BRIHANMUMBAI MUNICIPAL CORPORATION

(Sewerage Operations Department)

Sub : Invitation of Expression of Interest (EOI) for finalization of Qualifying Technology/ies for Condition Assessment of Sewer Rising Mains/ Sewer Pressure Mains in Mumbai.

The Commissioner of BRIHANMUMBAI MUNICIPAL CORPORATION invites Expression of Interest (EOI) from Technology providers for subject work:

Name of Organization	:	BRIHANMUMBAI MUNICIPAL CORPORATION
Date of publication	:	26/06/2026 at 11:00 Hrs.
Link for downloading EOI document	:	https://portal.mcgm.gov.in
Pre-EOI Meeting	:	07/07/2026 at 14:00 Hrs.
Venue of Pre-EOI Meeting	:	Conference Room of Ch.E.(S.O.), 2nd Floor Conference Hall, Engineering Hub Building, Dr. E'Mozes Marg, Worli, Mumbai – 400 018.
Last date of Submission of EOI	:	16/07/2026 till 17:00 Hrs.
Address for submission of EOI Documents	:	Executive Engineer (Sewerage Operations) Planning & Construction, 1st Floor, S.O. Admin Building, 249, Senapati Bapat Marg, Dadar West, Mumbai – 400 028.

For further details refer https://portal.mcgm.gov.in

Sd/-
(Gajanan G. Machewad)
Executive Engineer
(Sewerage Operation) Planning and Construction

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(Sewerage Operation Department)

Subject: Invitation of Expression of Interest (EOI) for finalization of Qualifying Technology/ies for Condition Assessment of Sewer Rising Mains/ Sewer Pressure Mains in Mumbai.

1. INTRODUCTION:

The Sewerage Operations Department of Brihanmumbai Municipal Corporation (BMC) invites Expressions of Interest (EOI) from experienced technology/ies providers, specialized firms, and research institutions for identification of suitable technologies for Condition Assessment of Rising Mains/Pressure Mains Sewers within BMC limits.

BMC operates a network of 43 Sewage Pumping Stations (excluding terminal pumping stations), supported by more than 47 kms of Rising Main/ Pressure Mains Sewers of size ranging from 250 mm dia. to 3000 mm dia., which together form a critical component of Mumbai's sewerage infrastructure .Many of these rising main sewers are old (Min. two decades and more). These rising main sewers are primarily constructed of Cast Iron (CI) and Mild Steel (MS) with coating, materials that are susceptible to corrosion and deterioration over time.

Since their commissioning, the rising mains associated with these pumping stations have not been assessed for their structural integrity and serviceability. However, some stretches/locations have been repaired and at some places replaced with GRP liners owing to incidents like corrosion, bursting, pressure changes, third party damage etc.

Participants are advised that BMC recognises rising mains and pressure mains as pressurised, full-bore assets that are operationally distinct from gravity sewers. Accordingly, BMC invites Expressions of Interest (EOI) from technology/ies providers specifically designed for pressurised pipeline condition assessment. BMC recognises that sensor-based inline inspection technologies operating in live pressurised mains produce quantified data outputs rather than visual video footage, and that both output types are equally valid for the purposes of this EOI. Participants should not conflate requirements applicable to gravity sewer inspection with requirements for pressurised rising main assessment.

2. OBJECTIVE:

The primary objectives of this EOI are:

i. To study and evaluate, non-destructive or minimally invasive technology/ies capable of assessing the structural integrity, operational efficiency, and remaining useful life of BMC's rising mains/pressure sewers with minimum service disruptions based on the documentary evidence, case studies, and technical specifications submitted by the participants.
ii. To evaluate the suitability of such technology/ies under Mumbai-specific site constraints, including dense urban environments, traffic conditions and accessibility limitations, etc.
iii. To establish a standardized framework for data collection, defect coding, and asset condition assessment and grading (Structural and Service).

3. SCOPE OF WORK:

Participants to EOI must submit a comprehensive Technical Capability Dossier organized into the following clear sections:

i. Section A: Technology Technical Specifications

Participants must provide exhaustive technical data sheets for proposed technology, explicitly detailing:

- **Operating Principles:** The scientific and engineering basis of the technology (e.g., Remote Field Electromagnetic Testing (RFEC), Acoustic Pulse Reflectometry, Inline Sonar/Laser, Tethered vs. Free-swimming systems).
- **Asset Compatibility:** Clear matrices showing compatible pipe diameters (ranging from 250 mm to over 3000 mm and pipe materials (CI, DI, MS, MS with coatings etc).
- **Operational Constraints:**
    - Maximum operating pressure the tool can withstand.
    - Maximum flow velocity required or tolerated during deployment.

- Minimum access point dimensions (e.g., can it insert through a standard air valve flange, or does it require hot-tapping).
- Maximum inspection range/distance per single insertion.

ii. Section B: Data Capture & Accuracy Metrics

The evaluation relies heavily on what the technology can actually detect. Participants must specify which data output type their technology produces. EOI Submissions shall document:

- **Detection Capabilities:** Proven ability to detect and quantify wall thinning (metal loss), internal/external corrosion, structural cracks, joint displacements, leaks, gas pockets, and silt accumulation layers etc.
- **Resolution & Accuracy:** The quality of output (SD, HD, Full HD, etc.) and accuracy of detection. Also specify the limits of detection (e.g., minimum detectable crack size, wall thickness, measurement tolerance etc.).
- **Output Deliverables Sample**: Sample condition assessment reports, data visualisation outputs, or GIS-integrated datasets compatible with BMC GIS system.

  Where the proposed technology produces visual data, sample video or imagery must be provided. Where the technology operates on acoustic, ultrasonic, electromagnetic, or transient pressure principles, a sample data log with georeferenced anomaly positions and quantified defect parameters constitutes the equivalent output requirement. Participants must specify which data output type their technology produces.

iii. Section C: Operational Methodology & Safety Compliance

A document detailing the standard operating procedures (SOPs) for deployment:

- **Flow Disturbance Profile:** Documentation proving whether the technology allows for Zero-Shutdown (fully online inspection) or requires partial pumping restrictions or complete isolation.

- **Risk & Safety Protocols:** Standard safety measures for handling live pressurized sewage, gas monitoring (H_2S, Methane), and contingency plans for tool retrieval if a device gets stuck inline.

iv. Section D: Global & Indian Case Studies (Proof of Concept)

To validate the technology's track record, participants must submit:

- At least one case study of successful condition assessments on pressurized sewer rising mains/water transmission mains of similar diameters as stated above.
- Case studies should ideally highlight performance in high-silt or high-turbidity environments (matching Sewage characteristics).
- Certificates of successful completion or performance letters from municipal bodies, government utilities, or international water authorities.

4. ELIGIBILITY CRITERIA FOR PARTICIPATING IN EOI:

4.1 Eligible Entities:

i. Technology provider firms / institutes in the field of Condition Assessment of Sewer Pressure Mains / Sewer Rising Mains / Gravity Sewers / Sewer Pipelines / Water Pipelines.

ii. Sole Proprietary firms, Partnerships Firms, Companies, Joint ventures, and Consortiums in the field of Condition Assessment of Pressure Mains / Rising Mains / Gravity Sewers / Sewer Pipelines / Water Pipelines.

iii. A subsidiary company or sister concern may submit credentials of its parent company, provided that an authorization and undertaking from the parent company is submitted confirming technical support and availability of the proposed technology/ies.

The participant shall submit supporting documents applicable regulations in this regard along with EOI.

4.2 Certifications:

The participant shall submit valid relevant ISO or equivalent international certifications for proposed Condition Assessment technology/ies, if any, along with EOI.

4.3 Experience:

i. The participant shall have a minimum of Seven (07) years' experience (domestic as well as global) in the field of condition assessment of Sewer Pressure Mains / Sewer Rising Mains / Gravity Sewers / Sewer Pipelines / Water Pipelines.

ii. The participant must have carried out condition assessment of at least 10 Kms having a dia. range from 250 mm to 3000 mm Sewer Pressure Mains / Sewer Rising Mains / Gravity Sewers / Sewer Pipelines / Water Pipelines with the technology/ies proposed by them during last Seven (07) years.

iii. Out of 10 km, 50% or more experience should be with condition assessment of Sewer Rising Mains/ Sewer Pressure Mains with the technology/ies proposed by them.

The participant shall submit completion certificates and other supporting documents issued by concerned authorities with details of pipeline assessed with the technology/ies proposed by them along with EOI.

Note: The above criteria are the guiding factors for selection of Technology/ies and to assess its technical performance. Ongoing works (80% or 10 km completed) can also be taken into consideration.

5. GENERAL ASPECTS TO BE CONSIDERED BEFORE SUBMISSION OF EOI:

i. Condition Assessment technology/ies for the work shall be compatible to Mumbai geographical conditions from the point of view of subsoil strata condition, traffic, space constraints, narrow/ congested lanes, slum areas, parking conditions, varying depth of rising mains, existing utilities and existing and ongoing infrastructure developments and the fact that part of the execution work will be done during night time.

ii. The participant shall study and acquainted with the Deliverables, Technical Evaluation Matrix and other acceptance criteria before submitting the EOI.

iii. The participant shall submit videos / Photographs of the past condition assessment works carried out in past along with relevant details as part of the EOI submission(one complete set of deliverables for any past / ongoing similar work).

iv. BMC may seek the opinions/feedback from earlier users on the proposed technology/ies, for assessment and evaluation of the TAC and BMC.

v. The participant shall arrange BMC staff, external members of TAC for site / workshop / production shop visit for inspection of processes whenever necessary.

vi. It is the responsibility of the participant to submit authentic information / documents supporting their proposal.

vii. In case of any disputes, TAC / BMC higher authorities reserve the right to take decision which will be binding on the participant/s. No further claim in this regard will be entertained.

6. Disqualifications:

The EOI Bid will be liable for disqualification in following cases:

i. If the EOI Bid is not meeting the eligibility criteria.
ii. If the submission by the participant is found incomplete.
iii. If the technology/ies proposed offers Limited Integration with BMC GIS System or the output visualization and analysis requires specialized proprietary software.
iv. If it is found that the information submitted by the participant is not authentic or the participant has submitted forged and fraudulent information.

Note: The participants are requested to refer to the relevant sections of the EOI Document for interpretation of disqualification criteria mentioned above.

7. TECHNICAL REQUIREMENTS OF THE TECHNOLOGY/IES PROPOSED:

The participant shall ensure that the proposed technology/ies meets the following requirements:

7.1 General Requirements

i. Suitable for sewer Rising Mains / Pressure Mains.
ii. Compatible with materials such as CI, DI, MS, Coated MS etc.
iii. Preferably operable in live sewer conditions/limited period isolation conditions, including partially filled pipelines.

7.2 Performance Criteria

i. Capability to detect defects and locate them on GIS or along traverse of Rising Mains Sewer.
ii. Capability to inspect pipelines / rising mains of varying diameters (minimum and maximum to be specified).
iii. Capability to operate at varying depths and in confined urban conditions.

7.3 Inspection Capabilities

i. Capability for continuous inspection between designated access points.
ii. High-resolution data capture appropriate to the technology type. For visual inspection technologies: HD video minimum. For sensor-based technologies (ultrasonic, acoustic, electromagnetic, transient analysis): continuous quantified data output with defect sizing and localisation to sub-metre accuracy.
iii. Distance measurement with geo-referenced pipeline mapping.

7.4 Identification of

TIER 1 — Core Requirements:

i. Air pocket and gas accumulation detection at high points
ii. Blockages and significant flow restrictions
iii. General wall condition assessment and deterioration trending
iv. Leak, infiltration, and exfiltration zone identification
v. Silt and deposit accumulation mapping

TIER 2 — Advanced Capability

i. Quantified remaining wall thickness to stated accuracy tolerance
ii. Joint condition assessment (angular displacement, gap width, deterioration)
iii. Precise XYZ anomaly localisation to sub-metre accuracy
iv. Internal coating and cement lining condition
v. Ovality and geometric deformation quantification
vi. Illegal or unknown connection (hot tap) detection

7.5 Advanced Capabilities

i. Geometry and deformation analysis: Quantified ovality, diameter change, and angular joint displacement by any non-destructive method appropriate to the technology type (including but not limited to laser profiling, IMU-based measurement, or ultrasonic diameter scanning)
ii. Sonar capability for submerged sections
iii. AI-based defect detection and classification
iv. 3D modelling / point cloud generation

8. DATA & DELIVERABLE REQUIREMENTS

The participant shall ensure that the proposed technology/ies to be capable to provide:

8.1 Inspection Outputs and Data

i. Continuous condition data record for the full inspected length, in digital format, georeferenced to pipeline chainage.
   - For visual technologies: continuous HD video with 360-degree coverage and PTZ facility.
   - For sensor-based technologies: continuous quantified data logs with anomaly flags, defect classification, and positional coordinates.

Note: Participants must submit a sample data output demonstrating their standard deliverable format.

ii. HD images of each defect
iii. Defect logs linked to chainage and location

8.2 Condition Assessment

i. Structural and operational grading of sewer segments
ii. Identification of critical sections

8.3 GIS Integration

i. GIS-compatible datasets (Shapefile / GeoJSON or equivalent)
ii. Dataset consisting size, depth (continuous/section wise), traverse of Rising Mains sewer
iii. GPS coordinates of manholes and/or inspection points
iv. Asset linkage (upstream/downstream connectivity)

Note: The GIS Dataset shall be based on the Geo-Referencing Base Stations of SO Dept., BMC.

8.4 Reporting

i. Detailed Condition Assessment Report
ii. Geo-referenced alignment of rising mains sewer integrated with GIS platform
iii. Recommendations for rehabilitation, repair, replacement, etc. with reasonings

9. DEFECT CODING STANDARDS

Defect classification and condition grading shall be documented using internationally recognised standards appropriate to the technology type and asset class. Acceptable standards include:

(a) WRc MSCC5 or NASSCO PACP — applicable where the technology produces visual/CCTV-based output
(b) ISO 15589, ASME B31G, or equivalent structural integrity standards — applicable for metallic pipeline wall condition assessment
(c) AWWA Manual M77 or equivalent — applicable for condition assessment reporting of pressure pipelines
(d) EN / DIN / ASTM standards as applicable to the technology type
(e) Other relevant national or international standards, clearly identified by the participant with documented application methodology

Disqualification criterion (revised): Proprietary non-documented internal logging methodology with no reference to any published national or international standard. Participants using their own condition grading framework must demonstrate its equivalence to a recognised standard

10. PRE-EOI MEETING

A pre-EOI meeting will be held for clarification of queries as per the schedule of EOI. All queries related to EOI should be submitted in spreadsheet (.xls) format to email id: eepncme.so@mcgm.gov.in 4 working days before the scheduled date of pre-EOI meeting.

The minutes of pre-EOI meeting along with clarifications of the queries will be published on BMC Portal in due course.

11. SUBMISSION OF EOI

11.1 Submission Mode

The EOI shall be submitted via email (eepncme.so@mcgm.gov.in) in soft copy and one set of the uploaded documents in legible form shall be submitted physically as per the EOI Schedule in the office of:

Executive Engineer (Sewerage Operations) Planning & Construction,
1st Floor, S.O. Admin Building,
249, Senapati Bapat Marg, Dadar West,
Mumbai – 400 028.

The documents received after due date and time of submission will not be considered for evaluation.

11.2 Language

All submissions shall be in English language.

12. CLARIFICATION OF EOI

i. The participant shall ensure that all the submitted documents shall be clear and legible. BMC may call for original documents for verification, wherever required.
ii. Documents submitted by the participant will also be verified from the source of generation, wherever required.
iii. The submitted EOI information will be presented before The Technical Advisory Committee (TAC) members who in turn may seek written clarifications which will be communicated to the participant via email.
iv. Non-submission of documents required or non-submission or unsatisfactory / incomplete submission of clarification may lead to rejection of the EOI.

13. DEMONSTRATION REQUIREMENT

The Condition Assessment Technology/ies fulfilling eligibility criteria and Evaluation Matrix will be called for presentation and field demonstration before TAC. The schedule of the same will be communicated at later stage.

Technology/ies demonstration and Output data submission shall be evaluated for:

i. Accuracy
ii. Data quality
iii. Ease of operation
iv. Suitability for Mumbai conditions
v. Advanced capabilities, if any.
vi. Feedback from earlier users of the proposed technology/ies
vii. Other technical requirements as directed by TAC

14. VETTING OF EOI BY TAC

TAC will evaluate technologies on:

i. Eligibility Criteria
ii. Technical Compliance Questionnaire (Proforma-I)
iii. Technical Evaluation Matrix (Annexure-I)
iv. Presentation and Field Demonstration

15. CONFIDENTIALITY

All evaluation, comparison, and decision-making processes shall remain confidential until finalization of technical assessment by TAC members.

PROFORMA-I

Technical Compliance Questionnaire (Mandatory Submission)

Applicants must fill out this questionnaire completely. Every 'Yes' or numerical claim must point to a specific page/clause number in their attached technical dossier as supporting evidence.

Part A: Asset Compatibility & Range

Sr. No.	Parameter / Question	Applicant Response (Yes / No / Data)	Reference Page No. in Attached Dossier
A1	Can the proposed technology inspect pipelines ranging from **250mm to 3000mm and above?** (State maximum diameter capability).		
A2	Is the technology fully compatible with **metallic pipes** and coatings if any (Cast Iron, Ductile Iron, Mild Steel etc.)?		
A3	Is the technology fully compatible with **concrete/plastic pipes** (Pre-Stressed Concrete, Reinforced Cement Concrete, HDPE etc.)?		
A4	State the **maximum continuous distance** the tool can travel and inspect from a single insertion point (in meters).		
A5	What is the minimum bend radius, drop, rising etc. the tool can navigate inside a pressurized line?		

Part B: Operational Constraints & Safety

Sr. No.	Parameter / Question	Applicant Response (Yes / No / Data)	Reference Page No. in Attached Dossier
B1	Can the inspection be carried out completely **online under live pressure** without stopping the Pumping Station?		
B2	Can the technology function in **zero-visibility, high-turbidity, and high-silt environments** typical of live sewage?		

B3	Does the deployment methodology utilize existing appurtenances (e.g. air valves) for tool insertion without requiring masssive excavations?		
B4	Is a documented emergency **Tool Retrieval Protocol** attached to handle scenarios where an inline tool gets lodged or stuck?		

Part C: Defect Detection Capabilities

Sr. No.	Parameter / Question	Applicant Response (Yes / No / Data)	Reference Page No. in Attached Dossier
C1	Can the technology precisely quantify **remaining wall thickness** and detect internal/external metal loss?		
C2	Is the system capable of pinpointing **active leaks** along the pipeline profile under live pressure conditions?		
C3	Can the technology identify localized **gas pockets / air pockets** trapped at high points along the rising main?		
C4	Can the technology map external **soil voids or bedding failures** adjacent to the pipeline?		
C5	State the **accuracy/tolerance limit** of your primary structural defect sensor.		

Annexure I

Technical Evaluation Matrix

The Evaluation Matrix has been established to evaluate, score, and select suitable Condition Assessment Technology/ies submitted in response to the Expression of Interest (EOI) by BMC. The marking system for the Technical Evaluation Matrix is as mentioned below. Total points for evaluation of Condition Assessment Technology/ies are 100 and minimum qualifying score is 70. Applicants shall note that the Technology/ies not securing minimum qualifying points shall be treated as non-qualifying.

1. Pre-Qualification

The participants to the EOI shall refer to the section 4: Eligibility Criteria and Section 6: Disqualifications of this document.

All applicants must adhere to the requirements specified in section 4: Eligibility Criteria and submit filled Proforma-1 and Annexure-I.

Failure to fulfil any of the criteria would results in disqualification without further evaluation.

2. Point-Based Technical Evaluation

This matrix distributes a maximum of 100 points across four areas reflecting Structural Integrity, Hydraulic Performance alignment, and asset life prediction capabilities specified in the EOI.

Sr. No.	Evaluation Parameter & EOI Clause Context	Scoring Criteria & Breakdown	Max Points
1	**TECHNICAL CAPABILITIES & PIPELINE COMPATIBILITY**		**60**
1.1	Diameter Compatibility: If the proposed technology is compatible with more sizes, points as per size compatibility will be added.	• From Dia.250mm to 400 mm: 2 Points • From Dia.401mm to 600 mm: 2 Points • From Dia.601mm to 800mm: 2 Points • From Dia.801mm to 1200 mm: 2 Points • From Dia.1201mm and above: 2 Points • Compatible for all sizes – **10 Points**	10
1.2	Material Compatibility	• Limitations to be compatibility with some specific material type: **04 Points**	10

		• Fully compatible with metals such as Cast Iron (CI), Mild Steel (MS), DI etc: **06 Points** • Fully compatible with materials and coatings:**10 Points**	
1.3	Flow Condition Operability	• Operable in live full flow / partial flow sewer conditions: **10 Points** • Requires complete line isolation/dewatering/pumping stoppage: 5 Points	10
1.4	Access Pit Requirement Min. no. of access points required for sample length of Sewer Rising Mains of 500 meter.	• 2 access point / sample length of 500 meter. Or more : **10 Points** • 3 access point / sample length of 500 meter.: 6 Points • 4 access point / sample length of 500 meter.: 4 Points • 5 access point / sample length of 500 meter.: 2 Points • More than 5 access points – 0 Points	10
1.5	Power Supply Autonomy	• Fully independent (Runs effectively on mobile DG sets/remote power supply): **10 Points** • Reliance on fixed, highly specialized structural power grids: **5 Points**	10
1.6	Capability to detect Defects mentioned in Clause No. 6.4	• **TIER 1 core detections** (Air pockets, Flow restrictions, General wall condition, leak/infiltration zones, silt/deposit mapping): 7 Points; • **TIER 2 advanced capabilities** (quantified wall thickness, joint condition, XYZ localisation, coating condition, ovality, illegal connections): 3 Points, partial scoring at 0.5 pts per capability demonstrated.	10
2	**DATA ACQUISITION, MAPPING & ADVANCED FEATURES**		**40**
2.1	Ability of system to provide data output	• Continuous geo-referenced condition data record with quantified anomaly output: **10 Points.** • **For visual technologies:** HD video with PTZ and geo-referencing: **10 Points.** • **For sensor-based technologies:** continuous quantified data log with sub-metre defect localisation and geo-referencing: **10 Points.** • Data output without geo-referencing: 5 Points. • No continuous data record: 0 Points.	10

2.2	GIS & Asset Mapping Integration	• Full integration providing accurate GPS mapping, alignment logs (slope/bend), and GIS-ready Shapefiles/GeoJSON with dataset compatible to BMC GIS System: **10 Points** • Limited mapping integration / output visualization and analysis requiring specialized proprietary and commercial software: **Disqualification**	10
2.3	Advanced Inspection Capabilities	• Features 2 or more: Laser profiling, Sonar (for submerged sections), AI-based automated defect detection, or 3D point cloud generation: **10 Points** • Features only 1 advanced Criteria: **5 Points** • Standard HD Video / traditional CCTV inspection only: **2 Points**	10
3	**International Coding Standards**	• Documented use of any recognised national or international standard appropriate to the technology type and asset class (MSCC5/PACP for visual tools; ISO 15589, ASME B31G, AWWA M77 or equivalent for sensor-based tools): **10 Points** • Undocumented proprietary methodology with no reference to any published standard: **Disqualification**	10
TOTAL MAXIMUM EVALUATION SCORE		**Categories 1 & 2 Combined**	**100 Points**