

Statement Number
 Launch Date
 Closing Date for Submission

3
 15 September 2023
 26 October 2023

Title	Solutions to inspect and effectively clear choked drain pipes in building
Background	<p>Discharge pipes carry away wastewater from the individual units to the drain-lines, before it reaches the interceptor-manhole that is connected to the public sewerage systems. It is the responsibility of building owners to maintain the drain-lines, and the responsibility of individual units to maintain their discharge pipes. While the Authorities have a best practice guide for maintenance (see guide in Annex A), it is still common for buildings' units to experience pipe chokes due to: i) the build-up of food waste and grease; and ii) indiscriminate disposal of waste (such as rags) through discharge pipes (see Annex B for illustrations). The impact is not only on the unit that does not maintains its discharge pipes, but also other units connected to the same drain-line. When such pipes choke, backflows occur causing unsanitary conditions for businesses, disrupting their operations significantly.</p> <p>Often the repair works are done after operating hours to minimise disruptions to business operations and may involve intrusive opening sections of discharge pipes and drain lines for inspection and clearing of choke.</p>
Challenges	<ol style="list-style-type: none"> 1) Repairs by building owners are often afterhours to reduce disruption to business, as the inspection may involve cutting open pipes. 2) Opening drain-lines and discharge pipes for inspections can only be done for sections that are within common areas, and these pipes are often hidden (between walls or under floor) 3) Due to the complex routing of pipes, existing CCTV pipe inspection solution is unable to navigate through effectively 4) Current method to find the choke is through trial and error (can take 6 nights or even more). 5) Pipes for discharge pipes (<10cm) and drain-lines have smaller diameter, solution needs to be able to fit within this tight dimension. 6) Difficult to enforce best practices on individual tenant, it is also difficult to ascertain if choke is caused by a specific tenant.
Desired Outcomes	The envisioned solution should be able to inspect and clear choke. It should be non-destructive and non-disruptive, be easy to use, and uses less/no manpower.

<p>Requirements</p>	<p><u>General</u></p> <ul style="list-style-type: none"> • There should be sufficient details on the solution’s working principles/approach. • Includes a technology disclosure of Foreground Intellectual Property (FIP) as the final project deliverable in the payment schedule amounting to <u>at least 5%</u> of the lump sum payment. <p><u>Processes and work flow</u></p> <ul style="list-style-type: none"> • Includes operational workflow for the proposed solution, the workflow must be reasonable with sufficient details. • Illustrates how solution would be easy to use and makes provisions to refine solution to be easy to use. <p><u>Solution</u></p> <ul style="list-style-type: none"> • Proposed solution must effectively address common discharge pipe and drain line dimensions in Singapore. • The proposal clearly outlines the limitations and capabilities of the solutions being used. • Proposal needs to provision to validate the stated <u>limitations</u> and <u>capabilities</u>. • The method to manoeuvre through discharge pipe and drain line must be clearly articulated with sufficient details. • Proposal includes provision to demonstrate to JTC the solution’s ability to <u>manoeuvre</u> through discharge pipe and drain line. • The method to inspect must be clearly articulated with sufficient details. • Proposal includes provision to demonstrate to JTC the solution’s ability to <u>inspect</u> discharge pipe and drain line. • Allocate adequate resources for data collection to detect blockages within the project timeline. • The method to clear choke must be clearly articulated with sufficient details. • Proposal includes provision to demonstrate to JTC the solution’s ability to <u>clear</u> discharge pipe and drain line. • Address how sanitary cleanliness is maintained in the operations of the solution. • If the proposed solution is a <u>robotic solution</u>, it should have reasonable operating hours.
<p>Possible Solutions</p>	<p>We are open to all plausible approaches, but not looking for:</p> <ul style="list-style-type: none"> - Usage of strong cleaning agents - Conventional methods (already commercially available)

Development Timeframe	Keep it within 12 months	
	<i>Item</i>	<i>Timeline</i>
	<i>Preliminary design review with stakeholders</i>	<i>by month 1</i>
	<i>Develop and demonstrate manoeuvrability to stakeholders</i>	<i>by month 3</i>
	<i>1st round of refinement</i>	<i>by month 6</i>
	<i>Develop and demonstrate manoeuvrability and inspection to stakeholders</i>	
	<i>2nd round of refinement</i>	<i>by month 9</i>
	<i>Develop and demonstrate manoeuvrability, inspection and clearing blockage to stakeholders</i>	
	<i>3rd round of refinement</i>	<i>by month 11</i>
	<i>Final round of trial to stakeholders</i>	
<i>Final project review & technology disclosure</i>	<i>by month 12</i>	
Evaluation Criteria	60% quality of Proposal (scope of work, operational feasibility, disruption to operations, experiences and skills, cost benefit analysis, commercialisation and implementation plans); and 40% price (reasonableness of project cost and value for money, co-funding and contribution in-kind).	
Testbed/ Trial site (envisioned deployment site)	Majority of pipes in one north test estate can be used for testing and trial of proposed solutions.	
Payment model	Fixed priced, payment by milestones	
Additional Info	Annex A - Good Practices Annex B - Illustrations	