

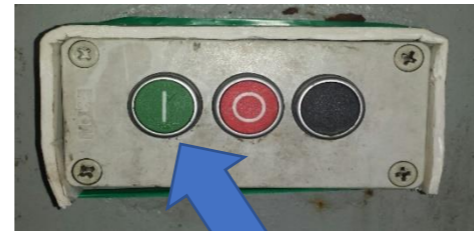
Challenge Theme	Zero Waste Industries
Statement Number	02
Statement Owner	Surbana Jurong
Launch Date	19 June 2024
Closing Date for Submission	18 October 2024

Title	Data-led Mixed Use Waste Handling
Background	<p>In line with Singapore’s Zero Waste Masterplan of 2019, nationally we have pledged to achieve by 2030 a 70 % overall recycling rate and to reduce the amount of waste sent to the Semakau Landfill by 30 % of its per capita per day rate.</p> <p>In the short term, a step change to 20 % reduction in waste-to-landfill per capita per day by 2026 is targeted.</p> <p>Currently, food waste recycling, nationally, is at around 18 % and only about 4 % of plastics are recycled. It follows that by addressing food waste and plastic waste in general mixed use/commercial facilities shall increase the amount of waste going to landfill.</p> <p>Surbana Jurong Campus, the global headquarters of Surbana Jurong Group, seeks to be a market-leading demonstration of holistic sustainability (Green Mark v2015 Platinum “Super Low Energy”, WELL Platinum certified, and etc.).</p> <p>The premises have been operational since June 2023 with existing infrastructure and services to handle waste and recycling. In addition to the commercial office space, the premises host food & beverage (F&B) units catering to up to 2,000 pax. Moreover, food marketplace app-based vendors deliver food and beverages to Campus with delivery packaging. most of which is being discarded without efforts to rinse and recycle by the buyers and high levels of contamination. With gardens bordering the Jurong Eco-Park, and multiple roof terrace planting and beautiful indoor courtyard gardens, there is generally manageable but not insignificant source of horticultural litter waste too.</p>
Challenges	<p>Surbana Jurong Campus is setting itself the challenge to achieve a diversion from landfill rate of 90% or greater and whilst Surbana Jurong Group is the anchor tenant, there are third party tenants including F&B suppliers that should collaboratively and enthusiastically involved in the programme with insignificant increases to service fees and costs to those tenants.</p>
Desired Outcomes	<p>Diversion from landfill rate of 90% or greater for all waste associated with Surbana Jurong offices and on-premise third party-F&B suppliers.</p> <p>Data-led platform for accounting for waste in a smart, digital manner for feedback; process optimisation and performance of value chain.</p> <p>Manage all food/organic waste from food & beverages at SJ Campus</p>
Requirements	<ol style="list-style-type: none"> 1. A smart/intelligent data-led solution such as IoT devices allowing granular data capture by waste stream, weight and location for baselining, trending and hotspotting on SJ premises. The solution needs to be easily taught to and operated by front line cleaning/waste handling staff.

	<ol style="list-style-type: none"> 2. A solution or data service which allows the operator to optimise the waste servicing of the premises. Able to show the performance trends over the study period. 3. Hygienic infrastructure which allows the operator to safely handle food and beverage waste (organic waste from both plant and animal products) with solid and/or liquid effluent which can be certified as safe for agricultural use. 4. Promoting or fostering a connection of SJ Campus into a wider circular economy (eco-system) where such composted/digested waste is of value to community or commercial partners; to serve as a model at scale. 5. To create such value that downstream waste / recycling haulage companies licenced by NEA can plug-in such that waste and recycling from SJ Campus can be “passported” or tracked all the way to the material recovery facility and/or landfill destination. To provide means to accurately measure for “diversion from landfill” rates. <p>For the avoidance of doubt, this call for an integrated solution across the value chain involving building users, building managers, first-line domestic staff, waste haulers and material recovery operators.</p>
Possible Solutions	<p>Safe and hygienic microbial and/or other biological composting (e.g. <i>Hermetia illucens</i> black soldier fly) as a service (design, build, operate and maintain)</p> <p>Internet of things (“IoT”) for granular data capture and acquisition on premises and fleet vehicle assets.</p> <p>Data science for baselining and process optimisation and performance assessment of the value chain.</p>
Development Timeframe	18 months
Testbed/ Trial site (envisioned deployment site)	Surbana Jurong Campus Pte Ltd at 38 Cleantech Loop S636741
Additional Info	<p>Annex 1: Surbana Jurong Campus brochure, please refer to the following link https://surbanajurong.com/wp-content/uploads/2023/07/20230721_SJC_Brochure.pdf</p> <p>Annex 2: Standard Operating Procedure for Refuse Compactor</p> <p>Annex 3: Waste Report</p>

Annex 2: Standard Operating Procedure
Refuse Compactor (Bin Lifter Operations)

Bin Lifter customized for 240-litre and 660-litre bin



Compactor "Start Button"



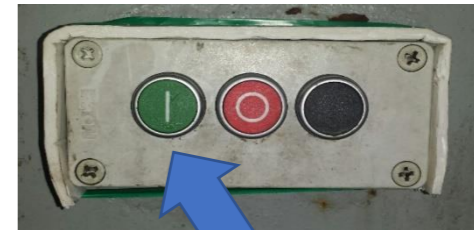
Kindly wait for **10 seconds** for oil to run before using **Lever** to operate the Bin Lifter



Push in the 240- litre bin or 660-litre bin into the lifter



Hook up the bin and ensured that it is *properly secured* to the lifter



Press the "Start Button" to start the Compactor.



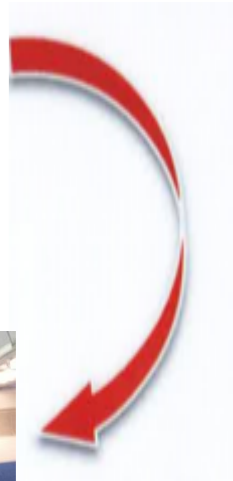
Kindly wait for 10 seconds for oil to run, then gently *pull down* the "Lever" to bring down the bin.



Continue to *lift up* the "Lever" till the waste is fully discharge from the bin into the compactor hopper.



Gently *lift up* the "Lever" to lift up the bin.



Annex 3: Waste Report

Date	Vehicle Type	Gross Weight (tonnes)	Vehicle ULW (tonnes)	Nett Weight (tonnes)	Customer Name
2/8/2024	Hook-lift Truck	17.60	17.04	0.56	SMM @ SJ Campus
5/8/2024	Hook-lift Truck	17.76	17.09	0.67	SMM @ SJ Campus
7/8/2024	Hook-lift Truck	18.03	17.01	1.02	SMM @ SJ Campus
14/8/2024	Hook-lift Truck	18.29	17.05	1.24	SMM @ SJ Campus
16/8/2024	Hook-lift Truck	17.53	17.02	0.51	SMM @ SJ Campus
19/8/2024	Hook-lift Truck	17.84	17.01	0.83	SMM @ SJ Campus
23/8/2024	Hook-lift Truck	19.74	17.05	2.69	SMM @ SJ Campus
26/8/2024	Hook-lift Truck	17.53	17.07	0.46	SMM @ SJ Campus
28/8/2024	Hook-lift Truck	17.87	17.05	0.82	SMM @ SJ Campus
30/8/2024	Hook-lift Truck	18.77	17.04	1.73	SMM @ SJ Campus