Longitudinal/ Cross sectional)<br><br><b>Query:</b> Request you to kindly mention at what intervals the profile graphs have to be generated and the format in which it has to be generated .shp or .dwg?      | As per Tender.                                                                                             |
| 18 | Key Deliverables, Pg: 7 | Quantity Estimates Report<br><br><b>Query:</b> Request you to kindly mention the particulars wherein the quantity estimates are required?                                                                                    | As per tender.                                                                                             |
| 19 | Key Deliverables, Pg: 7 | Photogrammetric data (Measurements) reports.<br><br><b>Query:</b> Request you to kindly share the report format                                                                                                              | Report should include the details of key deliverables.                                                     |

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|----|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| 20 | Key Deliverables, Pg: 7   | Periodically Aerial Videography (4K Aerial videos)<br><b>Query:</b> The requirement mentioned can be achieved with full HD video quality. 4K video quality data is cumbersome to handle and is data heavy, request you to kindly consider this point                                                                        | As per tender.                                                                  |
| 21 | Pg: 8                     | Bid Submission: 16.03.2023- 16:30 Hrs<br><b>Query:</b> Request you to kindly extend the bid submission due date and grant minimum of 15 more days from the date of clarification.                                                                                                                                           | NIT submission last date & time is extended to 23rd March 2023, time 14:00 Hrs. |
| 22 | Pre-Qualification, Pg: 16 | <b>Query:</b> Request you to kindly rephrase "Similar job" to: means providing services of drone based monitoring and/or drone based monitoring and visualisation system in any large industrial setup comprising of cement plant/Power plant/Oil and Gas Refineries & pipelines/Steel plant/Fertiliser Plant or coal mines | As per tender.                                                                  |

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