Challenge Theme	Sustainable Water Usage
Statement Number	03
Launch Date	9 January 2026

Title	**Reducing water-intensive cleaning through long-lasting, sustainable facade maintenance**
Background	Many buildings, especially those with complex or irregular facades, face challenges in maintaining clean exterior surfaces. The need for increased frequency of cleaning not only increases water consumption (e.g. hi-jet façade cleaning), but also safety concerns due to working at heights.
Challenge	Contaminants such as dust, dirt, and biological growths often reappear shortly after cleaning (Figure 1), while streaks and stains (Figure 2) tend to return despite annual facade cleaning. These recurring issues not only affect the visual appearance of the buildings but also increase the cleaning cycles, resulting in substantial water consumption.  **Fig. 1**  **Fig. 2**
Desired Outcomes	The envisioned solution shall: • Effectively reduced the water consumption for façade cleaning by at least 30% in comparison with current practice. • Extend current cleaning cycles, (e.g. from annual to every 3–5 years or longer), and reduce overall maintenance costs
Requirements	• Technologies and/or solutions must be innovative and have not been deployed in large scale projects. • Technology readiness level of >=7 • Be scalable and cost effective • Repeatable and achieve uniform outcomes • Ensure safety (e.g. compliant with work-at-height standards) and continuity of operations on irregular surfaces. • Compatible with heritage finishes and comply with conservation guidelines (e.g., NHB's Preservation of Sites and Monuments, PSM guidelines).
Possible Solutions	Solutions should be preventive, and practical for operations. If preventive measures are not possible, the solution should be operationally efficient to remove the build-up and not be resource intensive.
Development Timeframe	

Step	Task	Start	End
1	Proof of Concept	T_o	T_o + 6 months
2	Performance verification	T_o + 6 months	T_o + 12 months

<table>
<tr><td>Testbed/ Trial site (envisioned deployment site)</td><td>The solution will be tested out at Jurong Town Hall, JTC Aviation One & Two. Please note that Jurong Town Hall is gazetted as a national monument.
<table><tr><td>  </td><td>  </td></tr><tr><td>JTC Aviation One and Two @ Seletar Aerospace Park</td><td>Jurong Town Hall</td></tr></table>
Interested participants are encouraged to visit the sites which will be arranged.</td></tr>
<tr><td>Additional Info</td><td></td></tr>
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