

15 -ാം കേരള നിയമസഭ

6 -ാം സമ്മേളനം

നക്ഷത്ര ചിഹ്നം ഇല്ലാത്ത ചോദ്യം നം. 355

23-08-2022 - ൽ മറുപടിയ്ക്ക്

ബയോ മൈനിങ്

ചോദ്യം		ഉത്തരം	
ശ്രീ ടി. ജെ. വിനോദ്		ശ്രീ എം.വി.ഗോവിന്ദൻ മാസ്റ്റർ (തദ്ദേശ സ്വയംഭരണ, ഗ്രാമവികസനം, എക്സൈസ് വകുപ്പ് മന്ത്രി)	
(എ)	എറണാകുളം ജില്ലയിൽ ബ്രഹ്മപുരത്തു അടിഞ്ഞു കിടക്കുന്ന മാലിന്യം ബയോ മൈനിങ് നടത്തുന്നതിന് കേരള സ്റ്റേറ്റ് ഇൻഡസ്ട്രിയൽ ഡെവലപ്മെന്റ് കോർപ്പറേഷൻ (കെ.എസ്.ഐ.ഡി.സി) തയ്യാറാക്കിയ ടെൻഡർ വ്യവസ്ഥകൾ എന്തൊക്കെയാണ്;	(എ)	ബ്രഹ്മപുരത്തു നിലവിൽ അടിഞ്ഞു കൂടിയിരിക്കുന്ന മാലിന്യം 2016ലെ ഖരമാലിന്യ സംസ്കരണ നിയമത്തിനു വിധേയമായി ശാസ്ത്രീയമായ മാർഗ്ഗങ്ങളിലൂടെ നീക്കം ചെയ്തു മുഴുവൻ സ്ഥലവും താരതമ്യേന പരന്ന പ്രതലമായി വീണ്ടെടുക്കുക എന്നതാണ് പദ്ധതിക്കായി പ്രസിദ്ധപ്പെടുത്തിയ ടെൻഡറിലെ പ്രധാന വ്യവസ്ഥ. കൂടാതെ പ്രദേശത്തുള്ള ലെഗസി വേസ്റ്റ്, ബയോ മൈനിങ് നടത്തി അനുയോജ്യമായ ഉപകരണങ്ങളും സാങ്കേതിക വിദ്യയും ഉപയോഗിച്ച് ജൈവമാലിന്യങ്ങളെയും അജൈവ മാലിന്യങ്ങളെയും തരം തിരിക്കണമെന്നും അതിനു ശേഷം പുനരുപയോഗിക്കാൻ കഴിയുന്ന മാലിന്യങ്ങൾ അതിലേക്കായി മാറ്റണമെന്നും മറ്റുള്ളവ ശാസ്ത്രീയമായ സാങ്കേതിക വിദ്യയിലൂടെ ഡിസ്പോസ് ചെയ്യണമെന്നും ടെൻഡറിൽ വ്യവസ്ഥ ചെയ്യുന്നു. ടെൻഡറിൽ പറഞ്ഞിരിക്കുന്ന വ്യവസ്ഥകളുടെ വിശദമായ വിവരണം അനുബന്ധമായി 1 ആയി ചേർക്കുന്നു.
(ബി)	കേരള സ്റ്റേറ്റ് ഇൻഡസ്ട്രിയൽ ഡെവലപ്മെന്റ് കോർപ്പറേഷൻ (കെ.എസ്.ഐ.ഡി.സി) തയ്യാറാക്കിയ ടെൻഡർ വ്യവസ്ഥകൾക്കു വിധേയമായിട്ടാണോ ഇപ്പോൾ ബയോ മൈനിങ് നടത്തുന്ന കമ്പനിക്ക് കരാർ നൽകിയത്; എങ്കിൽ കമ്പനി ഹാജരാക്കിയ രേഖകളുടെ പകർപ്പ് ലഭ്യമാക്കുമോ;	(ബി)	05.03.2022-ലെ 08/2020/DMD നമ്പർ ഉത്തരവ് പ്രകാരം ബ്രഹ്മപുരത്തുള്ള ലെഗസി വേസ്റ്റ് ഖര മാലിന്യ സംസ്കരണ നിയമ പ്രകാരം ഭൂമി പുനരുപയോഗിക്കത്തക്ക തരത്തിൽ നീക്കം ചെയ്തു സ്ഥലം മാലിന്യമുക്തമായി വീണ്ടെടുക്കുന്നതിനായുള്ള ഏജൻസിയെ കണ്ടെത്തുന്നതിനുള്ള ടെൻഡർ നടപടികൾ സ്വീകരിക്കുകയും തുടർന്ന് നടന്ന വിശദമായ സാങ്കേതികവും സാമ്പത്തികവുമായ പരിശോധനകളിലൂടെ മതിയായ യോഗ്യതയുള്ള ഏജൻസിയെ കണ്ടെത്തുകയും ചെയ്തു. രേഖകളുടെ പകർപ്പ് അനുബന്ധം 2 ആയി ചേർക്കുന്നു.
(സി)	ഇപ്പോൾ ബ്രഹ്മപുരത്തു ബയോ മൈനിങ് നടത്തുന്ന	(സി)	കണ്ണൂർ കോർപ്പറേഷൻ ടെർമിനേറ്റ് ചെയ്ത്

കമ്പനിയെ കണ്ണൂർ കോർപ്പറേഷനിൽ നിന്നും കൊല്ലം കോർപ്പറേഷനിൽ നിന്നും ടെർമിനേറ്റ് ചെയ്തിട്ടുണ്ടോ; ഉണ്ടെങ്കിൽ അതിന്റെ കാരണം വ്യക്തമാക്കുമോ?

തുടർനടപടി സ്വീകരിച്ചിട്ടുണ്ട്. കെ.എസ്.ഐ.ഡി.സി. ടെണ്ടർ വ്യവസ്ഥകൾ പ്രകാരം പ്രവൃത്തി ഏറ്റെടുത്ത് അഡ്വാൻസ് തുക കൈപ്പറ്റിയശേഷം (മലിനീകരണ നിയന്ത്രണ ബോർഡ് തയ്യാറാക്കിയ കണക്ക് പ്രകാരം 40,000 m³) കൂടുതൽ അളവിലുള്ള മാലിന്യം ഉണ്ട് എന്ന് തർക്കം ഉന്നയിക്കുകയും, ആയതിന്റെ അടിസ്ഥാനത്തിൽ കോർപ്പറേഷൻ സർക്കാരിലേക്ക് കത്ത് നൽകുകയും, സർക്കാർ നിർദ്ദേശപ്രകാരം കോഴിക്കോട് NIT യെ കൊണ്ട് മാലിന്യത്തിന്റെ അളവ് സർവ്വേ നടത്തി പുനർനിർണ്ണയിച്ചതിൽ 123,822 m³ ആണെന്ന് കണ്ടെത്തുകയും ചെയ്തിട്ടുണ്ട്. തുടർന്ന് കൂടുതൽ തുക ടി കമ്പനി ആവശ്യപ്പെടുകയും, 21 കോടിയിൽ കൂടുതൽ തുക വരുന്ന സാഹചര്യത്തിൽ കൗൺസിൽ ടി കമ്പനിയെ ഒഴിവാക്കുന്നതിനും, ടി കമ്പനി നേരത്തെ കൈപ്പറ്റിയ അഡ്വാൻസ് തുക തിരിച്ചു പിടിക്കുന്നതിനായി തുടർനടപടി സ്വീകരിക്കുവാൻ തീരുമാനിക്കുകയും, ആയത് പ്രകാരം നടപടികൾ സ്വീകരിച്ചു വരുന്നതുമാണ്.

കൊല്ലം നഗരസഭയിലെ കുര്യപ്പുഴ ചണ്ടി ഡിപ്പോയിലെ ലെഗസി മാലിന്യങ്ങൾ നീക്കം ചെയ്യുന്നതിനായി ബയോമൈനിംഗ് നടത്തുന്നതിന് M/s സോണ്ട ഇൻഫോടെക് എന്ന സ്ഥാപനം രേഖപ്പെടുത്തിയിരുന്ന കുറഞ്ഞ നിരക്കിന്റെ അടിസ്ഥാനത്തിൽ തെരഞ്ഞെടുത്തിരുന്നുവെങ്കിലും ടെണ്ടർ വ്യവസ്ഥകൾക്ക് വിരുദ്ധമായി മുൻകൂർ പേമെന്റ് ആവശ്യപ്പെട്ടതിന്റെ അടിസ്ഥാനത്തിൽ കൗൺസിൽ തീരുമാനപ്രകാരം കരാറിൽ നിന്നും ഒഴിവാക്കുകയും റീടെണ്ടർ നടപടികളിലൂടെ M/s സിഗ്മ ഗ്ലോബൽ എൻവിറോൺ സൊല്യൂഷൻസ് പ്രൈവറ്റ് ലിമിറ്റഡ്, ഈറോഡ് എന്ന സ്ഥാപനത്തെ പ്രവൃത്തി ഏൽപ്പിക്കുകയും ആയത് അവസാന ഘട്ടത്തിൽ എത്തിയിട്ടുള്ളതുമാണ്.

സെക്ഷൻ ഓഫീസർ



കേരളം KERALA

K 011624

Contract Agreement

This agreement, made on the 06th day of September, 2021, Between

Kochi Municipal Corporation, (KMC), established under the provisions of the Kerala Municipality Act, 1994, acting through its Secretary having its principal offices at Kochi Municipal Corporation, PB No.1016, Cochin, Ernakulum District, Kerala- 682 011, hereinafter referred to as "**KMC or Employer**", which expression shall unless excluded by or repugnant to the context, be deemed to include its successors and assigns;

AND

Zonta Infratech Private Limited, is a Company set up under the Companies Act, 2013, acting through its Company Secretary, having its principal office at First Floor, Reliaable Phoenix Towers, 16 & 16/1, Museum Road, Bangalore- 560 001 hereinafter referred to as "**Contractor**", which expression shall unless excluded by or repugnant to the context, be deemed to include its successors and assigns;

Collectively referred to as "Parties", and individually as "Party".



Secretary
Kochi Municipal Corporation

Sl. No. 30873 Date 6-9-21

Value Rs.

Sold To

Linked With Sl. No.

JAYADEVI P. B.
District Court, Vengal
Ernakulam.

Zonta Infratech Pvt Ltd
Bangalore



Whereas

- a. KMC is responsible for management of municipal solid waste in the city of Kochi, Kerala including dumpsite of such waste within its municipal limit;
- b. KSIDC has been designated as authorised nodal agency to procure the competent contractor to execute the task of Rehabilitation of Municipal Solid Waste dumpsite at Brahmapuram Site("Proposed Site") in Kochi, Kerala vide the Govt. order GO(Ms)No.8/2020/DMD dated 05/03/2020.
- c. KSIDC, on behalf of LSGD Govt. of Kerala, has conducted an open and transparent process of selection of a contractor for rehabilitation of the proposed site and found M/s. Zonta Infratech Private Limited as preferred bidder for the said Work;
- d. KMC now desirous that the Contractor execute Rehabilitation of Municipal Solid Waste dumpsite at Brahmapuram (hereinafter called "the Work") and the KMC has accepted the Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all aspects with the provisions of the Contract.
3. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying the defects wherein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.
4. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:
 - i. Letter of Acceptance;
 - ii. Contractor's Bid;
 - iii. Conditions of contract (including Special Conditions of Contract);
 - iv. Specifications;
 - v. Detailed Implementation Plan (to be annexed upon submission)
 - vi. Correspondences & NIT Report
 - vii. Request for Proposal No. KSIDC/TVM/W2E/15/2020 dated 24th June 2020

In witness whereof the parties thereto have caused this Agreement to be executed the day and year first before written.

The Common Seal of Employer and Contractor was hereunto affixed in the presence of:

Signed, Sealed and Delivered by the said in the presence of:

Binding Signature of Employer


Secretary
Kochi Municipality

Binding Signature of Contractor


Zonta Infratech Private Limited
Bengaluru



ZIPL/202122BD/2021-22/097

July 24, 2021

The Secretary,
Kochi Municipal Corporation (KMC),
Kochi

Dear Sir,

Subject: Rehabilitation of Municipal Solid Waste dumpsite at Brahmapuram for Local Self Government Department, Government of Kerala. - **Letter of Acceptance; reg:**

Reference:

1. Tender No: KSIDC/PMU/W2E/15/2020, Dated 24-06-2020
2. Kochi Corporation Council Resolution No 1, Dated 22-07-2021
3. LOA No: MOE2/3760/20, Dated 23-07-2021

We are glad to be in receipt of your Letter of Acceptance vide above reference (3) and we extend our sincere appreciation to you for providing us this opportunity to work with Kochi Municipal Corporation to implement the subject project and we assure best of our services at all times. We hereby accept the LOA as above.

In order to discuss in detail about the above Rehabilitation work and as communicated, a technical and project team from our company will visit your office for the meeting scheduled on 27-07-2021, with your kindself, Worshipful Mayor and other senior officials of Corporation for better planning as well as execution of the work.

Also we request you to provide us with the copy of the Site Survey and Assessment Report submitted by National Institute of Technology, Kozhikode so as to understand the quantity and variance, if any, thereon from our estimation as communicated earlier. Further, we would look upon to you to inform us the data on the quantity of waste dumped at the site post the site survey conducted by NIT, Kozhikode, as above.

Upon our meeting and deliberations thereto, as above, we would take immediate steps to prepare a detailed Implementation Plan and submit the same for your review and approval. We intent to commence the work immediately upon receipt of the approval of the said Implementation Plan.

We look forward to your support and assure you with best of our services.

Thanking You,

Yours' Faithfully,
For Zonta Infratech Private Limited

Antony Pontal
Vice President - Project Implementation

**Zonta Infratech Private Limited**

1st Floor Reliable Phoenix Tower # 16 & 16-1 Museum Road Bengaluru -560 011
Phone : +91 80 67292100 Email : info@zontaglobal.com Website : www.zontaglobal.com

Secretary
Kochi Municipal Corporation





KOCHI MUNICIPAL CORPORATION

Phone { 2369007, 2369196
2369143, 2369149
2369197, 2369069
Fax : 91-484-2369023

Corporation Office
P.B.No.1016
Ernakulam. Cochin 682 011

No.MOE2/3760/20

23/07/2021

From
Secretary

To
The Managing Director
Zonta Infratech Private Limited
1st Floor, Reliable Phoenix towers
#16 & 16/1 Museum Road
Bengaluru 560001
Karnataka

LETTER OF AWARD

Rehabilitation of Municipal Solid Waste dumpsite at Brahmapuram

Sir,

- Ref. 1. G.O (Ms)No.8/2020/DMD dated 05/03/2020
2. Tender No.KSIDC/PMU/W2E/15/2020 dated 24/06/2020
3. Letter No.238/DC1/2020/LSGD dated 22/10/2020
4. LOA to NIT-Calicut with No.MOE2/029333/20 dated 23/01/2021
5. Letter No.MOE2/3760/18 dated 22/03/2021
6. Letter No.CED/CON/PVI/SGT/2021056/04/01 dated 05/04/2021
7. Letter No.MOE2/3760/18 dated 07/04/2021
8. Letter No.238/DC1/2020/LSGD dated 26/05/2021
9. Letter No.MOE2/3760/18 dated 01/06/2021
10. G.O(Rt)No.1219/2021/LSGD dated 27/06/2021
11. Kochi Corporation Council Resolution No.1 dated 22/07/2021

Vide G.O under reference 1, the work of biomining legacy waste at Brahmapuram was taken over by the Government invoking section 24(e) of

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Secretary
Kochi Municipal Corporation



Disaster Management Act 2005 and entrusted KSIDC to identify an experienced and technically competent agency to manage and dispose the legacy waste at Brahmapuram.

Accordingly KSIDC has floated tender vide reference 2 for the rehabilitation of Municipal Solid waste dumpsite at Brahmapuram for LSGD, Govt. of Kerala and has identified M/s Zonta Infratech as the successful bidder.

As directed by the Principal Secretary to Government, LSGD vide letter under reference 3, NIT Calicut was engaged to quantify the volume of legacy waste.

Vide G.O under reference 10 Government have directed to award the work based on the report of NIT Calicut.

Kochi Municipal Corporation Council vide its decision No.1 dated 22/07/2021 has given approval to award the work to M/s Zonta Infratech the L1 bidder selected for the work of "Rehabilitation of Municipal Solid Waste dumpsite at Brahmapuram for Local Self Government Department. Government of Kerala"

The work is hereby awarded to you. You may execute the agreement with Kochi Municipal Corporation within 7 days and start the work soon thereafter.



Secretary
Kochi Municipal Corporation



Yours faithfully,


Secretary
Kochi Municipal Corporation



Tender Inviting Authority: Managing Director - KSIDC

Name of Work: REQUEST FOR PROPOSAL for Rehabilitation of Municipal Solid Waste dumpsite at Brahmapuram for Local Self Government Department, Govt of Kerala.

Contract No: KSIDC/TVM/W2E/15/2020

ZONTA INFRA TECH PRIVATE LIMITED									
Name of the Bidder/ Bidding Firm / Company :									
PRICE SCHEDULE									
(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)									
NUMBER #	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	Estimated Rate in Rs. P	BASIC RATE In Figures To be entered by the Bidder Rs. P	TOTAL AMOUNT Without Taxes in Rs. P	TOTAL AMOUNT In Words		
1	2	4	5	6	13	53	55		
1.00	Rehabilitation of Municipal Solid Waste Dumpsite at Brahmapuram for Local Self Government Department, Govt of Kerala	1.000	RFP		549036036.00	549036036.00	INR Fifty Four Crore Ninety Lakh Thirty Six Thousand & Thirty Six Only		
Total in Figures					0.0000		549036036.00	INR Fifty Four Crore Ninety Lakh Thirty Six Thousand & Thirty Six Only	
Quoted Rate in Words		INR Fifty Four Crore Ninety Lakh Thirty Six Thousand & Thirty Six Only							

Secretary
Rochi Municipal Corporation



SECTION IV: CONDITIONS OF CONTRACT



SECTION I: CONDITIONS OF CONTRACT

Clause 1: General Conditions of Contract

The General condition of contract shall be read in conjunction with contracts specifications of work, drawings and any other documents forming part of this contract wherever the context so requires. Notwithstanding the subdivision of the documents into these separate sections and volumes every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the contract so far as it may be practicable to do so.

Where any portion of the general conditions of contract is repugnant to or at variance with any provision of the special conditions of contract then, unless a different intention appears, the provisions of the special condition of contract shall be deemed to override the provision of the general conditions of contract and shall to the extent of such repugnancy, or variations, prevail.

The materials, design and workmanship shall satisfy the relevant Indian standard, the job specifications contained herein and codes referred to. Where the job specification stipulate requirement in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied.

Clause 2: Grant of Contract

Subject to and in accordance with the terms and conditions set forth in this Contract, LSGD hereby grants and authorizes the Contractor to investigate, study, engineer, finance and rehabilitate dumpsite and to exercise and/ or enjoy the rights, powers, benefits, privileges, authorizations and entitlements as set forth in this Contract.

Clause 3: Handover of Site

LSGD/KSIDC shall, within 15 days from the Appointed Date, handover to the Contractor on as-is where-is basis, vacant and peaceful physical possession of the site free from encumbrance, for the purpose of implementing the project.

Clause 4: Rights, Title and Use of the Site

- a) The Contractor shall have the right to the use of the site in accordance with the provisions of this Contract and for this purpose; it may regulate the entry into and use of the same by third parties.
- b) The site shall be and continue to be the property of GOK/LSGD.
- c) The Contractor shall not, without the prior written approval of LSGD, use the site for any purpose other than for the purpose of the project and purposes incidental or ancillary thereto.
- d) The Contractor shall allow access to and use of the site for laying/ installing/ maintaining telegraph lines, electric lines or for such other public purposes as LSGD may specify.

Clause 5: Peaceful Possession

LSGD hereby warrants that:

- a) The site together with the necessary right of way/way-leaves
 - (i) has been acquired through the due process of law
 - (ii) belongs to GOK and is vested in LSGD/KSIDC and that LSGD has full powers to hold, dispose of and deal with the same consistent, inter alia, with the provisions of this Contract and that the Contractor shall, in respect of the site, have no liability regarding any



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compensation payment on account of land acquisition or rehabilitation/resettlement of any persons affected thereby.

Clause 6: Contractor to obtain his own Information

The Contractor for fixing his rate shall for all purposes whatsoever is deemed to have him independently obtained all necessary information for the purpose of preparing this Bid. The correctness of the details, given in the Bid document to help the Contractor to prepare the Bid is not guaranteed.

The Contractor shall be deemed to have examined the contract document, to have generally obtained his own information in all matters whatsoever, that might affect the carrying out the works at the scheduled rates and to have satisfied himself to the sufficiency of the Bid. Any error in the description or omission of quantity there from shall not vitiate the contract or release the Contractor from executing the work comprised in the contract according to the drawings and specifications at the scheduled rates. He is deemed to have known the scope, nature and magnitude of works and the requirement of material and labour involved and as to what all works he has to complete in accordance with the contract document whatever be the defects, omission or errors that may be found in the contract document. The Contractor shall be deemed to have visited site surroundings to satisfy himself to the nature of all existing structure, if any and also as to the nature and condition of the roads, bridges and culvert, means of transportation and communication and to possible interruption thereto and the access from the site, to have made inquiries, examined and satisfied himself as to the site for obtaining sand, stone, brick and other material, the sites for disposal of surplus material, the available accommodation as to wherever required depots and such other building as may be necessary for executing and completing the works, to have made local independent enquiries as to the subsoil, subsoil water and variation thereof, storm, prevailing winds, climatic conditions and all other similar matter affecting these works. He is deemed to have acquainted himself as to his liability for payment of government taxes, custom duty and other charges.

Any neglect and failure on the part of Contractor in obtaining the necessary reliable information upon the foregoing or any other matter affecting the contract shall not relieve him from any risk or liability or the entire responsibility from completion of work at the scheduled rate and time in accordance with the contract document.

No verbal agreement or inference from conversation with any officer or employee of the corporation either before or after the execution of the contract agreement shall in any way affect or modify any of the terms or obligation herein contained.

Clause 8: Security Deposit

The Bidder whose Bid is accepted (hereinafter called the "Contractor" which shall, unless excluded by, or repugnant to the context include his legal heirs, executors, administrators and assignees) shall submit a Performance Security for a sum of rupees equivalent to 2% of the contract value of the Bid. The balance security deposit after adjusting the EMD shall be deducted proportionately from the payments made to the Contractor.

All compensation, liquidated damages or other sums or money payable by the Contractor to Government under the terms of this contract shall be deducted from or recouped by the realisation of a sufficient part of his security deposit, or from any sums which may due or may become due by LSGD/KSIDC to the Contractor on any account whatsoever and whether in respect of this contract, any other contract, or otherwise. In the event of his security deposit being reduced by reason or any such deduction or recoupment



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as aforesaid, the Contractor shall within ten days thereafter, make good in cash or in Government securities transferred as aforesaid any sum or sums required to make good the shortfall in the amount of the security deposit.

Clause 9: Liquidated damages for delay

If the Contractor fails to achieve the milestones as under contract with in the stipulated time frame , he shall pay liquidated damages of Rs. 10,00,000/- (Rupees Ten Lakhs Only) per month from the date of delaying the said work up to the date of completion and handing over to LSGD/KSIDC

Delays requiring payment of Five percentage liquidated damages of the amount put to Bid for performance shall be sufficient cause for termination of contract and for forfeiture of performance security deposit and registration of the Contractor shall also be kept in abeyance for three years from the date as fixed in all cases.

Clause 10: Default by Contractor

If the Contractor shall neglect or fail to proceed with the work with due diligence or if he violates any of the provision of the Contract, the Engineer-in-charge of LSGD/KSIDC shall give the Contractor a notice, identifying deficiencies in performance and demanding corrective action. Such notice shall clearly state that it is given under the provision of this Clause. After service of such notice, the Contractor shall not remove any plant, equipment and material from the site. The KSIDC/LSGD, shall have a lien on all such plant, equipment and material from the date of such notice till the said deficiencies have been corrected as mentioned in the said notice.

If the Contractor fails to take satisfactory corrective action within ten days after receipt of such notice, the LSGD/KSIDC shall terminate the contract in whole. In case, the entire contract is terminated, the amount of security deposit together with the value of the work done but not paid for shall stand forfeited to the KSIDC. The plants, equipment and materials, held under this Clause shall then be at the disposal of the LSGD/KSIDC to recover the amount equivalent to the liquidated damages and registration of the Contractor shall be kept in abeyance for three years from the date as fixed in all such cases.

The Engineer-in-charge if necessary shall direct that a part or the whole of such plant, equipment and material be removed from the site within a stipulated period. If the Contractor fails to do so, the Engineer-in-charge shall cause them or any part of them to be sold holding the net proceeds of such sale to the credit of the Contractor. After settlement of accounts, the lien by the LSGD/KSIDC of the Contractor's remaining plant equipment and balances of materials shall be released.

Termination of the contract in whole shall be an adequate authority for the Engineer-in charge to demand discharge of the obligations from the guarantors of the security for the performance.

Clause 11: Unsatisfactory progress by Contractor

If the progress of any particular portion of the work under contract is unsatisfactory, the Engineer-in-charge shall, notwithstanding that the general progress of the work is satisfactory, in accordance with Clause 9 be entitled to take necessary action under Clause 10, after giving the Contractor ten days' notice in writing and the Contractor shall have no claim whatsoever for any compensation for any loss caused to him due to such action.

Clause 12: Non-exercise of powers under Clause 10 not a waiver:



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In any case in which any of powers conferred upon the Engineer-in-charge by Clause 10 hereof shall have become exercisable and the same shall not have been exercised, the non-exercise thereof shall not constitute waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable at any future date.

Clause 13: Powers to seize tools, plants, machineries, materials and stores of the Contractor on invocation of Clause 10:

In the event of the Engineer-in-charge taking action under Clause 10, he may, if so desire, take possession of all or any tools, plants, machineries, materials and stores in or upon the work or the site thereof or belonging to the Contractor or procured by him and intended to be used for the execution of the work or any part thereof, by paying or allowing for the same in account at the contract rate or in case of contract rates not being applicable at such reasonable rates, as may be comparable to current market rates where ascertainable of similar articles and comparable condition, to be certified by the Engineer-in-charge. Alternatively, the Engineer-in-charge may by notice in writing to the Contractor or his clerk of the works foreman or other authorised agent require him to remove such, tools, plants, machineries, materials or stores from the premises within a time to be specified in such notice and in the event of the Contractor failing to comply with any such requisition, the Engineer-in-charge may remove them at the Contractor's expense or shall remove them by auction or private sale at the risk and cost of the Contractor in all respects, and the certificate of the Engineer-in charge as to the expenses of any such removal and the amount of the proceeds and expenses of any such removal shall be final and conclusive against the Contractor.

Clause 14: Extension of Time:

If the Contractor shall desire an extension of the time for completion of the work on the ground of his having been unavoidably hindered in its execution or any other ground he shall apply in writing to the Engineer-in-charge before the expiration of the period stipulated in the Bid or before the expiration of 30 days from the date on which he was hindered whichever is earlier and the Engineer-in-charge may, if in his opinion, believe that there are reasonable grounds for granting an extension, grant such extension, as he thinks necessary or proper. The decision of the Engineer-in-charge in this matter shall be final.

Clause 15: Final measurement and final bill on completion of work

As soon as the work is completed, the Contractor shall give a notice of such completion to the Engineer-in-charge and on receipt of such notice the Engineer-in-charge shall inspect the work and if he is satisfied that the work is completed in all respects then

- (i) The completion certificate shall be issued within one month from the date of the notice of work completion subject to the Contractor fulfilling his obligation as provided in the contract and subject to the work being complete in all respects.

When separate period of completion has been specified for items or groups of items, the Engineer-in-charge shall issue, separate completion certificate for such items or groups of items.

No certificate of completion shall be issued nor shall the work be considered to be complete till the Contractor shall have removed from the premises, on which the work has been executed, all scaffoldings, sheds and surplus materials, except such, as are required for rectification of defects; rubbish and all huts and sanitary arrangements required for his workmen on the site in connection with the execution of the work, as shall have been erected by the Contractor for the workmen and cleared all dirt from all parts of building(s) in, upon or around which the work has been executed or of which he may have possession for the purpose of the execution thereof and cleared floors, gutters and drains, cased doors and sashes, oiled locks and fastenings labeled keys clearly and handed them over to the Engineer-in-charge or his



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representative and made the whole premises fit for immediate occupation or use to the satisfaction of the Engineer-in-charge. If the Contractor shall fail to comply with any of the requirements, of these conditions as aforesaid, on or before the date of completion of the works, the Engineer-in-charge may, at the expense of the Contractor, fulfill such requirements and dispose of the scaffolding, or surplus materials and rubbish, as he thinks fit and the Contractor shall have no claim in respect of any such scaffolding or surplus materials, except for any sum actually released by the sale thereof less the cost of fulfilling the requirements and any other amount that may be due from the Contractor. If the expenses of fulfilling such requirements are more than the amount realized from such disposal as aforesaid the Contractor shall forthwith, on demand, pay such excess. The Engineer-in-charge shall also have the rights to adjust the amount of excess against any amounts that may be payable to the Contractor.

Clause 16: Intermediate and final payments:

The Contractor shall on submitting an intermediate bill be entitled to receive payment proportionate to the part of the work then approved and passed by the Engineer-in-charge, whose certificate of such approval and passing of the sum so payable shall be final and conclusive against the Contractor. All such intermediate payments shall be regarded as payments by way of advance against the final payments only and not as payments for work actually done and completed and shall not preclude the Engineer-in-charge from requiring bad, unsound, imperfect or unskilled work to be removed and taken away and reconstructed, or re-erected, nor shall any such payment be considered as an admission of the due performance of the Contractor or any part thereof in any respect or the accruing of any claims, nor shall it conclude, determine, or affect in any way the power of the Engineer-in-charge as to the final settlement and adjustment of the accounts or otherwise or in any other way vary or effect the contract. The final bill shall be submitted by the Contractor within one month of the completion of the work, otherwise the Engineer-in-charge's certificate of the measurements and of the total amount payable for the work shall be final and binding on all parties.

Clause 17: Payment at reduced rates:

The rates for items of works shall be valid only when the items concerned is accepted as having been completed fully in accordance with the sectional specifications, In cases where the items of work are accepted as not so completed, the Engineer-in-charge may make payment on account of such items at such reduced rates as he may consider reasonable in preparation of final or on account bill.

Clause 18: Bills to be submitted on achieving each milestone:

A bill shall be submitted by the Contractor upon achieving a milestone and Engineer-in-charge shall take or cause to be taken the requisite measurement for the purpose of having the same verified and the claim, so far as it is admissible, shall be adjusted, if possible, within ten days from the presentation of the bill.

Clause 19: Bills and rates payable:

The Contractor shall submit all the bills on the printed forms at the office of the Engineer-in-charge. The charges to be made in the bills shall always be entered at the rates specified in the agreement or at the partly reduced rates subject to the approval by the Engineer-in-charge. In the case of Items not completed/executed as per agreements or in the case of any extra work ordered in pursuance of these conditions and not mentioned or provided for in the Bid, at the rate here in after provided for such work.

Clause 20: Drawings, Designs, Instructions of the Engineer in-charge and specifications, order of precedence in case of discrepancies



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- 1) The Contractor shall execute the whole and every part of the work in the most substantial and workman-like manner and both as regards materials and in other respects in strict accordance with specifications.
- 2) The Contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions developed by the Contractor and approved by the Engineer-in-charge in writing for the work assigned. The design and the drawings shall be made available with the Engineer-in-charge the three (3) sets free of cost for the purpose of approvals and future reference.

Where the instructions referred to above are not contained in separate letters addressed to the Contractor the same shall be recorded in the work-order book, which shall be maintained and kept on the site of the work. The Contractor shall be required to sign such entries in the work-order book in token of having noted the instructions. However, if the Contractor fails to sign the work-order book for any reason whatsoever, the entry of the instructions in the work-order book shall be deemed to be the due notice to him of the said instructions. The work-order book shall be open for inspections to the Contractor on the site of the work during office hours.

- 1) The Contractor will be entitled to receive one copy of the accepted Bid along with the work order free of cost.
- 2) The several documents forming the contract are essential parts of the contract and requirements occurring in one is binding as through occurring in all. They are intended to be mutually explanatory and complimentary and to describe and provide for a complete work.

In the event of any discrepancy in the several documents, the following order of precedence should apply:

1. Bill of Quantities developed by the Bidder and approved by Engineer-in-charge
2. Drawings developed by the Bidder and approved by the Engineer-in-charge
3. Specifications in Special Condition of Contracts

In the case of defective description or ambiguity, the Engineer-in-charge is entitled to issue further instructions directing in what manner the work is to be carried out. The Contractor cannot take any advantage of any apparent error or omission in drawings or specifications and the engineer-in-charge shall be entitled to make corrections and interpretations as necessary to fulfill the plans and specification.

Clause 21: Excess over Bid quantities, extra items and variations:

- 1) The Engineer-in-charge shall have the power to make any alterations in or addition to the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work and the Contractor shall be bound to carry out the work in accordance with any instructions in this connection which may be given to him in writing signed by the Engineer-in-charge and such alternation shall not invalidate the contract and any additional work which the Contractor may be directed to do in the manner above specified as part of the work shall be carried out by the Contractor on the same conditions in all respects on which he agreed to do the main work and at the same rate as are specified in the Bid for the main work.
- 2) If the additional or altered work includes any class of work for which no rate is specified in this contract, then such class of work shall be carried out.
 - (i) At the rate derived from the item within the contract which is comparable to the one involving additional or altered class of work; where there are more than one comparable items, the item of the contract which is nearest in comparison with regard to class or classes



- of the work involved shall be selected and the decision of the Superintending Engineer as to the nearest comparable item shall be final and binding on the Contractor.
- (ii) If the rate cannot be derived in accordance with (i) above, such class of works shall be carried out at the rate entered in the Schedule of Rates of the Division for the year in which the Bid was received, increased or decreased by the percentage by which the Bid amount is more or less as compared to the amount arrived at the rates in the "Schedule of Rates" of the Division in the year in which the Bid was received. If the Schedule of rates of the Division does not contain all the items, the percentage increase or decrease of the Bid shall be calculated considering such items which were included in the "Schedule of Rates" of the Division for the year and for materials consumed on such item the rate to be charged would be the basic rate taken into account for fixing the rate in S. O. R. referred to above.
- (iii) If it is not possible to arrive at the rate from (i) and (ii) above, such class of work shall be carried out at the rate decided by the competent authorities on the basis of detailed rate analysis after hearing the Contractor before a Committee of two superintending Engineers stationed at the same place or the nearest place.
- 3) If the additional or altered work, for which no rate is entered in the "Schedule of Rates" of the Division is ordered to be carried out before the rate is agreed upon, then the Contractor shall within seven days of the date of receipt by him of the order to carry out the work, inform the Engineer-in-charge of the rate, which it is his intention to charge for such class of work and if the Engineer in charge does not agree to this rates, he shall by notice in writing be at liberty to cancel his order to carry out such class of work and arrange to carry it out in such manner as he may consider it advisable, provided always that if the Contractor shall commence work or incur any expenditure in regard thereof before the rates shall have been determined as lastly herein before mentioned, then in such cases he shall only be entitled to be paid ;In respect of the work carried out or expenditure incurred by him prior to the date of the determination of the rate as aforesaid according to such rate or rates as shall be fixed by the Engineer-in-charge. In the event of the dispute, the decision of the Superintending Engineer shall be final.

Where, however, the work is to be executed according to the designs, drawings and specifications recommended by the Contractor and accepted by the competent authority, the alternation above referred to shall be within the scope of such designs, drawings and specifications appended to the Bids.

The time limit for the completion of the work shall be extended in the proportion that the increase in the cost occasioned by alternations bears to the cost of the original contract work and the certificate of the Engineer-in-charge as to such proportion shall be final and conclusive.

Clause 22: No claim for any payment of compensation for change or restriction of work

If at any time after the execution of the contract documents the Engineer-in-charge shall for any reason whatsoever, require the whole or part of the work, as specified in the Bid, be stopped for any period or shall not require the whole or part of the work to be carried out at all or to be carried out by the Contractor, he shall give notice in writing, stating the fact to the Contractor who shall thereupon suspend or stop the work totally or partially, as the case may be. In any such case, except as provided hereunder, the Contractor shall have no claim to any payment or compensation whatsoever except as provided hereunder on account of any profit or advantage which he might have derived from the execution of the work in full but which he did not so derive in consequence of the full amount of the work not having been carried out, or on account of



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any loss that he may be put to on account of materials purchased or agreed to be purchased or for unemployment of labour required by him. He shall not have also any claim for compensation by reason of any alterations having been made in the original specifications, drawings, designs and instructions which may involve any curtailment of the work as originally contemplated.

- (1) However, the Contractor will be entitled for compensation for loss, if any on the date of notice, for the purchased materials or for the contract executed for the material to be purchased for such work. Such compensation will be paid only for actual loss for materials, if such materials so purchased or agreed to purchase is of required quantity/quality and was purchased / contracted to be purchased only for the same work. But no compensation shall be granted to Contractor on material for which advance has been given to Contractor. The amount of loss for such claim will be decided by Engineer-in-charge.
- (2) The Contractor also will be entitled for compensation of unemployed labourers for 7 days from the date of notice provided that in that opinion of Engineer-in-charge such labourers were working for 7 days prior to the notice and would not be in a position to get employment elsewhere within 7 days from the date of such notice. The Contractor should try to employ such unemployed labourers at other places from the date of such notice. The Contractor shall not be entitled for loss of any expected profit of such work.

Clause 23: Time limit for unforeseen claims

The Contractor shall not be entitled to any compensation from Authority on any account unless where allowed by the conditions of this contract. In such cases, the Contractor shall have to submit a claim in writing to the Engineer-in-charge within one month of the cause of such claim occurring.

Clause 24: Action & compensation in case of bad work

If, at any time before the expiry of Defects Liability period as detailed in Clause 25, it shall appear to the Engineer-in-charge or his sub-ordinate in charge of the work that any work has been executed unsound, imperfect or unskilled workmanship or with materials of inferior quality or that any materials or articles provided by him for the execution of the work are unsound, or of a quality inferior to that contracted for or are otherwise not in accordance with the contract, it shall be lawful for the Engineer-in-charge to intimate this fact in writing to the Contractor and then notwithstanding the fact that the work, materials or articles complained of may have been passed, certified and paid for the Contractor shall be bound forthwith to rectify, or remove and reconstruct the work so specified in whole or in part as the case may require, or if so required, shall remove the materials or articles so specified in whole or in part and provide other proper and suitable materials or articles at his own charge and cost, and in the event of his failing to do so within a period to be specified by the Engineer-in charge in the written intimation aforesaid, the Contractor shall be liable to pay compensation at the rate of one percent on the amount of the estimate of the rectification for every day not exceeding ten days during which the failure so continues, and in the event of any such failure as aforesaid continuing beyond ten days, the Engineer-in-charge may rectify or remove, and re-execute the work or remove and replace the materials complained of as the case may be at the risk and expense in all respects of the Contractor. Should the Engineer-in-charge consider that any such inferior work or materials as described above may be accepted or made use of, it shall be within his discretion to accept the same at such reduced rates as he may fix therefore.

However, the Contractor shall be responsible for normal maintenance of the work till the final bill for the work is prepared by the Employer.



Clause 25: Defects Liability Period

The Contractor shall be responsible to make good and remedy at his own expense any defect, which may develop or may be noticed before the period mentioned hereunder from the certified date of completion. The same should be done within 15 days of receipt of the notice. In the case of failure on the part of the Contractor, the Engineer-in-charge may rectify or remove or re-execute the work at the risk & cost of the Contractor. The Engineer-in-charge shall be entitled to appropriate the whole or any part of the amount of security deposit towards the expenses, if any, Incurred by him in rectification, removal or re-execution. The Defects Liability period shall be 12 months from the certified date of completion, which should include one monsoon.

Clause 26: Work to be open to inspections - Contractor or responsible agent to be present

All works under or in course of execution or executed in pursuance of the contract shall, at all times be open to the inspection and supervision of the Engineer-in-charge and his subordinates and the Contractor shall, at all times during the usual working hours, and all other times for which reasonable notice of the intimation of the Engineer-in-charge or his subordinate to visit the works shall have been given to the Contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing present for that purpose. Orders given to the Contractor's duly authorized agent shall be considered to have the same force and effect as if they had been given to the Contractor himself.

Clause 27: Notice to be given before work is covered up

The Contractor shall give not less than five days' notice in writing to the Engineer-in-charge or his subordinate in charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof taken before the same is so covered up or placed beyond the reach of measurement and if any work shall be covered up or placed beyond the reach of measurement without such notice having been given or consent obtained, the same shall be uncovered at the Contractor's expense and in default thereof, no payment or allowance shall be made for such work or for the materials with which the same was executed.

Clause 28: Damage to contract work-in-progress and damages to surrounding properties:

If the Contractor or his workmen, or servants shall break, deface, injure or destroy any part of the building or the work in question in/ on which they may be working or any building, road, fence, enclosure or grassland or cultivated ground contiguous to the premises on which the works or any part thereof is being executed or if any damage shall be done to the work ' from any cause whatever before damage occurred/caused due to normal flood or rain or if any imperfections become apparent in it within three months from the grant of a certificate of completion, final or otherwise by the Engineer-in-charge, the Contractor shall make good the same at own expenses or in default, the Engineer-in-charge may cause the same to be made good by other Contractor, and deduct the expenses (of which the certificate of the Engineer in- charge shall be final) from any sums that may thereafter become due to the Contractor or from his security deposit or the proceeds of sale thereof or a sufficient portion thereof.

Clause 29: Damages due to acts of God and unprecedented floods

Neither party shall be liable to the other for any loss or damage occasioned by or arising out of acts of God, such as Unprecedented flood, Volcanic eruption, earthquake or other convulsion of nature and other acts such as but not restricted to general strike, invasion, the acts of foreign countries, hostilities, or war like operations before or after declaration of war, rebellion, military or Usurped power which prevent performance of the contract and which could not have been foreseen or avoided by a prudent person.



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Note: "Unprecedented flood" means the flood crossing the High Flood Level of the past 100 year(s) which is on the available record.

Clause 30: Contractor to supply plant, ladders, scaffolding etc. and is liable for damage arising from non-provision of lights, fencing etc.:

The Contractor shall supply at his own cost all materials plant, tools, appliances, implements, ladders, cordage, tackle, scaffolding, and any temporary works which may be required for the proper execution of the work whether in the original, altered or substituted form and whether included in the specifications, or other documents forming part of the contract or referred to in these conditions or not and which may be necessary for the purpose of satisfying or complying with requirements of the Engineer- in-charge as to any matter or to which under these conditions he is entitled to be satisfied or which he is entitled to require together with carriage there for to and from the work. The Contractor shall provide all necessary fencing and lights required to protect the public from accident.

Clause 31: The Contractor shall provide suitable scaffolds and working platforms, gangways and stairways, etc.

The Contractor shall provide suitable scaffolds and working platforms, gangways and stairways, and shall comply with the following regulations in connection therewith.

- a) Suitable scaffolds shall be provided for workmen for all works that cannot be safely done from a ladder or by other means.
- b) A scaffold shall not be constructed, taken down or substantially altered except - (i) Under the supervision of a competent and responsible person. (ii) appointed by Contractor and by competent workers possessing adequate experience in this kind of work.
- c) All scaffolds and appliances connected therewith and all ladders shall – (i) be of sound material (ii) be of adequate strength having regard to the loads and strains to which they will be subjected, and, (iii) be maintained in proper condition
- d) Scaffolds shall be so constructed that no part thereof can be displaced in consequence of normal use.
- e) Scaffolds shall not be overloaded and so far as practicable the load shall be evenly distributed.
- f) Before installing the lifting gear on scaffolds, special precaution shall be taken to ensure the strength and stability of the scaffolds.
- g) Scaffolds shall be periodically inspected by a competent person.
- h) Before allowing a scaffold to be used by his workmen, the Contractor shall, whether the scaffold has been erected by his workmen or not, take steps to ensure that it complies fully with the regulation herein specified.
- i) Working platforms, gangways shall (i) be so constructed that no part thereof can sag unduly or unequally, (ii) be so constructed and maintained having regard to the prevailing conditions as to reduce as far as practicable risks of persons tripping or slipping and (iii) be kept free from any unnecessary obstruction.
- j) In the case of working platforms, gangways working places and stairways at a height exceeding 2.00 metre (to be specified) (i) every working platform and every gangway shall be closely boarded unless other adequate measures are taken to ensure safety. (ii) every working platform and every gangway shall have adequate width, and (iii) every working platform, gangway, working place and stairway shall be suitably fenced.
- k) Every opening in the floor of a building or in a working platform shall, except for the time and to the extent required to allow the access of person or the transport or shifting of materials. be provided with suitable means to prevent the fall of persons or material.



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- l) When persons are employed on a roof where there is danger of falling from a height exceeding 3.00 (to be specified) meters suitable precaution shall be taken to prevent the fall of persons or material.
- m) Suitable precautions shall be taken to prevent persons being struck by articles which might fall from scaffold or other working places.
- n) Safe means of access shall be provided to all working platforms and other working places.

Clause 32: Hoisting Appliances

The Contractor shall comply with the following regulations as regards the hoisting appliances to be used by him.

Hoisting machines and tackle including their attachments, anchorages and supports shall (i) be of good mechanical construction, sound material and adequate strength and free from patent defect, and (ii) be kept in good repair and in working order.

- a) Every rope used in hoisting or lowering materials or as a means of suspension shall be of suitable quality and adequate strength and free from patent defect.
- b) Hoisting machines and tackles shall be examined and adequately tested after erection on the site and before use and be re-examined in position at intervals to be prescribed by Engineer-in-charge.
- c) Every chain, ring, hook, shackle, swivel and pulley block used in 'hoisting or lowering materials or as a means of suspension shall be periodically examined.
- d) Every crane driver or hoisting - appliance operator shall be properly qualified,
- e) No person who is below age of 15 years shall be in control of any hoisting machine, including any scaffolds, nor shall give signals to the operator.
- f) In the case of every hoisting machine and of every chain ring hook shackle, swivel and pulley block used in hoisting or lowering or as a means of suspension the safe working load shall be ascertained by adequate means.
- g) Every hoisting machine and all gears referred to in preceding regulation shall be plainly marked with the safe working load.
- h) In the case of hoisting machine having a variable safe working load, each safe working load and conditions under which it is applicable shall be clearly indicated.
- i) No part of any hoisting machine or gear referred to in regulation 'g' above shall be loaded beyond the safe working load except for the purpose of testing.
- j) Motors, gears, transmissions, electric wiring and other 'a. dangerous parts of hoisting appliances shall be provided with sufficient safeguards.
- k) Hoisting appliances shall be provided with such means as will reduce to a minimum the risk of the accidental descent of the load.
- l) Adequate precautions shall be taken to reduce to minimum the risk of any part of a suspended load becoming accidentally displaced.

Clause 33: Measures for prevention of Fire

The Contractor shall not set fire to any standing jungle, trees, bush wood or grass without a written permit from the Engineer-in-charge. When such permit is given, and also in all cases when destroying cut or dug up tress, bush wood, grass etc. by fire, the Contractor shall take necessary measures to prevent such fire spreading to or other-wise damaging surrounding property. When such permit is given, and also in all cases when destroying cut or dug up tress, bush wood, grass etc. by fire, the Contractor shall take necessary measures to prevent such fire spreading to or otherwise damaging surrounding property.



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Clause 34: Liability of Contractors for any damages done in or outside work area

Compensation for all damage done intentionally or unintentionally by Contractor's labourers whether in or beyond limits of LSGD/KSIDC property including any damage caused by the spreading of fire mentioned in the Clause 33, shall be estimated by the Engineer-in-charge, or such other Officer as he may appoint and the estimates of the Engineer-in-charge, shall be final and the Contractor shall be bound to pay the amount of the assessed compensation on demand, failing which the same will be recovered from the Contractor as damages in the manner prescribed in Clause 8 or deducted by the Engineer-in-charge from any sums that may be due or become due from LSGD/KSIDC to the Contractor under this contract or otherwise.

The Contractor shall bear the expenses of defending any action or other legal proceeding that may be brought by any person for injury sustained by him owing to neglect of precautions to prevent the spread of the fire and he shall also pay the damages and cost that may be awarded by the court in consequence.

Clause 35: Work not to be sublet

Contract may be rescinded and security deposit forfeited for subletting it without approval or for bribing a public officer or if Contractor becomes insolvent: The contract shall not be assigned or sublet without the written approval of the Engineer-in-charge. And if the Contractor shall assign or sublet his contract or attempt to do so or become insolvent or commence any proceeding to get himself be adjudicated an insolvent or make any compromise with his creditors or attempt to do so, the Engineer-in-charge may, by notice in writing rescind the contract, Also if any bribe, gratuity, gift, loan, perquisite, reward or advantage, pecuniary or otherwise, shall either directly or indirectly be given, promised or offered by the Contractor, or any of his servants or agents to any public officer or person in the employ of LSGD/KSIDC in anyway relating to his office or employment, or if any such officer or person shall become in any way directly or indirectly interested in contract, the Engineer-in charge may thereupon by notice in writing rescind the contract. In the event of contract being rescinded, the security deposit of the Contractor shall thereupon stand forfeited and be absolutely at the disposal of LSGD/KSIDC and the same consequence shall ensue as if the contract had been rescinded under Clause 10 hereof and in addition the Contractor shall not be entitled to recover or be paid for any work there for actually performed under the contract.

Clause 36: Sums payable by way of compensation to be considered as reasonable compensation without reference to actual loss:

All sums payable by a Contractor by way of compensation under any of these conditions shall be considered as a reasonable compensation to be applied to the use of LSGD/KSIDC without reference to the actual loss or damage sustained and whether any damage has or had not been sustained.

Clause 37: Change in the constitution of firm to be notified:

In the case of a Bid by partners, any change in the constitution of a firm shall be forthwith notified by the Contractor to Engineer-in-charge for his information.

Clause 38: Works to be under directions of Chief Engineer/ Engineer in charge:

All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects of Chief Engineer/Engineer in charge of LSGD for the time being, who shall be entitled to direct at what point or points and in what manner they are to be commenced and from time to time carried on.

Clause 39: Disputes to be referred to Tribunal:



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1. The disputes relating to this contract, so far as they relate to any of the following matters, whether such disputes arise during the progress of the work or after the completion or abandonment thereof, shall be referred to the Arbitration Tribunal as notified by KSIDC/LSGD
 - (i) The rates of payment under Clause 13 for any tools, materials and stores, in or upon the works of the site thereof or belonging to the Contractor or procured by him and intended to be used for execution of the work or any part thereof possession of which may have been taken by the Engineer-in-charge under the said Clause - 13.
 - (ii) The reduction in rates made by the Engineer-in-charge under Clause 9 from the items of works not accepted as completed fully in accordance with the sanctioned specifications.
 - (iii) The rate of payment for any class of work which is included in the additional or altered work carried out by the Contractor in accordance with the instructions of the Engineer-in-charge under Clause 21 and the rates for which is to be determined under the said Clause 21.
 - (iv) The rates of payment for materials already purchased or agreed to be purchased by the Contractor before receipt of notice given by the Engineer-in-charge under Clause 15, and/or the amount of compensation payable to the Contractor under the said Clause for loss in respect of such materials.
 - (v) The amount of compensation which the Contractor shall be liable to pay under Clause 24 in the event of his failure to rectify, remove or reconstruct the work within the period specified in the written intimation or the amount of expenses incurred by the Engineer-in-charge under the said Clause 24 in rectifying, removing or re-executing the work or in removing and replacing the materials or articles complained of.
 - (vi) The reduction of rates as may be fixed by the Engineer-in-charge under Clause 24 for the interior work or materials as accepted or made use of.
 - (vii) The amount of compensation payable by the Contractor for damages as estimated and assessed under Clause 34.
 - (viii) The amount payable to the Contractor for the work carried out under Clause 41 in accordance with the instructions and the requirements of the Engineer-in-charge in a case where there are no specifications.
2. The provision of Arbitration Act, shall in so far as they are inconsistent with the provision of this Act cease to apply to any dispute arising from a works contract and all arbitration proceedings in relation to such dispute before an arbitrator, court of authority shall stand transferred to the Tribunal.
3. The awards declared by the arbitrator should be speaking award, giving reasons and calculations for every item of claims. The decision will have to be implemented by all the departments of the State Govt. and Public Sector Enterprises of Kerala.
4. In case of dispute leading to the Contractor or Govt. of Kerala approaching to Court of Law, it shall be within the jurisdiction where the site of work is situated.
5. The reference to arbitration proceeding under this Clause shall not (i) affect the right of the Engineer-in-charge under Clause 13 to take possession of all or any tools plants, materials and stores in or upon the works of site thereof belonging to the Contractor or procured by him and intended to be used for the execution of the work or any part thereof. (ii) Preclude the Engineer-in-charge from utilizing the materials purchased by the Contractor in any work or from removing such materials to other places, during the period the work is stopped or suspended in pursuance of notice given to the Contractor under Clause 22. (iii) Entitle the Contractor to stop the progress



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of the work or the carrying out the additional or altered work in accordance with the provisions of Clause 21 or as the case may be, of Clause 41.

Clause 40: Lump sum in estimates

When the estimate on which a Bid is made includes lump sum in respect of part of the work, the Contractor shall be entitled to payment in respect of the items of work involved or the part of the work in question at the same rates as are payable under this contract for such items, or if the part of the work in question is not in the opinion of the Engineer-in-charge capable of measurement, the Engineer-in-charge may, at his discretion, pay the lump sum amount entered in the estimate and the certificate in writing of the Engineer-in-charge shall be final and conclusive against the Contractor with regard to any sum or sums payable to him, under the provisions of this Clause.

Clause 41: Action where there are no specifications

In the case of work for which there is no such specification, such work shall be carried out in accordance with the Divisional Specification and in the event of there being no Divisional Specifications, then, in such case the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-charge.

Clause 42: Definition of work

The expression "work" or "works" where used in these conditions shall, unless, there be something in the subject or context repugnant to such construction be construed to mean the work, or the works, contracted to be executed under or in virtue of the contract. Whether temporary or permanent and whether original, altered, substituted or additional.

Clause 43: Compensation under the Workmen's Compensation Act:

The Contractor shall be responsible for paying compensation to his workman payable under the Workmen's Compensation Act, 1923 (VIU of 1923, hereinafter called the said Act) for injuries caused to the workmen, if such compensation is paid by LSGD/KSIDC as principal under sub section 12(1) of the said Act on behalf of the Contractor it shall be recoverable by LSGD/KSIDC from the Contractor under sub-section. 12 (2) of the said section. Such compensation shall be recovered in the manner laid down in Clause 8 above.

Clause 44: Medical aid to worker for bodily injury

The Contractor shall be responsible for and shall pay the expenses of providing medical aid to any workmen who may suffer a bodily injury as a result of an accident. If such expenses are incurred by KSIDC/LSGD, the same shall be recoverable from the Contractor for with and be deducted, without prejudice to any other remedy of LSGD/KSIDC from amount due or that may become due to the Contractor.

Clause 45: Personal safety equipment and first aid apparatus

The Contractor shall provide all necessary personal safety equipment and first aid apparatus available for use of the person employed on the site and shall maintain the same in suitable condition for immediate use at any time.

Clause 46: Quantity Analysis

The quantities shown in the Bid are approximate and no claim shall be entertained for quantities of work executed being less than those entered in the Bid. In the case quantities by more than 30 % the new rate will be paid to the Contractor for the quantities in excess of 30%. The rates for the increased quantities as aforesaid will be fixed in the manner specified in Clause 21.



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Clause 47: Delay in starting

No compensation shall be allowed for any delay caused in the starting of the work or account of delay in making available the full site of land at a time.

Clause 48: Delay in Execution

No claim for compensation shall be allowed for any delay in execution of the work on account of water standing in borrow pits or compartment. The rates are inclusive of hard or cracked soil, excavation in mud, sub soil water or water standing in borrow-pits and no claim for an extra rate shall be entertained unless otherwise expressly specified.

Clause 49: Entering upon or commencing any portion or work

The Contractor shall not enter upon or commence any portion or work except with the written authority and instruction of the Engineer-in-charge or of his subordinate in charge of the work. Failing such authority, the Contractor shall have no claim to ask measurement of or payment for work.

Clause 50: Minimum age of person employed

No Contractor shall employ any person who is under the age of 15 years.

Clause 51: Payment of fair wages

The Contractor shall pay fair and reasonable wages to the workman employed by him in the contract undertaken by him. In the event of any dispute arising between the Contractor and his workmen on the grounds that the wages paid are not fair and reasonable, the dispute shall be referred without delay to the Engineer-in-charge who shall decide the same. The decision of the Engineer-in-charge shall be conclusive and binding on the Contractor, but such decision shall not in any way affect the conditions in the contract regarding the payment to be made by LSGD/KSIDC at the sanctioned Bid rates.

- (i) The Contractor shall provide drinking water facilities to the workers / labourers employed on works. Amenities relating to sanitation shall also be provided to the workers/ labourers employed on works. If the Contractor fails to comply with 'these provisions', the Engineer-in-charge shall give notice in writing and if the Contractor does not provide this facility to the workers/ labourers within a period of ten days from the date of the notice in writing, the Engineer-in-charge shall thereupon make the arrangement for drinking water at the cost of the Contractor.
- (ii) The Contractor shall provide the amenity of proper shade and shelter to the workers/ labourers and their children on work as soon as the work starts. If the Contractor fails to provide shed and shelter, the Engineer-in-charge shall provide the same at the cost of Contractor.

Clause 52: Method of payment

Payment to Contractor shall be made by means of NEFT/RTGS transfer to the account of the contractor or cheque drawn on any treasury within the division convenient to them, provided the amount exceeds Rs.10 (Amount not exceeding Rs.10 will be paid in cash).

Clause 53: Rates exclusive of GST

The rates to be quoted by the Contractor must be inclusive of all applicable taxes except GST. GST if applicable shall be paid extra. No extra payment on this account will be made to the Contractor.



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Clause 54: Fair Wages

If the Contractor fails to pay within '7' (Seven) days to the labourer(s)/worker(s) the minimum wages prescribed by Authority under the Minimum Wages Act, 1948 as in force from time to time, the Engineer-in-charge shall be at liberty to deduct the amount payable to the labourer(s)/workers from his (Contractors') bills or deposit(s) payable by the Contractor after making due inquiries and establishing the claim(s) of the labourer(s)/worker(s).

Clause 55: List of Machinery

The Contractors shall also give a list of machineries in his possession and which they propose to use on the work.

Clause 56: Local labour on normal rates

The Contractor shall have to engage local labour and person seeking available on normal rate.

Clause 57: Vaccination of labour

The Contractor shall employ only such labour who shall produce a valid certificate of having been vaccinated against small pox within a period of last three years.

Clause 58: Worker Amenities

Drinking water: The Contractor shall as far as possible provide an adequate supply of chlorinated pure potable drinking water for the use of labourers. This provision shall be at the rate of minimum 4.5 liters per head, where there is a suitable drain, river or well within 0.4 kms of the camp. However, arrangement should as far as possible, be made to chlorinate water by chlorinated tablets before it is allowed for drinking purpose.

Toilet facility: The Contractor shall construct semi-permanent latrines for the use of labourers on the following scale, namely; (a) Where females are employed, there shall be at least one latrine for every 25 females (b) Where males are employed, there shall be at least one latrine for every 25 males provided that where the number of males or female exceed 100, it shall be sufficient if there is one latrine for every 25 males or females, as the case may be up to the first 100 and one for every 50 thereafter.

Privacy in latrines: Every latrine shall be under cover and so partitioned off as to secure privacy, and shall have a proper door and fastenings.

Notice to be displayed outside latrines and urinals: Where workers of both sexes are employed there shall be displayed outside each block of latrine and urinal a notice in the language understood by the majority of the workers for Men Only or for Women Only: as the case may be. The notice shall also bear the figures of a man or of women, as the case may be.

Urinals: There shall be at least one urinal for male/female workers up to 50 employed at a time. Provided that where the number of male or female workmen, as the case may be, exceeds 500. It shall be sufficient if there is one urinal for every 50 males or females up to the first 500 and one for every 100 males or females or part thereof.

Latrines and Urinals to be accessible: (i) The latrines and urinals shall be conveniently situated and accessible to workers at all times at the establishment. (ii) The latrines and urinals shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times (iii) Latrines and urinals other



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than those connected with a flush sewage system shall comply with the requirements of the Public Health Authorities. Water for latrines and urinals: Water shall be provided by means of pipes or tanks or otherwise, so also be conveniently accessible in or near the latrines and urinals. Bathing and washing places: (1) the Contractor shall construct sufficient number of bathing places; every unit of 20 persons being provided with a separate bathing place. 12) Washing places should also be provided for the purposes of washing clothes. Every unit of 30 persons shall have at least one washing place. (3) such bathing and washing places should be suitably screened and separate places provided for male and female workers. (4) Such facilities shall be conveniently accessible and shall be kept in clean and hygienic condition.

Drainage: The Contractor shall make sufficient arrangement for draining away the sewerage water as well as water from the bathing and washing places and shall dispose off this waste water in such a way as not to cause nuisance. The Contractor should obtain a permission from the Kerala Pollution Control Board, if water is so be drained in river or near the well. The Contractor would put malarial oil once in a week in stagnant water round about the residence.

Medical facilities: The Contractor shall engage a medical officer with a traveling dispensary for a camp having 500 or more persons if there is no Government or other private dispensary situated within 6 km from the camp.

Conservancy and cleanliness: The Contractor shall provide the necessary staff for effecting the satisfactory conservancy and cleanliness of the camp to the satisfaction of the Engineer-in-charge. At least one sweeper per 200 persons should be engaged. Conservancy staff should dump refuse in compost pit, away from the labour camp.

Health Provisions: The District Health Officer of the District or the Deputy Director of Health Services shall be consulted before opening a labour camp and his instructions on matters, such as the water supply, sanitary convenience, the camp-site, accommodation and food supply shall be followed by the Contractor.

Precautions against epidemic: (a) The authorities in charge of the colonies should get the labourers; inoculated against cholera and plague and Vaccinated against smallpox at the time of recruitment, If they are not inoculated or vaccinated within 6 months or 3 years respectively prior to the date of recruitment. (b) When, in any labour camp there is an epidemic disease or is threatened with such an outbreak, the authorities in charge of the labour camps should ensure that all the inmates of the labour colonies are inoculated or vaccinated as the case may be, depending on the diseases, within 72 hours after the outbreak. (c) The authorities in charge of the labour colony should arrange to communicate by wire regarding the outbreak of the epidemic diseases on the very day of the outbreak, to the District Health officer or to the Deputy Director of Public Health in charge of that area and the Director of Public Health. Thereafter they should continue to send daily reports to the above officers in the prescribed form regarding the progress of the epidemic disease. (d) When the authorities in charge of the labour colony suspect or have reason to believe that any inmate of the labour colony is suffering from the infectious or contagious disease, they shall forthwith arrange for the segregation of such persons to isolated huts to be specifically provided for the purpose and also for their treatment. (e) As regional malaria epidemic outbreaks are likely to occur in such project areas, the authorities in charge of the labour colonies should report promptly the occurrence of unusual incidence of cases of malaria and also inform the District Health Officers of the District, Deputy Director of Public Health (Malaria) and the Director of Public Health and also arrange to institute all necessary antimalarial measures as may be advised by the officials of the Public Health Department. (f) The authorities in charge of the colonies should also arrange to carry out any other measures that may be



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recommended by the officials of the Public Health Department necessary to prevent or control the spread of disease.

Clause 59: Gumboots, hand gloves, masks etc. to labourers

Contractor shall have to arrange for the supply of gumboots. Hand gloves, mask etc. invariably to the labourers workers engaged by the Contractor on asphalt work.

Clause 60: No distinction, etc.

The Contractor shall not show any distinction between Harijan and other class of labourers/workers employee to carry out the work.

Clause 61: Fencing and Lighting

- a) The Contractor shall, unless otherwise specified, be responsible for the proper fencing, lighting grading and taking of the necessary safety measures for all works comprised in the contract and for the proper provision of temporary road, way, foot-way, guards, fences, caution notices, etc. as far as the same may be rendered necessary by reasons of the work for the accommodation of workmen, foot passengers or other traffic and of owners and occupiers of adjacent property and the public and shall remain responsible for any accidents that may occur on account of his failure to take proper & timely precautions.
- b) All the arrangements made for fencing and lighting shall be maintained by the Contractor through the currency 'of the contract till the physical taking over of the work by department.

Clause 62: Liabilities for accidents to persons

Responsibilities and liabilities of the Contractor under Workmen's Compensation Act are given in Clause No. 43. In addition, following shall also apply:

- (a) On the occurrence of an accident, which results in death of workmen employed by the Contractor or which is so serious as is likely to result in death of any such workmen, the Contractor, shall within 24 hours of happening of such accident(s) intimate, in writing to the Engineer-in-charge the fact of such accident(s). The Contractor shall indemnify LSGD/KSIDC against all loss or damage sustained by the contractor resulting directly or indirectly from his failure to give intimation in the manner aforesaid including the penalties or fines, if any, payable by the LSGD/KSIDC as a consequence of contractor's failure to give notice under the Workmen's Compensation Act or otherwise to conform to the provisions of the said act in regard to such accident(s).
- (b) In the case of an accident, in respect of which compensation may become payable under Workmen's Compensation Act, whether by the Contractor or by the LSGD/KSIDC as principal Employer, it shall be lawful for the Engineer-in-charge to retain out of money due and payable to the Contractor, such sum or sum of money as may, in the opinion of the Engineer-in-charge, be sufficient to meet such a liability. The opinion of the Engineer-in-charge shall be final in regard to all matters arising under this Clause.

Clause 63: Access to site and work on site

The Engineer may, if he considers fit from time to time, enter upon any land(s) which may be in possession of the Contractor for this contract for the purpose of executing any work not included in this contract and may execute such works not included in this contract by agents or by other Contractors, at his opinion and the Contractor shall, in accordance with the requirements of the Engineer-in-charge, afford all reasonable



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facilities for execution of the work including occupation of lands by structure or otherwise for any other Contractor employed by the LSGD/KSIDC and his workmen or for the workmen of the LSGD/KSIDC who may be employed in the execution on or near the site of the work not included in the contract or of any contract in connection with or ancillary to the work and in default, the Contractor shall be liable to the LSGD/KSIDC for any delay or expense incurred by reason of such default.

Clause 64: Reports regarding labour:

The Contractor shall submit the following reports to the Engineer-in-charge: (i) A daily report in the suitable form of the strength of labour both skilled and unskilled employed by him on the work(s). The Contractor shall increase or decrease the strength both skilled and unskilled, if directed by the Engineer-in-charge. The submission of such reports shall not, however, relieve the Contractor of his responsibilities and duties regarding progress or any other obligations under the contract. (ii) A classified weekly return in the suitable form of the number of person employed on the works during the preceding week (iii) A weekly medical report in the suitable form showing the health of the Contractor's camp, the number of persons ill or incapacitate and the nature of their illness. (iv) A report of any accident, which may have occurred, to be sent within 24 hours of the occurrence, (v) Such other report as may be prescribed.

Clause 65: Treasure Trove:

In the event of discovery by the Contractor or his employees, during the progress of work of any gold, silver, oil or other minerals of any description and precious stones, treasures, coins, antiquates, relic, fossils or other articles or value of interest whether geological, archaeological or any other such treasure & other things shall be deemed to be the absolute property of the LSGD/KSIDC and the Contractor shall duly preserve the same to the satisfaction of the Engineer-in-charge from time to time, and relieve the same to such persons as the Engineer-in-charge may appoint. The Contractor shall take all reasonable precautions to prevent his workmen or any other person from removing or damaging, any such articles or things, immediately after the discovery thereof and before removal acquaint the Engineer-in-charge with such discovery and carry out his orders for the disposal of the same.

Clause 66: Indemnity:

The Contractor shall indemnify LSGD/KSIDC against all actions, suits, claims & demands through or made against the Department in respect of work of this Contractor against any loss damage to Department in consequence of any action or suit being brought against the Contractor for anything done or omitted to be done in execution of the work of this contract.

Clause 67: Insurance of Labours:

The Contractor shall be responsible to arrange for insurance of all labourers, skilled and unskilled, workers, and supervisors etc., employed by him as per labour regulation of the State.

Clause 68: Setting Out:

The Contractor shall be responsible for the true and proper setting out of the works and the correctness of positions, levels, dimensions and alignments of all parts of the work and for the provisions of all necessary instruments, appliance and labour in connection therewith. If, at any time, during the progress of the work, any errors, appear or arise in the position, levels, dimensions or alignments of any part of the work, the Contractor, on being required to rectify such errors by the Engineer-in-charge shall at his own expense do so to the satisfaction of the Engineer-in-charge.



The checking of and setting out of any line or level by the Engineer-in-charge or his representative shall not in any way, relieve the Contractor of his responsibilities for the correctness of the error. The Contractor shall carefully protect and observe all benchmarks, site-nails, page and other things used in setting out of the work(s).

Clause 69: Cement Register:

Not applicable.

Clause 70: Materials and Works Test Register:

A register in the prescribed form showing day-to-day receipt, consumption and balance of cement on site of work by the Department and every entry thereof shall invariably be signed by the Contractor or his authorised representative in taken of its correctness.

Clause 71: Progress Schedule:

The Contractor shall furnish within one month (unless extended by the Engineer-in-charge) of receipt of work order to start the work, the progress schedule in quadruplicate indicating the date of starting, the monthly progress expected to be achieved and the anticipated completion date of each major item of work to be done by him, also indicating dates of procurement and setting up the materials, plants and machinery. The schedule should include a statement of proposed general and detailed arrangements for carrying out works, and of item, order and manner in which it is proposed general and detailed arrangements for carrying out works and of item, order and manner in which it is proposed that these shall be executed. The schedule should be framed keeping requirement of the Clause 9 of Bid form in view and be such as in practice to the achievement towards completion of the work in the time limit and of the particular items on the dates specified in the contract and shall have the approval of the Engineer-in-charge. Further, the dates for the progress, as in this schedule shall be adhered to.

- a) in case it is found necessary, at any stage to alter the schedule, the Contractor shall submit in, good time a revised schedule incorporating necessary modification proposed and get the same approved from the Engineer-in-charge. No revised schedule shall be operative without such acceptance in writing. The Engineer-in-charge is further empowered to ask for more detailed schedule or schedules, any week by week, for any item and the Contractor shall supply the same as and when asked for.
- b) The Engineer-In-charge shall have, at all times, the right, without in any way vitiating this contract forming grounds for any claim, to alter the order of the work of any part thereof and the Contractor shall after receiving such direction, proceed in the order directed. The Contractor shall also revise the progress, schedules accordingly and submit four copies of the revised schedule. The Engineer in-charge within seven day; of the said Engineer's to alter the order of works.
- c) The Contractor shall sufficient plant, equipment and labour and shall work such hours and shifts as may be necessary to maintain the progress of the work as per approved progress schedule. The working and shift hours shall comply with all the Govt. regulations in force and shall be such, as may be approved by the Engineer-in-charge and the same not be varied without the prior approval of Engineer-in-charge.
- d) The Contractor shall from time to time, as may be required by the Engineer-in-charge, furnish the Engineer-in-charge with a statement in writing of the arrangements he proposes to adopt for the execution of this contract and the Engineer-in-charge may, if he considers necessary at any time advice alternation in the same, which the Contractor shall adopt on notice thereof.
- e) The progress-schedule(s) shall be in the form of progress chart, forms, statements and/or reports as may be approved by the Engineer-in-charge. The Contractor shall submit four copies showing



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the progress of the work in the form of a chart etc., at periodical intervals as may be specified by Engineer-in-charge.

- f) The approval of the progress schedules by the Engineer-in-charge shall not relieve the Contractor of schedule required by the Engineer-in -charge shall not entitle the Contractor to any extra payment.

Clause 72: License

Before starting the work, the Contractor will have to obtain the license from the District Assistant Labour Secretary under the Contract Labour (Regulation and Abolition) Act, 1970 after paying necessary fees and deposit on the basis of the number of labourers to be employed on the work and will have to supply two true copies of the said license to the Deputy Executive Engineer before the work is started.



SECTION V: TECHNICAL SPECIFICATIONS



GENERAL SPECIFICATIONS

Scope of Work

1) Scope of Work (9 months)

The broad scope of work to be carried out by the selected contractor includes but not limited to Reclamation of the MSW site at Brahmapuram as per SWM Rules 2016, levelling, compaction and reformation of waste slopes at [site]

The project intends to undertake the works required for Dumpsite Land Reclamation through Bio-mining of Municipal Solid Waste/Legacy Waste, resource recovery and scientific disposal of residual solid waste at the solid waste treatment plant of Corporation at Brahmapuram. The contract shall be awarded to the successful bidder ("the contractor") for a period of 9 months reckoned from the date of signing of contract agreement or the date of issue of Consent to Establish (CTE) to the project, whichever is earlier. The Authority shall appoint an Engineer (the "Engineer-in charge") for overall supervision, monitoring and certification of the works executed by the contractor. The brief scope of work to be carried out by the selected contractor during the execution of the intended project includes, but not limited to, the following component:

- (i) The works shall be carried out by the contractor as per the specifications provided in this document and scope of works provided in this section.
- (ii) The contractor shall carry out Total Station Survey of complete project site including area earmarked in which Bio-mining is to be done. Total Station Survey shall be certified by the Engineer-in-charge. The survey shall be done at the time of possession of the site as well as at the completion of each milestone of physical progress of land reclamation at the site. The survey report shall be submitted along with each running bill. The area earmarked by Authority for Reclamation through Bio-mining shall be considered as 100% area for the scope of work.
- (iii) Minimum 80% of the earmarked land to be reclaimed which is presently covered by old/ legacy MSW waste.
- (iv) The Contractor shall carry out baseline environmental survey of the site as per EMP and specification.
- (v) The Contractor shall conduct its own due diligence for site investigation, analyzing the characteristics, composition and quantum of the waste at the Project site.
- (vi) Dumpsite reclamation will be done by dividing the site into suitable sectors/loops in consultation of the Engineer-in-charge based on the priority of land reclamation.
- (ix) Excavating the existing mixed compacted MSW in the land portion allocated/earmarked by the Authority and sieving them by Mechanical sieving machine or any other suitable technology proposed and accepted by the Engineer-in-charge.



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Kochi Municipal Corporation



- (x) The contractor shall deploy sufficient machinery, manpower and required resources to execute the project scope within the project duration.
- (xi) Provision, installation, operation and maintenance of plant, machineries, infrastructure facilities and amenities for excavation, sieving of the excavated MSW, storing the segregated materials, reuse, marketing, selling, and transporting them from the project site.
- (xii) Construction of temporary shed, platform and creation of facilities for handling, separating, segregating, storing and quantifying of the excavated MSW and processing material.
- (xiii) Excavating the soil which lost its stability due to MSW dumping with necessary dewatering works in the portion of the land earmarked at the cost of the Contractor.
- (xiv) MSW waste brought for segregation and processing from the earmarked land portion shall be quantified (in Cubic meter, and weight based on number of vehicles trips and capacity) after excavation and record of the same shall be maintained by the Contractor and Authority jointly.
- (xv) Segregate the excavated MSW in the land portion earmarked into as many kinds and categories as possible of Useful Material such as compost, soil conditioner, recyclables, raw RDF, filler material (Soil, C&D) and Un-useful material such as residual Solid Waste.
- (xvi) Packing, storing, stacking, selling, diverting for recycling, marketing and recycling of all Useful Material within thirty days of segregation at the cost of the Contractor, without accumulation in the storage facility at the project site beyond thirty days.
- (xvii) Baling, packing, stacking, storing and sale of non-recyclable fraction of high calorific as raw material to RDF / Pellets using appropriate technology and sale to waste to energy or co-processing in cement plants or to thermal power plants.
- (xviii) **Contractor shall produce the copy of agreement entered into with the cement kiln in disposing the RDF prepared**
- (xix) Stacking, transporting, spreading and compacting the segregated C&D, Soil and Inert as filler material in low level and depression area within the site and prepare well compacted and clear ground for proposed development at site or disposing such material in the low level area or quarry area designated by the authority.



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- (xix) Scientific disposal of residual Solid Waste/inert waste shall be carried out as per SWM Rules 2016, SWM CPHEEO Manual 2016 and instructions of the Engineer-in-charge within thirty days of segregation at the cost of the Contractor, without accumulation in the storage facility at the site beyond thirty days.
- (xx) The revenue or the income from the sale of the segregated Useful Material such as reusable and recyclable, Compost, soil conditioner, raw RDF, C&D, Soil or any other by-product materials shall go to the contractor's account. However, before selling the recovered material the Contractor, at its own cost, will conduct a lab testing of such materials from an NABL accredited lab, for the parameters as recommended by the Engineer-in-charge or applicable rules/guidelines, and submit the report of the same to the Engineer-in-charge. The contractor shall initiate the sale or disposal process of the material by-products only after the acceptance/approval of the engineer-in-charge.
- (xxi) The Contractor shall hand over reclaimed land and scientific residual solid waste disposal site to the Authority in a good and acceptable condition as per SWM Rules 2016.
- (xxii) Record of the residual solid waste disposal quantity (in Cubic meter, based on number of vehicles trips and capacity) shall be maintained by the Contractor and the Authority jointly.
- (xxiii) Carrying out the entire project work in accordance with the Detailed Plan of Action and schedule proposed by Bidder and approved by the Authority at the cost of the Contractor.
- (xxiv) Using only covered body vehicles for the transportation of materials at the cost of the Contractor.
- (xxv) Apply method, process, equipment and resources which would reduce the impact of dumpsite reclamation activity in the adjacent areas.
- (xxvi) Create facilities and make arrangements for controlling/ mitigating the emission, pollution and contamination (Environment impact) including air, water and soil including mitigation for dust, odor and noise pollution at the cost of the Contractor **and measures for dust mitigation shall be displayed prominently at site for public viewing**
- (xxvii) Construction of temporary site office, water, power, sanitation facilities and accommodation facilities of workers for the Project as per statutory standards at the cost of the Contractor.



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Kochi Municipal Corporation



(xxviii) Providing security arrangement for the project site, machineries, equipment etc. at its own cost

(xxix) Completing the work within the Contract Period.



1.1 Air Quality, Water Quality and Noise Monitoring at dumpsite

- To carry out the ambient air quality monitoring parameters like Suspended Particulate Matter, RSPM, Methane, Carbon Monoxide, Carbon di-oxide, Nitrogen oxides, Sulphur dioxide.
- These data need to be collected quarterly from commencement to end of the work.
- The first collection of data on these parameters or any additional parameters, as finalised in consultation with Kerala Pollution Control Board (KPCB), vetted by KPCB laboratory or its accredited laboratory, as the first activity, will form the Base line.
- To carry out the water quality (surface and ground water), noise levels, soil characteristics before commencement of work. Ground water quality is to be assessed in either existing or established test bore-wells upstream and downstream of the site. This base line data needs to be established in consultation with Kerala Pollution Control Board, vetted by KPCB laboratory or its accredited laboratory. A report on the hydrology of the site is to be developed and findings are to be considered during the design of the landfill cover and required infrastructure.
- Post completion monitoring is to be performed semi-annually for two years, for ambient air quality and water quality parameters listed above and as directed by KPCB

2) Environmental Management Plan

In order to ensure the optimal performance of the Closure site, it is important to check the environmental pollution and comply with the regulatory requirements, the following environmental parameters shall be monitored on a regular basis.

- Surface & Ground Water Quality
- Ambient Air Quality

The above parameters shall be monitored as per the standards stipulated in SWM Rules 2016. The frequency of sampling and location for monitoring are given below.

Components of Environmental Monitoring

Sl. No.	Description	Frequency
1	Quality of Water in wells within site	Once in 3 months
2	Ground Water Quality – Outside the Site	Once in 3 months
3	Air Quality	Once in 3 months

The monitoring shall meet the standards recommended by MoEF in SWM Rules 2016.

The samples shall be collected as per the sampling plan and monitored as per the standards stipulated in SWM Rules 2016.

Sampling Specifications for Environmental Monitoring

Description	Sampling Specifications
Surface Water Quality	One grab sample each at up-stream side and down-stream of treated leachate out fall into River once in three months. Summer, pre-monsoon and post monsoon.
Ground Waste Quality	One sample each from the monitoring well on upstream side and down-stream side of the landfill site once in three months. Summer, pre-monsoon and post monsoon.
Ambient Air Quality	24 hours continuous ambient air quality monitoring at one location in upwind and three locations in downwind directions twice a year.

Table 1: Surface Water Quality Parameters



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Kochi Municipal Corporation



Sl. No	Test Parameters	Unit	SW1	IS: 2296: Class 'C' Water
1	Colour	Hazen	<5	300
2	pH value	-	7.25	6.5-8.5
3	Total Dissolved Solids	mg/L	340	1500
4	Total Hardness	mg/L	128	N.S
5	Total Suspended Solids	mg/L	4	N.S
6	Chloride (as Cl ⁻)	mg/L	40	600
7	Sulphate as (SO ₄ ²⁻)	mg/L	32	400
8	Oil & Grease	mg/L	N.D	N.S
9	Sodium (as Na)	mg/L	10	N.S
10	Potassium (as K)	mg/L	3	N.S
11	DO	mg/L	1.8	4
12	BOD at 27°C	mg/L	4	3
13	COD	mg/L	20	N.S
14	Iron as Fe	mg/L	0.11	50
15	Lead (as Pb)	mg/L	N.D	0.1
16	Arsenic (as As)	mg/L	N.D	0.2
17	Chromium (as Cr)	mg/L	N.D	N.S
18	Cadmium (as Cd)	mg/L	N.D	N.S
19	T. Coliform	MPN/100ml	43	5000
20	Faecal coliform	MPN/100ml	11	N.S

Table 2: Ground Water Parameters

Sl. No	Parameters	IS 10500: 1991 Desirable limit (mg/l except for pH)
1	Arsenic	0.05
2	Cadmium	0.01
3	Chromium	0.05
4	Copper	0.05
5	Cyanide	0.05
6	Lead	0.05
7	Mercury	0.001
8	Nickel	-
9	Nitrate as NO ₃	45.0
10	PH	6.5-8.5
11	Iron	0.3
12	Total hardness (as CaCO ₃)	300.0
13	Chlorides	250
14	Dissolved solids	500
15	Phenolic compounds (as C ₆ H ₅ OH)	0.001
16	Zinc	5.0
17	Sulphate (as SO ₄)	200

Table 3: Air Quality Parameters

Sl.No	Parameters	Acceptable Limits
1	Sulphur dioxide	120 µg/m ³ (24hrs)
2	Suspended Particulate Matter	500 µg/m ³ (24hrs)
3	Methane	Not to exceed 25 per cent of the lower explosive limit (equivalent to 650 mg/m ³)



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Kochi Municipal Corporation



3) Health of Staff and Labour

The filthy Working condition/environment at the old garbage dump site may possess harmful contaminants, all the workers shall be provided with the personnel protective equipment like masks, gloves, goggles, protective caps, gum boots, uniform, etc. The care shall be taken by providing oxygen cylinders, first aid facilities at the site at all times.

Mitigation of immediate health and safety hazards, such as hazardous substance vapor exposures in enclosed spaces where people work and/or live, contaminated drinking water supplies, imminent hazardous substance release to surface water, etc.

Education and specialized training certificates (including health and safety) of personnel likely to be assigned to work on landfill remediation projects (for both onsite and project management personnel). Contractor shall provide equipment and monitor the work place to protect workers from safety and health hazards.

All necessary precautions shall be taken by the Contractor to ensure the health and safety of staff and labour engaged at the site for the execution of the project as well as during the Post Closure Operation & Maintenance. The Contractor shall, in collaboration with and to the requirements of the local health authorities, ensure that medical staff, first aid facilities, sickbay and ambulance service are available on the Project Site at all times, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics. The Contractor shall maintain records and make reports concerning health, safety and welfare of personnel, and damage to property, in such manner as the Engineer may reasonably require. Safety Precautions and Emergencies and Protection of Environment

Responsibility for Safety:

The Contractor shall be solely responsible notwithstanding any stipulations by owner or Engineer for initiating, maintaining and supervising all safety precautions and programmes, in connection with the work and shall comply with all laws, ordinance, code rules, regulations and lawful orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damages, injury or loss during the entire contract period including non-working hours. On the occurrence of an accident arising out of the works which result in death or which is so serious as to be likely to result in death, the Contractor shall within one hour of such accident intimate in writing to the Engineer the facts stating clearly and with sufficient details the circumstances of such accidents and subsequent action taken by him. The matter should also to be reported to the local police station immediately. All other accidents on the works involving injuries to the persons or property other than that of the Contractor shall be promptly reported to the Engineer clearly and with sufficient details the facts of such accidents and the action taken by the Contractor. The Contractor shall submit the following within 15 days of receipt of Work Order and get approved from Engineer. Failing to do so, a fine of Rs. 5000/- (Rupees Five Thousand) per day shall be imposed on the Contractor.

Safety Measures:

The Contractor shall, throughout the execution and completion of the works and the remedying of any defects therein:

- a) Have full regard for the safety of all persons entitled to be upon the site and keep the site (so far as the same is under his control) and the works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons.
- b) Provide barricading for the work site as per the drawings and specifications provided in Volume II. Provide and maintain at this own cost all lights, guards, fencing, warning signs and watching,



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- when and where necessary or required by the Engineer or by any duly constituted authority, for the protection of the works or for the safety and convenience of the public or others, and
- c) Take all reasonable steps to protect the environment on and off the site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation.
 - d) The Contractor shall appoint a safety engineer to be responsible for the safety of personnel on the Project Site. This safety engineer shall be qualified for his work and shall have the authority to issue instructions concerning safety and take protective measures to prevent accidents.

7) Schedule for Various Milestone

Milestones required to be achieved within the given timeframe are as follows:

- Recovering Plan: The dumpsite recovering plan must be accompanied by detailed drawings and site plans for the intended recovering of the dumpsite. The dumpsite recovering and management plan shall provide a time schedule for the completion of all the works specified. Drawings should include design drawings indicating proposed movement of waste, compaction and potential partial land reclamation. Design drawings for an appropriate leachate collection and treatment system and a storm water management system should also be provided.

8) Environmental Standards

Contractor has to follow the Environmental Standards as mentioned below

- 1) Air Quality Monitoring: As per Solid Waste Management Rules 2016 (SWM Rules 2016) or amendments thereafter with respect to baseline site parameters.
- 2) Noise Monitoring – As per Noise Pollution Rules 2000 or amendments thereafter with respect to baseline site parameters.
- 3) Leachate Treatment – As per Solid Waste Management Rules 2016 (SWM Rules 2016) or amendments thereafter with respect to baseline site parameters.
- 4) Odour Monitoring – As per CPCB guidelines 'Odour Pollution & Its Control May 2008' or amendments thereafter with respect to baseline site parameters.
- 5) Water Quality Monitoring - As per Solid Waste Management Rules 2016 (SWM Rules 2016) or amendments thereafter with respect to baseline site parameters.
- 6) Contractor has to make all the necessary arrangement for monitoring of environmental standards to meet the SPCB conditions.
- 7) Contractor may appoint a professional agency approved by MoEF/NABET for carrying out the monitoring.

After completion of the work, the contractor has to maintain the site in good condition and remove all equipment and machinery used for the work.

Performance security of the contractor will be released only after the entire project site has been handed over to LSGD/KSIDC without encumbrances unless it is decided to buyback the plant and machinery at a mutually agreed value.

If the plant and machinery are not removed within the stipulated period, the same shall be removed and disposed of, by LSGD/ KSIDC

9) Special conditions



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Kochi Municipal Corporation



3) Health of Staff and Labour

The filthy Working condition/environment at the old garbage dump site may possess harmful contaminants, all the workers shall be provided with the personnel protective equipment like masks, gloves, goggles, protective caps, gum boots, uniform, etc. The care shall be taken by providing oxygen cylinders, first aid facilities at the site at all times.

Mitigation of immediate health and safety hazards, such as hazardous substance vapor exposures in enclosed spaces where people work and/or live, contaminated drinking water supplies, imminent hazardous substance release to surface water, etc.

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Responsibility for Safety:

The Contractor shall be solely responsible notwithstanding any stipulations by owner or Engineer for initiating, maintaining and supervising all safety precautions and programmes, in connection with the work and shall comply with all laws, ordinance, code rules, regulations and lawful orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damages, injury or loss during the entire contract period including non-working hours. On the occurrence of an accident arising out of the works which result in death or which is so serious as to be likely to result in death, the Contractor shall within one hour of such accident intimate in writing to the Engineer the facts stating clearly and with sufficient details the circumstances of such accidents and subsequent action taken by him. The matter should also to be reported to the local police station immediately. All other accidents on the works involving injuries to the persons or property other than that of the Contractor shall be promptly reported to the Engineer clearly and with sufficient details the facts of such accidents and the action taken by the Contractor. The Contractor shall submit the following within 15 days of receipt of Work Order and get approved from Engineer. Failing to do so, a fine of Rs. 5000/- (Rupees Five Thousand) per day shall be imposed on the Contractor.

Safety Measures:

The Contractor shall, throughout the execution and completion of the works and the remedying of any defects therein:

- a) Have full regard for the safety of all persons entitled to be upon the site and keep the site (so far as the same is under his control) and the works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons.
- b) Provide barricading for the work site as per the drawings and specifications provided in Volume II. Provide and maintain at this own cost all lights, guards, fencing, warning signs and watching,



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when and where necessary or required by the Engineer or by any duly constituted authority, for the protection of the works or for the safety and convenience of the public or others, and

- c) Take all reasonable steps to protect the environment on and off the site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation.
- d) The Contractor shall appoint a safety engineer to be responsible for the safety of personnel on the Project Site. This safety engineer shall be qualified for his work and shall have the authority to issue instructions concerning safety and take protective measures to prevent accidents.

7) Schedule for Various Milestone

Milestones required to be achieved within the given timeframe are as follows:

- Recovering Plan: The dumpsite recovering plan must be accompanied by detailed drawings and site plans for the intended recovering of the dumpsite. The dumpsite recovering and management plan shall provide a time schedule for the completion of all the works specified. Drawings should include design drawings indicating proposed movement of waste, compaction and potential partial land reclamation. Design drawings for an appropriate leachate collection and treatment system and a storm water management system should also be provided.

8) Environmental Standards

Contractor has to follow the Environmental Standards as mentioned below

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- 2) Noise Monitoring – As per Noise Pollution Rules 2000 or amendments thereafter with respect to baseline site parameters.
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- 5) Water Quality Monitoring - As per Solid Waste Management Rules 2016 (SWM Rules 2016) or amendments thereafter with respect to baseline site parameters.
- 6) Contractor has to make all the necessary arrangement for monitoring of environmental standards to meet the SPCB conditions.
- 7) Contractor may appoint a professional agency approved by MoEF/NABET for carrying out the monitoring.

After completion of the work, the contractor has to maintain the site in good condition and remove all equipment and machinery used for the work.

Performance security of the contractor will be released only after the entire project site has been handed over to LSGD/KSIDC without encumbrances unless it is decided to buyback the plant and machinery at a mutually agreed value.

If the plant and machinery are not removed within the stipulated period, the same shall be removed and disposed of, by LSGD/ KSIDC

9) Special conditions




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Kochi Municipal Corporation



There will be no lease of land to the contractor. Such right of entry however will be restricted to the plant and machinery set up by the contractor and will under no circumstances be extended to the land. As specified above, there will be no lease of land to the contractor and hence the question of creation of encumbrances on the land does not arise.

The bidders should familiarize themselves with the site conditions, and also carry out necessary site visits, surveys, studies / testing, analysis of the existing Solid Waste with due diligence at their own cost prior to the bidding. Bidders will be allowed to take bores at site to ascertain density at different levels and to carry out analysis of strata. All the data/information/maps provided in the tender are indicative only. Contractor shall not bring any dispute regarding any data provided in the tender, variation in quantity and characteristics of Solid Waste as he is expected to do his own studies.

- 1) Documentary evidence shall be provided for technical evaluation and all documents & technical proposal submitted shall be part of contract. The same plan shall be adhered for implementation. No change in the plan is allowed without the approval of LSGD
- 2) All the designs and equipment submitted in technical proposal should be reflected in the financial proposal. If any discrepancy is observed in the financial proposal with rate analysis and is not justified satisfactorily by the bidder, the bid shall be rejected.
- 3) KSIDC shall be absolved from any litigation which may arise subsequently due to violation of the contract and any applicable norms/rules.

Methodology for handling existing site at Brahmapuram

Management of the project and methodology required to be adopted for handling existing solid waste at Brahmapuram shall include the following

- 1) The contractor should ensure handling of waste from dump site with utmost safety and under standard hygienic conditions.
- 2) The waste removed from the dump sites is to be safely transferred to the required area within the site. The contractor will prepare a layout clearly showing the storage area required for the garbage along with allied activities.
- 3) The storage area should be provided with necessary infrastructure like security and access control/s, camera monitoring and recording features etc by the contractor.
- 4) A separate first aid facility will be provided at the dumping site within 100 m of the treatment facility.
- 5) Contractor may plan to work in three shifts
- 6) The hardware and technology adopted may include but not limited to the following:
 - Deploying of all requisite inputs viz., Solid Waste collection & handling equipment and vehicles, JCB, dumpers etc. will be contractor's responsibility.
 - The plant and machineries necessary for each of the above steps will be part of the proposal submitted to KSIDC for approval.
 - The plan proposed should be comprehensive in terms of providing a source to end solution.

Submissions of plan and methodology for the project

Bidders will submit the following documents along with the technical bid as per Form 9.

- 1) Detailed approach & methodology including work plan and methodology including monsoon period for contract period.
- 2) All relevant plans/design drawings as specified in this section




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The approach & methodology including work plan should also include a section on design & engineering including BOQ. The successful bidder will be required to further refine the proposed approach and methodology including design and engineering before starting implementation on approval of LSGD/ KSIDC .

Mobilization & Construction period and commencement of the project

Scientific Clearing of the dumpsite should be accomplished within Nine months from the receipt of LOA/work order.

Contract Period

Contract period will be 9 months for construction including monsoon period from the date of LOA/Work Order.

Monsoon Period

Additional care to be taken during the monsoon period (15th June to 15th September) to avoid leachates and odour problem by covering the garbage appropriately. Plan needs to be submitted and adhered to the plan.



Secretary
Kochi Municipal Corporation

ZIPL/202122BD/2021-22/130

August 4, 2021

The Secretary,
Kochi Municipal Corporation (KMC),
Kochi

Dear Sir,

Subject: Rehabilitation of Municipal Solid Waste dumpsite at Brahmapuram for Local Self Government Department, Government of Kerala. – **NIT Survey Report: Reg.**

Reference:

1. Tender No: KSIDC/PMU/W2E/15/2020, Dated 24-06-2020
2. Kochi Corporation Council Resolution No 1, Dated 22-07-2021
3. LOA No: MOE2/3760/20, Dated 23-07-2021

This is in reference with the above subject project, we M/s Zonta Infratech Pvt. Ltd being the successful bidder, the above work is awarded to us and subsequently the LOA has been issued. As directed by you we would come to Kochi on Monday 9th August 2021 for finalizing and signing the Agreement.

The scope of above subject work is as detailed in the RFP and essentially to clear the legacy waste spread in the Brahmapuram dumpsite by adopting bio-mining process and capping methods as per the SWM rules-2016 so as to reclaim and hand over a clear vacant land to the extent of 80% of the waste spread area. We would be submitting a detailed Implementation Plan describing the various steps and other technical parameters to be adopted for the subject Project.

As per the RFP, we have assessed the area and legacy waste quantity by carrying out a Total Station Survey prior to the bid submission. Based on the said, the legacy waste spread area and quantity of legacy waste, we have prepared the technical & financial bids and submitted the quote.

In the LOA issued to us (M/s Zonta Infratech Pvt. Ltd). It is informed that area to be reclaimed and subsequent quantity of waste to be Biomined as per the assessment done by National Institute of Technology (NIT), Calicut. We are now in receipt of the report of NIT, Calicut from you.

We have reviewed the survey report including the quantity assessment done by NIT Calicut. Accordingly, as per the total station survey statement of NIT Calicut, the following are the observations which needs to be confirmed from your side.

1. The quantity of waste as per NIT, Calicut survey report is 5,51,903.30 Cum which does not include the quantity of waste in the compost shed and shall not be included in the quantity of bio-mining/capping. The same may be confirmed.



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Kochi Municipal Corporation



2. The total quantity of legacy waste assessed by NIT Calicut authorities is 5,51,903.00 Cum as against our assessment quantity of 475,139.00 Cum. There is a difference (excess) of quantity of waste of 76,764.00 Cum, which is outside the scope of the bio-mining and capping.
3. The fresh waste received in the site from the date of NIT survey i.e. 08-02-2021 is to be quantified and accounted. Please confirm that this quantity shall be excluded from the project.

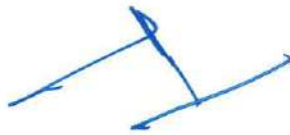
In view of the above, we request you to kindly confirm the above understanding at the earliest for preparation and submission of Implementation Plan.

We look forward to your support and assure you with best of our services.

Thanking You,

Yours' Faithfully,
For Zonta Infratech Private Limited

Ganga Maheswari. I
Deputy General Manager- Projects



Secretary
Kochi Municipal Corporation



2. The total quantity of legacy waste assessed by NIT Calicut authorities is 5,51,903.00 Cum as against our assessment quantity of 475,139.00 Cum. There is a difference (excess) of quantity of waste of 76,764.00 Cum, which is outside the scope of the bio-mining and capping.
3. The fresh waste received in the site from the date of NIT survey i.e. 08-02-2021 is to be quantified and accounted. Please confirm that this quantity shall be excluded from the project.


In view of the above, we request you to kindly confirm the above understanding at the earliest for preparation and submission of Implementation Plan.

We look forward to your support and assure you with best of our services.

Thanking You,

Yours' Faithfully,
For Zonta Infratech Private Limited

Ganga Maheswari. I
Deputy General Manager- Projects



Secretary
Kochi Municipal Corporation



ZIPL/202122BD/2021-22/155

September 2, 2021

The Secretary,
Kochi Municipal Corporation (KMC),
Kochi

Dear Sir,

Subject: Rehabilitation of Municipal Solid Waste dumpsite at Brahmapuram for Local Self Government Department, Government of Kerala. – **Confirmation of date for Signing of Agreement -Reg.**

Reference:

1. Tender No: KSIDC/PMU/W2E/15/2020, Dated 24-06-2020
2. Kochi Corporation Council Resolution No 1, Dated 22-07-2021
3. LOA No: MOE2/3760/20, Dated 23-07-2021
4. ZIPL/202122BD/2021-22/097, Dated 24-07-2021
5. ZIPL/202122BD/2021-22/130, Dated 04-08-2021
6. Our email sharing Draft Contract Agreement with Annexures, Dated 06-08-2021

At the outset, we hope you and your team are doing well and safe in this pandemic situation.

This is in reference to your telephonic conversation with our Company Secretary, Mr. Sreeju S Nair, on the subject project and the Contract Agreement execution.

In this regard, we humbly bring to your kind attention the following key technical aspects with reference to the scope of works which are submitted by us to your good office vide our letter ref (5) for your confirmation:

1. The quantity of waste lying at the project area, as per NIT Calicut survey report, is 5,51,903.30 Cum. This quantity does not include the quantity of waste in the existing compost shed and thus, shall **not be included** in the quantity to be bio-mined/capped under the subject project.
2. As said above, the total quantity of legacy waste assessed by NIT Calicut authorities is 5,51,903.00 Cum as against our assessment quantity of 475,139.00 Cum. There is a difference (excess) of quantity of waste of 76,764.00 Cum, and that shall remain **outside the scope of the subject bio-mining and capping.**
3. As you are aware, the fresh waste is continued to be received in the site from the date of NIT survey i.e., 08-02-2021 till date. This quantity has to be quantified and accounted for excess waste. Please confirm that this **quantity shall be excluded from the project.**

We understand that as per your telephonic discussions with our Company Secretary, it is assured that the above points will be accorded approval, and necessary confirmation will be issued; and further it has been suggested to proceed with signing of Agreement and execution of project work.

We do acknowledge that the project works need to be commenced at the earliest so that the activities at site can be timely commenced and completed. Accordingly, we also have proactively taken the following



Secretary

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PIN No : U74110KA2013PTC071241 | GST No. 29AADC13846A1ZR



steps post receipt of LOA for timely commencement of works and we will be pacing up the activities after agreement signing:

- 1) **Baseline Environmental Survey** : We have identified and are in the process of finalizing the expertized agency and will be taking up the service as soon as Agreement is signed.
- 2) **Detailed Implementation plan** : Preparation of the same, based on the area and Quantity of legacy waste as presented in the RFP is under way and will be completed in about 45 – 60 days and will be submitted for approval.
- 3) **Mobilization of equipment, vehicles, manpower** etc. is in process and will be deployed and work will be commenced as soon as implementation plan is approved.

In view of above, it is essential to sign the Agreement at the earliest and we propose to be in the Corporation office for signing the agreement on 06-09-2021. We request your kind confirmation on the date so that we can make necessary arrangements towards the same.

We look forward to your support and assure you with best of our services.

Thanking You,

Yours' Faithfully,
For Zonta Infratech Private Limited



Antony Ponraj
Vice president- Projects & Implementation



Secretary
Kochi Municipal Corporation



FINALREPORT ON

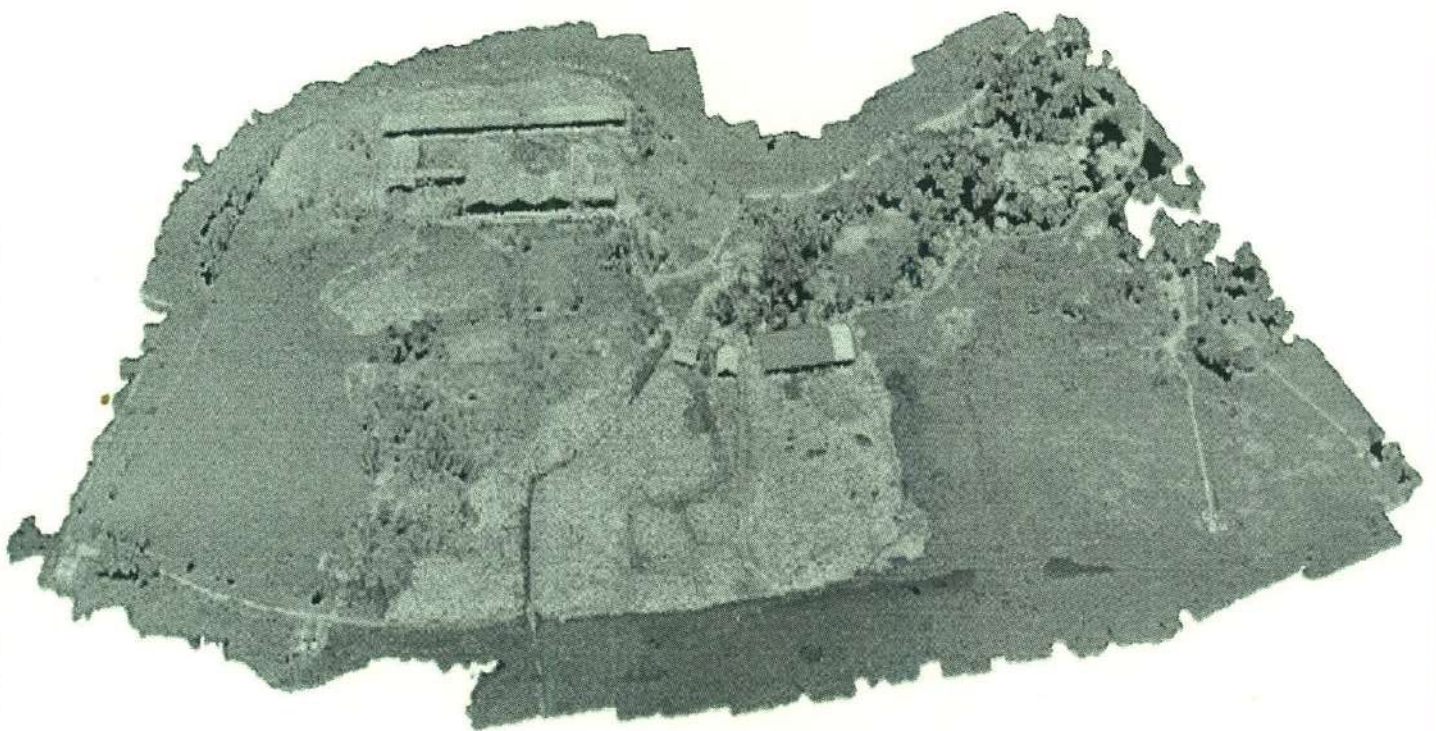
ASSESSMENT OF VOLUME OF LEGACY WASTE AT

THE

BRAHMAPURAMSOLID WASTE DUMP YARD

OF THE KOCHI MUNICIPAL CORPORATION

BY DRONE SURVEY



CONSULTANT CONTRACTOR



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APRIL 2021





FINAL REPORT ON

ASSESSMENT OF VOLUME OF LEGACY WASTE

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APRIL 2021





Project Information	
Document Type	Survey Report
Project	ASSESSMENT OF VOLUME OF LEGACY WASTE AT THE BRAHMAPURAMSOLID WASTE DUMP YARD OF THE KOCHI MUNICIPAL CORPORATION BY DRONE SURVEY
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Project No.	NITC-GMSPL-2021
Report No.	NITC-GMSPL-01-BrahmapuramDrone Survey -Final Report

Description of Report		
Volume No.	Type	Title
NA	Drone Survey Final Report	ASSESSMENT OF VOLUME OF LEGACY WASTE AT THE BRAHMAPURAMSOLID WASTE DUMP YARD OF THE KOCHI MUNICIPAL CORPORATION BY DRONE SURVEY





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5	DEM of the Brahmapuram Solid Waste Dump Yard	(Attached Separately)





1.0 INTRODUCTION

Location: Brahmapuram Solid Waste Dump Yard of the Kochi Municipal Corporation

Date of survey : 8th and 9th February 2021

Director of Urban Affairs, Govt. of Kerala, through a letter dated 3rd December 2020, had sought the expertise/ technical services of the Department of Civil Engineering, NIT Calicut, for assessing the quantity of legacy waste at the solid waste dump yard located at Brahmapuram in Kochi. A separate request in this regard was also sent by the Administrator, Kochi Municipal Corporation, on 5th December 2020. Department of Civil Engineering expressed willingness to offer its services for this purpose. However, it was informed that the field survey work cannot be directly done due to lack of manpower. After discussions with the concerned officials of the Kochi Municipal Corporation through telephonic conversations and letters, four options to proceed with the work was presented before the Administrator, Kochi Municipal Corporation, on 16th December 2020. After reviewing the same, the Secretary, Kochi Municipal Corporation, requested the Department of Civil Engineering, NIT Calicut, to carry out the work by conducting a fresh survey, under its supervision and guidance, through an agency identified by the Department of Civil Engineering, NIT Calicut. Department of Civil Engineering, NITC, engaged an agency, M/S Geo Marine Solutions Private Limited, Sankaigudda, Bejai - 575004, Mangaluru to carry out a drone survey and perform an assessment of the volume of legacy waste at the Brahmapuram solid waste dump yard of the Kochi Municipal Corporation, under their overall guidance and supervision. The work was taken up by M/S Geo Marine Solutions Private Limited, Mangaluru, and the field survey work was performed on the 8th and 9th of February 2021 in the presence and under the supervision and guidance of the Consultants from the Department of Civil Engineering, NITC. Details of the personnel involved in the work are presented in Table A-1 in the Annexure to this report. In this report (Report No. NITC-GMSPL-01-Brahmapuram Drone Survey-Final Report), details pertaining to the drone survey, and assessment of the volume of legacy waste at the Brahmapuram solid waste dump yard are presented.




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1.1. Scope of the Work

The overall scope of the work is to perform an assessment of the volume of legacy waste at the Brahmapuram solid waste dump yard of the Kochi Municipal Corporation after conducting a drone survey. The sequence of operations is as follows:

- (i) Fixing of ground control points (GCPs) and referencing these with respect to the Bench Mark (BM)
- (ii) Performing aerial survey using a drone, following an optimal flight path, and acquisition of data required for performing the volume assessment
- (iii) Post processing the data acquired during the drone survey and estimating the volume of legacy waste at the Brahmapuram solid waste dump yard of the Kochi Municipal Corporation
- (iv) Delivery of the report, maps etc

1.1.1 Survey equipment and software

The following equipment and software were used in this survey.

1. DJI Phantom 4 Pro Version 2 - drone for data acquisition
2. CHC i70 GNSS STATIC/ RTK-Positioning System
3. Pix4D software for post processing
4. Hypack Max 2020 software for computation of volume
5. ArcGIS software for data processing



Figure 1. Unmanned Aerial Vehicle



Figure 2. Three Axis Gimbal Camera

1.1.2 Area of the survey

The Brahmapuram solid waste dump yard of the Kochi Municipal Corporation is located in Ernakulam District, Kerala, within the areal limits of the Corporation. The co-ordinates of the dump yard are: Latitude 9°59'29.73"N and Longitude 76°21'52.35"E.

NITC-GMSPL-01-Drone Survey Report



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2.0 FIELD SURVEY

An area of approximately 0.583km²/ 58.2924ha/144.044acres in the project site was surveyed using a drone in order to calculate the volume of legacy waste accumulated in the dump yard. After the field survey, the following activities were performed using the data collected.

- (i) Preparation of an ortho-mosaic map of the site
- (ii) Preparation of a digital elevation model (digital surface model) of the site
- (iii) Preparation of a contour map of the site

2.1 Field Operations

A brief summary of the field operations performed in the course of the drone survey are presented in Table 1.

Table 1. Brief summary of the field operations

Date	Activities
08/02/2021	Mobilisation of the survey team and survey equipment at the Brahmapuramsolid waste dump yard, Cochin, Kerala Familiarisation with the site and reconnaissance for marking the ground control points
09/02/2021	Marking the ground control points in the field
09/02/2021	Surveying with a drone

2.2. Survey Methodology

2.2.1. Ground control points

Ground control points (GCPs) are points whose geographical position are known in an object-space reference coordinate system. These points can be positively identified in the images derived from the field survey. The desired number of GCPs for a survey is decided based on factors such as the areal extent of the survey, topography of the area - whether undulating or plain land, vegetative cover in the area etc. In this survey, nine ground control points (GCPs) were fixed using a high quality GNSS system for achieving centimetre level accuracy in horizontal and vertical positions. The GCPs were properly marked on the ground using CHC I70 GNSS base and rover units (RTK-PS system).



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The water level in the Kadambrayar, which is flowing adjacent to the solid waste dump yard and forming its boundary on one side, at the start of the survey was taken as the zero level for the survey (in terms of elevation).

The base station of the GNSS base unit was set up at the Kadambrayar riverjetty and the base point was marked using CHC I70 GNSS base and rover units(RTK-PS system). The elevation of the base point was observed to be about 1.75m above the water level in the Kadambrayar river. This level was considered as the ground level for the entire area for the purpose of calculating the volume of the waste dump. From the base station, the levels were transferred and GCPs were marked at nine different locations in the dump yard. These points were fixed in such a way as to be able to cover the areal extent and undulations within the area to be surveyed. Details of the ground control points are presented in Table 2 and Figure 3. During data processing using the Pix4D mapper software, the GCPs were identified in the image captured during the drone survey and its elevations were verified.

Table 2. Details of the ground control points

GCP No.	Easting	Northing	Elevation (m) (Observed in the field)	Elevation (m) (Observed on the ortho-mosaic map)
GCP0_BASE	649616.74	1104610.06	1.750	1.750
GCP1	649625.45	1104672.685	6.144	6.140
GCP2	649639.057	1104781.61	2.059	2.040
GCP3	649608.434	1104933.401	2.557	2.570
GCP4	649494.203	1105127.233	4.262	4.240
GCP5	649414.707	1104904.653	3.482	3.550
GCP6	649850.374	1104853.649	1.574	1.590
GCP7	649721.959	1104681.508	2.379	2.330
GCP8	649566.247	1104685.348	7.917	7.940





In Table 2, the elevations (with respect to the base station) mentioned in column 4 were obtained using the high precision GNSS system before conducting the drone survey. The base station was fixed in consultation with the representatives of the client. After performing the drone survey, data processing was done using the image processing software (Pix4D) and the digital surface model (DSM) and the ortho-mosaic map were generated. The elevations of the GCP points obtained from the ortho-mosaic map are presented in column 5 of Table 2. It can be observed that these values are reasonably close to each other.

2.2.2. Details of the drone

The drone deployed for the field survey was DJI Phantom 4 Pro Version 2. It has an auto pilot facility and capability to alter camera settings in order to enable capturing high precision geo referenced aerial photos. The specifications of the DJI Phantom 4 Pro Version 2 drone are listed below.

Weight: 1375g

Size: 196mm x 289.5mm

Flight altitude: Maximum - 500m

Flying speed: Maximum- 8m/s

Maximum range of flight: 2.5km from the take-off location

Flight time for each flight: Maximum 20 minutes

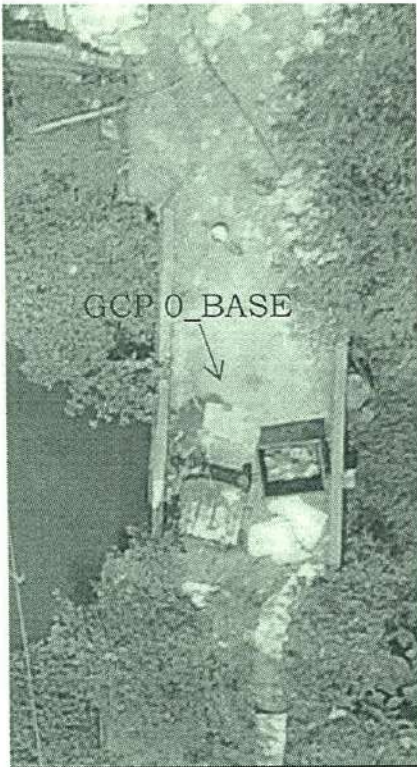
2.2.3. Pre survey plan

DroneDeploy software was used for planning the survey lines. DroneDeploy allows users to pre-program an automated flight path for their drone. To survey the dump yard, four flights (Figure 4) were planned to cover the entire area. In other words, the total area to be surveyed was divided into four zones. The flight line plan in each of these zones are presented in Figures 5, 6, 7, and 8.




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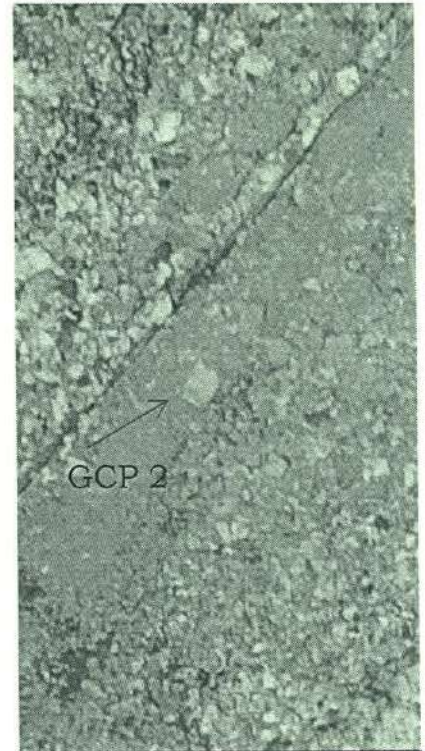




GCP 0_BASE
Easting: 649616.74
Northing: 1104610.06
Elevation: 1.75m



GCP 1
Easting: 649625.45
Northing: 1104672.685
Elevation: 6.144m



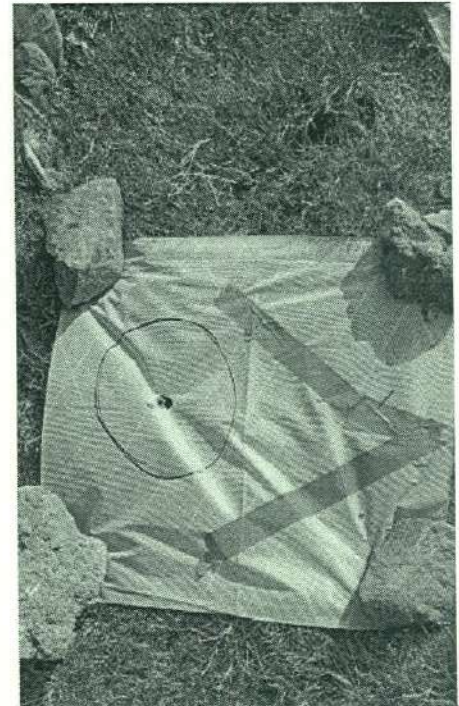
GCP2
Easting: 649639.057
Northing: 1104781.61
Elevation: 2.059m



GCP 3
Easting: 649850.374
Northing: 1104933.401
Elevation: 2.557m

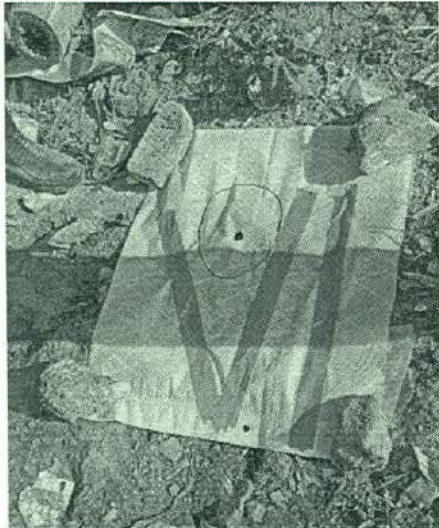


GCP 4
Easting: 649494.203
Northing: 1104681.508
Elevation: 4.262 m

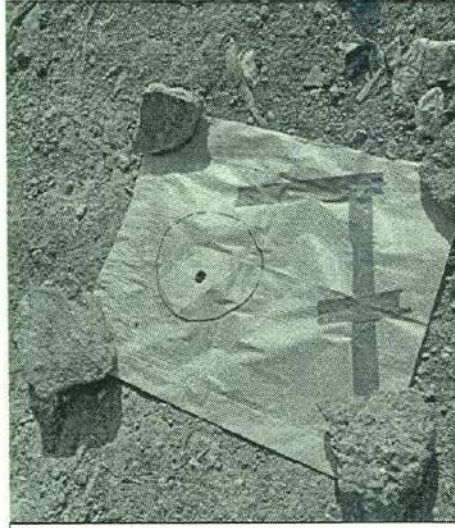


GCP 5
Easting: 649414.707
Northing: 1104904.653
Elevation: 3.482m





GCP 6
Easting: 649608.434
Northing: 1104853.649
Elevation: 1.574m



GCP 7
Easting: 649721.959
Northing: 1104933.401
Elevation: 2.379 m



GCP 8
Easting: 649566.247
Northing: 1104685.348
Elevation: 7.917m

Figure 3. Ground Control Points



Figure 4. Brahmapuram Solid Waste Dump Yard -Area and Zones



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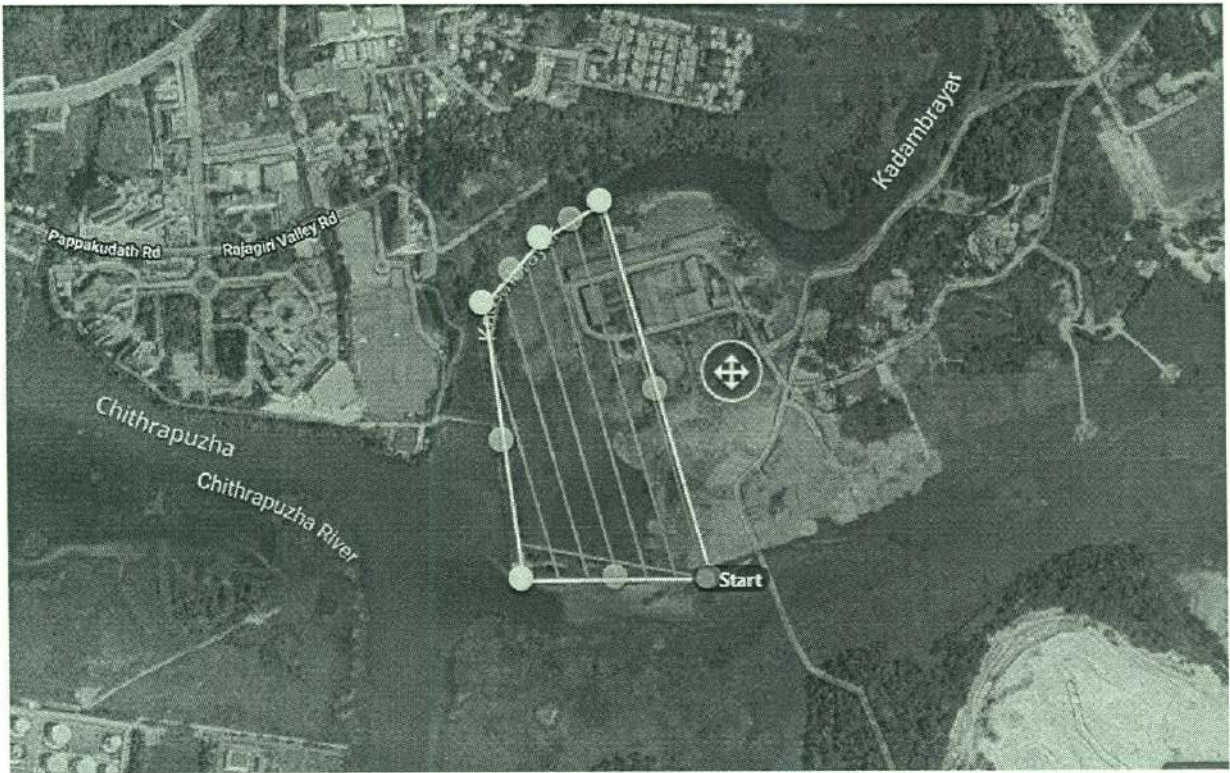


Figure 5. Plan of Flight 1

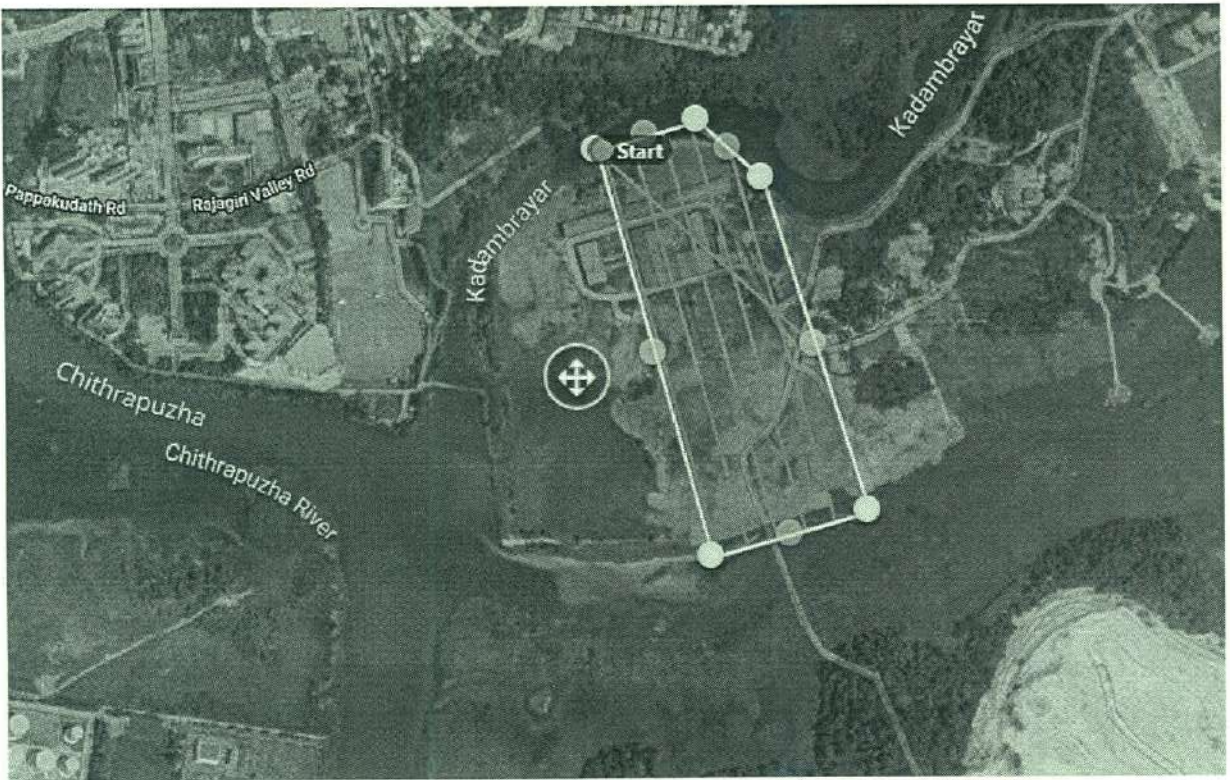


Figure 6. Plan of Flight 2

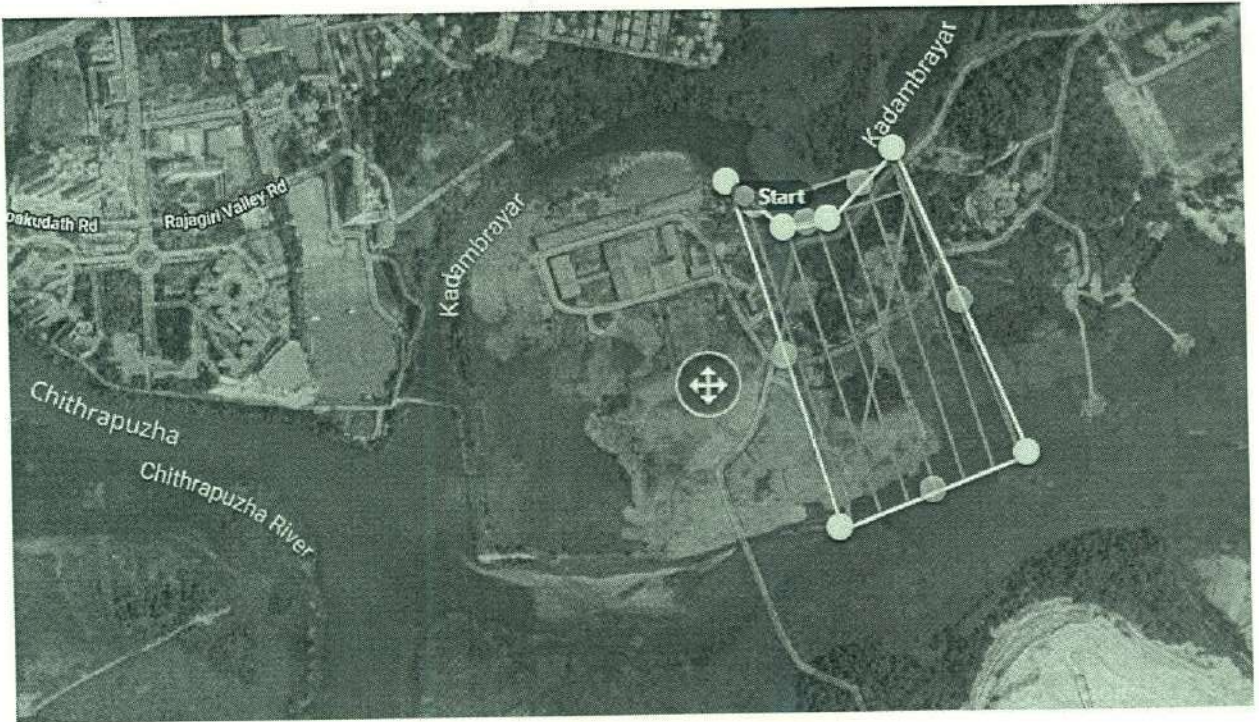


Figure 7. Plan of Flight 3

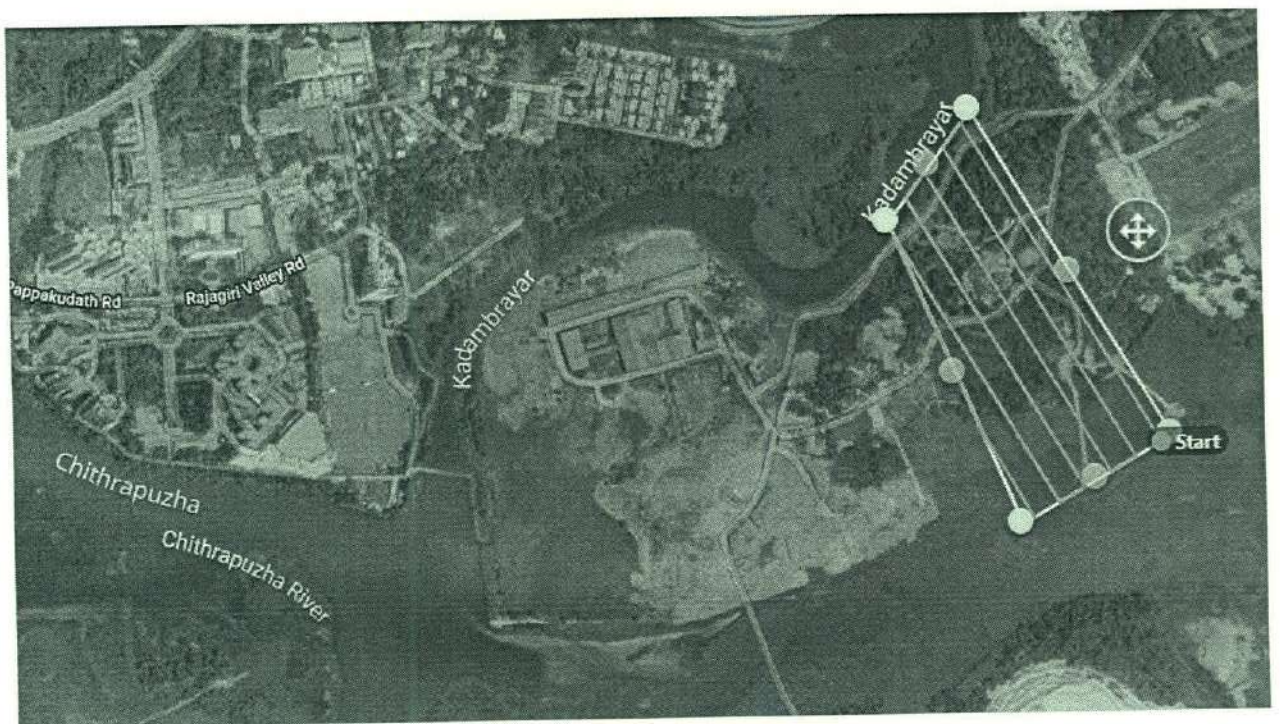


Figure 8. Plan of Flight 4





2.2.4 Data acquisition

The survey was carried out using a drone, following the operations mentioned below in the sequence in which it is listed.

- Marking GCPs using high accuracy GNSS
- Assembling the drone
- Installing its propellers
- Removing the gimbal lock
- Checking for the compass calibration and IMU
- Checking for clearance from obstacles
- Checking the settings of the camera
- Checking for the position of the camera
- Checking the resolution of the image
- Launching the drone and performing the survey – capturing images one by one (443 images were captured in these four flights).

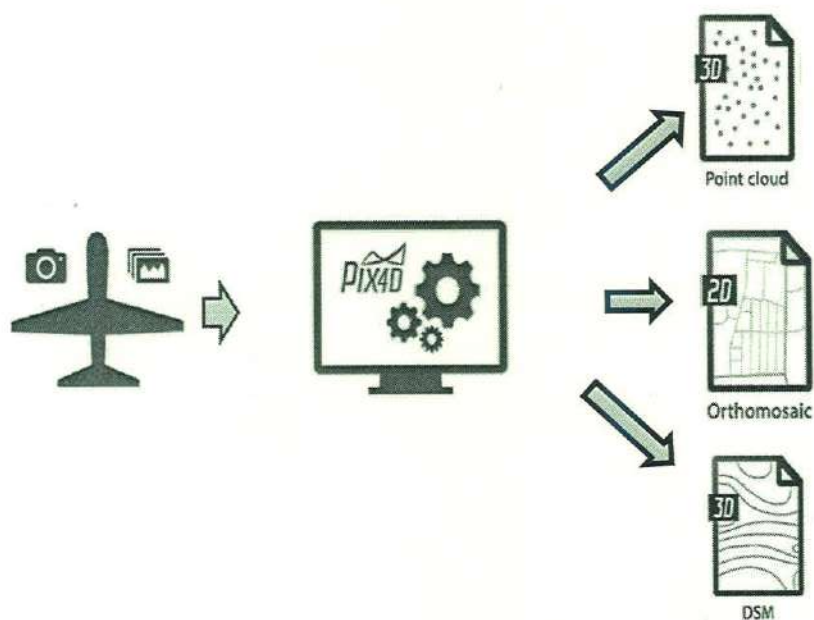


Figure 9. Data Processing - Work Flow Chart





Details pertaining to image resolution

Drone: DJI Phantom 4 Pro Version 2

Resolution: 2.3cm/pixel

Altitude of the flight: 100m above the ground

Total area covered: 0.583sq.km/ 58.2924ha/ 144.044acres

No. of flights: 4

Overlap between adjacent images : 75% front overlap and 65% side overlap

Before the start of the drone survey, the camera/ sensor was calibrated to ensure no pin-cushion or barrel errors. A large imaging sensor was used to capture very sharp, colour-rich images, even in dim light or cloudy conditions. A front overlap of 75% and a side overlap of 65% was planned for each flight path and for the entire survey. A 20 megapixel camera (SONY) was used. The sensor used was 1" CMOS, FOV 84° 8.8mm/24mm (35mm format equivalent) f/2.8-f/11 autofocus at 1m - ∞.

3.0. DATA PROCESSING

The major steps involved in data processing are

1. Initial processing of input data/ image
2. Point cloud pixel generation
3. Generation of Digital Surface Model (DSM) and Ortho-mosaic

Using the image processing software Pix4D, point cloud pixels were created from the images (input) taken during the drone survey. Point clouds are datasets that represent objects or space. These represent the X, Y, and Z geometric coordinates of a point on an underlying sampled surface. Point cloud pixels are a means of collating a large number of single spatial measurements into a dataset that represents the whole. Ground sampling distance (GSD) is the distance between two consecutive pixel centres measured on the ground; this depends on the height of the flight. The higher the value of the image GSD, the lower the spatial resolution of the image, and less visible the details. In the drone survey performed at Brahmapuram, the average GSD is 2.82cm, which is also the resolution of the DSM and the ortho-mosaic (i.e., 2.82cm per pixel).





3.1 Digital Surface Model

The Digital Surface Model (DSM) was generated from the point cloud data in Pix4D software. It depicts the elevations of all the reflective surfaces on the ground such as trees, buildings, vehicles, and all other features existing above the "bare earth". The DSM shows the earth's surface and all objects on it.

3.2. Ortho-mosaic

An ortho-photo, ortho-photograph or ortho-image is an aerial photograph geometrically corrected ("orthorectified") such that the scale is uniform in the entire image. Unlike an uncorrected aerial photograph, an ortho-photograph can be used to measure true distances, because it is an accurate representation of the earth's surface, having been adjusted for topographic relief, lens distortion, and camera tilt. Generation of the ortho-mosaic (true ortho-photo) is performed based on ortho-rectification. This method removes the perspective distortions from the images using a digital surface model (DSM) and can handle all types of terrain, as well as large datasets. A high number of matches/keypoints between adjacent images are required to generate the model. Since distances between points are preserved, horizontal distances can be measured from an ortho-mosaic. The following steps are performed to generate the ortho-mosaic.

Input: Images with perspective (facades are visible, roof do not have the correct size, as the scale is not preserved)

Processing:

- The perspective of the camera and non-uniformity of scale in the images were corrected.
- The images were calibrated and 3D and 2.5D models were computed.
- Images on the 2.5D model were projected to generate the ortho-mosaic.

Output: Ortho-mosaic is generated (facades are not visible, roofs have the correct size, since scale is uniform in the entire image).

The software can be used to generate the digital surface model (DSM) from the pixel data and subsequently the ortho-mosaic map is generated.



Handwritten signature

Secretary
Kochi Municipality





The ortho-mosaic is a collage of all the images after ortho rectification, with geo-coordinates and elevation values for all the pixels in the area covered. The ortho-mosaic is a raster image consisting of a very large number of pixels; each pixel has a unique Northing, Easting and Elevation (X, Y, Z) value. Hence, the ortho-mosaic as a whole and each pixel within it are geographically referenced units having a ground elevation value and an image component.



Figure 10.Ortho-mosaic and Digital Surface Model (DSM)

3.3. Contour Map

The entire point cloud data of the ortho-mosaic was exported in XYZ data format to theHypackMax 2020 software.A Triangulated Irregular Network (TIN) model was generated using the XYZ data. From the TIN model, the contours at the desired interval were generated by connecting points (pixels) of equal elevation. For volume computation, contours were generated at 0.5m interval. In the contour map (Annexure 3), the contour intervalis maintained at 1.0m to ensure better visibility of the individual contour lines and clarity.The maximum elevation in the area was observed to be about 20.000m; this elevation corresponds to top of trees in the area. The minimum elevation is the water level, the elevation of which is fixed as 0.000m.While computing the volume of accumulated legacy waste in the dump yard and preparing the contour map,points on the dump only wereconsidered.



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4.0.RESULTS

- Ortho-mosaic Map (Annexure 2)
- Contour Map (Annexure 3)
- Digital Surface and Digital Elevation Models (Annexures 4 and 5)
- Table presenting estimated volume of legacy waste in various sectors

4.1. Computation of the volume of legacy waste

For volume calculation, the entire area was divided into seven sectors as per the specifications given by the Secretary, Kochi Municipal Corporation. The volume of legacy waste in each of these sectors was then computed. Details pertaining to computation of the volume of legacy waste in these seven sectors are presented in Tables 3 and 4. The water level in the Kadambayar near the river jetty was taken as the zero level. The ground elevation at the river jetty base station (GCP 0) which is 1.75m above the water level in Kadambayar was taken as the ground level/ base level for computation of the volume of legacy waste at the solid waste dump yard. For computing the volume of legacy waste in the dump below this level, a cut off level 1.50m below the RL of GCP 0 (equivalent to 0.25m above the water level) was fixed. From the discussions with various officials during the two days when the survey was performed, it is understood that the dump extends into the ground beyond the elevation of the base point and the maximum depth below this level could be of the order of 2- 2.5m.

For performing volume computation, an average depth of 1.5m below the elevation of the base point is assumed. The volume of legacy waste in each of these sectors was computed in two parts: (i) the portion of the dump from the base point (1.75m above the water level in Kadambayar on the date of the survey) to the top of the dump and (ii) the portion of the dump from the base point or the top of the dump in this portion to 1.5m below this level (from 1.75m or the top of the dump in this portion to 0.25 m above the water level in Kadambayar on the date of the survey). While calculating the volume of legacy waste in each sector, the maximum elevation contour over the waste dump area was considered by matching the ortho-mosaic map with the contour map, and all higher elevations, mostly representing tree tops were discarded.





In Tables 3 and 4, the minimum and maximum elevations mentioned in the respective sectors have been determined from the point cloud data of pixel level elevations obtained from the drone survey. The contour maps as well as the surface profile of the dump were generated using this data. Computation of volumes was performed in the software Hypack Max 2020 using the TIN surface to level method. This was also verified using the ArcGIS software.

The volume of legacy waste below the level of GCP 0 was calculated assuming that the dump extends on an average to a depth of 1.5m below this level. However, this volume can be reassessed based on actual measurement of depths at different locations in the solid waste dump, after the existing dump has been cleared upto the level of the base point. Kochi Municipal Corporation may do the needful in this regard. Further, it is also pointed out that a large part of sectors 2 and 4 and a small part of sector 1 are areas that have been capped previously.





Table 3. Elevation and area – sectors 1 to 7

Sector	Observed Maximum Elevation (m)	Observed Minimum Elevation (m)	Area (at +1.750m) (m ²)	Area (at +0.250m) (m ²)
1	12.000	-0.710	81497.80	97061.10
2	5.500	-0.610	5033.90	7612.60
3	8.000	-0.310	15480.50	18310.60
4	5.250	-0.050	9284.20	14056.30
5	6.250	-1.130	11202.50	17835.20
6	6.000	0.340	4609.90	5176.10
7	6.500	0.310	2674.00	2818.40

Table 4. Volume of legacy waste – sectors 1 to 7

Sector	Volume of Legacy Waste (above +1.750m) (m ³)	Volume of Legacy Waste (above +0.250m) (m ³)	Volume of Legacy Waste (between +1.750m and +0.250m)** (m ³)
1	232595.10	371822.90	139227.80
2	7275.90	17436.40	10160.50
3	39023.90	65133.30	26109.40
4	12128.70	30132.70	18004.00
5	20528.10	41303.60	20775.50
6	8637.80	16256.70	7618.90
7	5626.80	9817.70	4190.90
TOTAL	325816.30	551903.30	226087.00

** Assuming an average depth of 1.500 m below the RL of GCP_0, i.e., +1.750 m



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Orthomosaic Map of Brahmapuram Dumpyard, Cochin, Kerala



Figure 11. Ortho-mosaic Map of the Brahmapuram Solid Waste Dump Yard

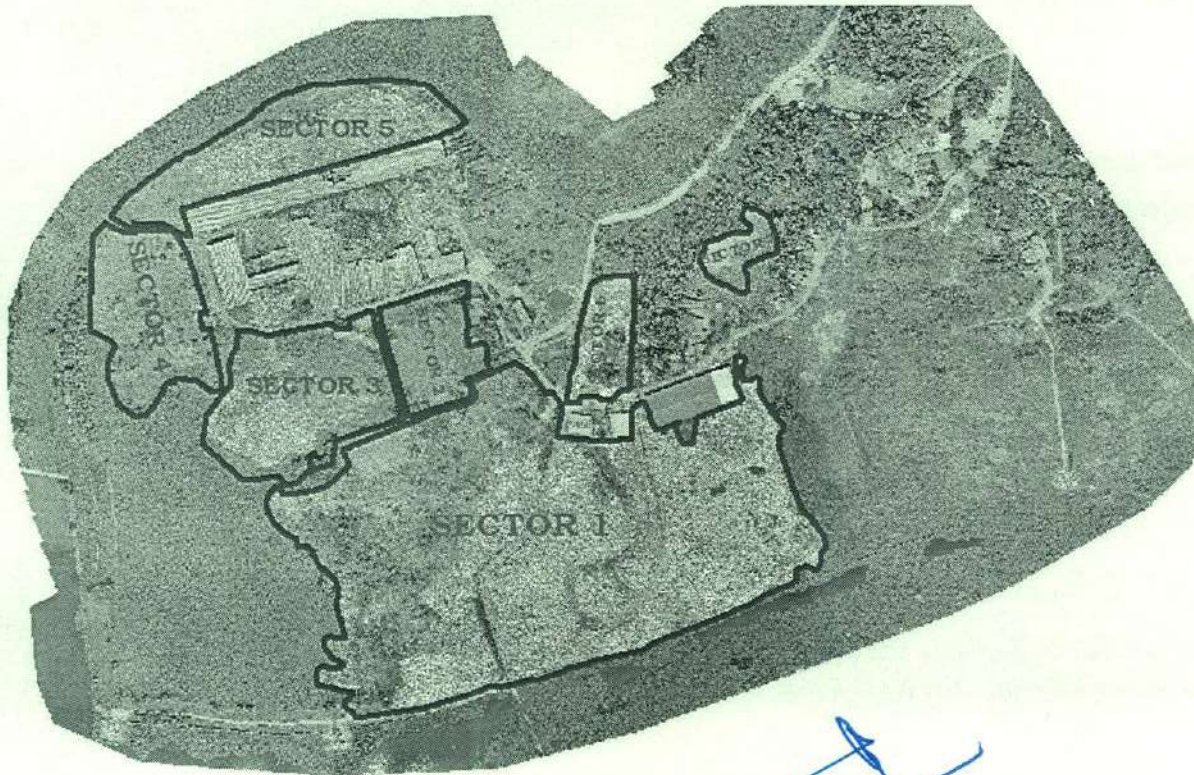




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Figure 13.Ortho-mosaic Map with the Sectors



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ANNEXURE

Annexure 1

Personnel Involved in the Work:

NATIONAL INSTITUTE OF TECHNOLOGY CALICUT (NITC)

Name	Designation
Dr.Santosh G Thampi	Professor (HAG), Dept. of Civil Engineering
Dr. Sathish Kumar D	Assistant Professor, Dept. of Civil Engineering

GEO MARINE SOLUTIONS PVT. LTD., MANGULURU

Name	Position
Shri. P. Praveen Kumar	Project Team Leader (Former Director, Geological Survey of India)



Secretary
Kochi Municipal Corporation





Shri. Dhanraj S.	Drone Surveyor & Data Processor, M.Sc. (Geoinformatics)
Shri. Guruprasad S.	Surveyor, M.Sc. (Geology)
Shri. Jithesh Kulal	Surveyor, Diploma in Civil Engineering



Secretary
Kochi Municipal Corporation





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No.MOE2/3760/20

04/09/2021

From
Secretary

To
The Managing Director
Zonta Infratech Private Limited
1st Floor, Reliable Phoenix towers
#16 & 16/1 Museum Road
Bengaluru 560001
Karnataka

Sir,

Sub: Confirmation on date of signing the agreement-Rehabilitation of Municipal
Solid Waste dumpsite at Brahmapuram

Ref. Letter No. ZIPL/202122BD/2021-22/155 dated 02/09/2021

It is to confirm that the contract agreement can be signed on forenoon of 06/09/2021. Further, to the clarifications requested by you, the following explanation is given:

1. As per the study report of NIT Calicut $5,51,903\text{m}^3$ is the quantity/volume of waste. The quantity of waste in the existing compost plant shed was not quantified by NIT Calicut and so it does not come under the present scope of work.
2. It was as per the direction of the Government Vide G.O(Rt)No.1219/2021/LSGD dated 27/06/2021 to award the work based on the study report of NIT Calicut, work was awarded. As per the report of NIT Calicut $5,51,903\text{m}^3$ is the quantity/volume of waste.

3. The wastes that are dumped in the site after the survey of NIT Calicut on 08/02/2021 till date is excluded from the scope of work as of now. Biomining of this waste can be decided later upon mutually agreed conditions.

Yours faithfully,




Secretary

Secretary
Kochi Municipal Corporation

**Rehabilitation of MSW Dumpsite at Brahmapuram for Local Self
Government Department**

GENERAL SPECIFICATIONS

Scope of Work

1) Scope of Work (9 months)

The broad scope of work to be carried out by the selected contractor includes but not limited to Reclamation of the MSW site at Brahmapuram as per SWM Rules 2016, levelling, compaction and reformation of waste slopes at [site]

The project intends to undertake the works required for Dumpsite Land Reclamation through Biomining of Municipal Solid Waste/Legacy Waste, resource recovery and scientific disposal of residual solid waste at the solid waste treatment plant of Corporation at Brahmapuram. The contract shall be awarded to the successful bidder ("the contractor") for a period of 9 months reckoned from the date of signing of contract agreement or the date of issue of Consent to Establish (CTE) to the project, whichever is earlier. The Authority shall appoint an Engineer (the "Engineer in charge") for overall supervision, monitoring and certification of the works executed by the contractor. The brief scope of work to be carried out by the selected contractor during the execution of the intended project includes, but not limited to, the following component:

(i) The works shall be carried out by the contractor as per the specifications provided in this document and scope of works provided in this section.

(ii) The contractor shall carryout Total Station Survey of complete project site including area earmarked in which Bio-mining is to be done. Total Station Survey shall be certified by the Engineer-in-charge. The survey shall be done at the time of possession of the site as well as at the completion of each milestone of physical progress of land reclamation at the site. The survey report shall be submitted along

with each running bill. The area earmarked by Authority for Reclamation through Bio-mining shall be considered as 100% area for the scope of work.

(iii) Minimum 80% of the earmarked land to be reclaimed which is presently covered by old/ legacy MSW waste.

(iv) The Contractor shall carry out baseline environmental survey of the site as per EMP and specification.

(v) The Contractor shall conduct its own due diligence for site investigation, analyzing the characteristics, composition and quantum of the waste at the Project site.

(vi) Dumpsite reclamation will be done by dividing the site into suitable sectors/loops in consultation of the Engineer in charge based on the priority of land reclamation.

(vii) Excavating the existing mixed compacted MSW in the land portion allocated/earmarked by the Authority and sieving them by Mechanical sieving machine or any other suitable technology proposed and accepted by the Engineer in charge.

(viii) The contractor shall deploy sufficient machinery, manpower and required resources to execute the project scope within the project duration.

(ix) Provision, installation, operation and maintenance of plant, machineries, infrastructure facilities and amenities for excavation, sieving of the excavated MSW, storing the segregated materials, reuse, marketing, selling, and transporting them from the project site.

(x) Construction of temporary shed, platform and creation of facilities for handling, separating, segregating, storing and quantifying of the excavated MSW and processing material.

(xi) Excavating the soil which lost its stability due to MSW dumping with necessary dewatering works in the portion of the land earmarked at the cost of the Contractor.

(xii) MSW waste brought for segregation and processing from the earmarked land portion shall be quantified (in Cubic meter, and weight based on number of vehicles

trips and capacity) after excavation and record of the same shall be maintained by the Contractor and Authority jointly.

(xiii) Segregate the excavated MSW in the land portion earmarked into as many kinds and categories as possible of Useful Material such as compost, soil conditioner, recyclables, raw RDF, filler material (Soil, C&D) and Un-useful material such as residual Solid Waste.

(xiv) Packing, storing, stacking, selling, diverting for recycling, marketing and recycling of all Useful Material within thirty days of segregation at the cost of the Contractor, without accumulation in the storage facility at the project site beyond thirty days.

(xv) Baling, packing, stacking, storing and sale of non-recyclable fraction of high calorific as raw material to RDF / Pellets using appropriate technology and sale to waste to energy or co-processing in cement plants or to thermal power plants.

(xvi) Contractor shall produce the copy of agreement entered into with the cement kiln in disposing the RDF prepared

(xvii) Stacking, transporting, spreading and compacting the segregated C&D, Soil and Inert as filler material in low level and depression area within the site and prepare well compacted and clear ground for proposed development at site or disposing such material in the low level area or quarry area designated by the authority.

(xviii) Scientific disposal of residual Solid Waste/inert waste shall be carried out as per SWM Rules 2016, SWM CPHEEO Manual 2016 and instructions of the Engineer in charge within thirty days of segregation at the cost of the Contractor, without accumulation in the storage facility at the site beyond thirty days.

(xix) The revenue or the income from the sale of the segregated Useful Material such as reusable and recyclable, Compost, soil conditioner, raw RDF, C&D, Soil or any other by product materials shall go to the contractors account. However, before selling the recovered material the Contractor, at its own cost, will conduct a lab testing of such materials from an NABL accredited lab, for the parameters as recommended by the Engineer in charge or applicable rules/guidelines, and submit the report of the same to the Engineer in charge. The Contractor shall initiate the sale or disposal process of the material by products only after the acceptance / approval of the engineer in charge.

(xx) The Contractor shall hand over reclaimed land and scientific residual solid waste disposal site to the Authority in a good and acceptable condition as per SWM Rules 2016.

(xxi) Record of the residual solid waste disposal quantity (in Cubic meter, based on number of vehicles trips and capacity) shall be maintained by the Contractor and the Authority jointly.

(xxii) Carrying out the entire project work in accordance with the Detailed Plan of Action and schedule proposed by Bidder and approved by the Authority at the cost of the Contractor.

(xxiii) Using only covered body vehicles for the transportation of materials at the cost of the Contractor.

(xxiv) Apply method, process, equipment and resources which would reduce the impact of dumpsite reclamation activity in the adjacent areas.

(xxv) Create facilities and make arrangements for controlling/ mitigating the emission, pollution and contamination (Environment impact) including air, water and soil including mitigation for of dust, odor and noise pollution at the cost of the Contractor and measures for dust mitigation shall be displayed prominently at site for public viewing

(xxvi) Construction of temporary site office, water, power, sanitation facilities and accommodation facilities of workers for the Project as per statutory standards at the cost of the Contractor.

(xxvii) Providing security arrangement for the project site, machineries, equipment etc. at its own cost

(xxviii) Completing the work within the Contract Period.