MEDIA RELEASE

Sentosa Development Corporation launches island-wide cooling roadmap to enhance guest experience through innovation and partnerships

The strategic roadmap leverages technological innovation, nature-based solutions and collaboration with businesses on the island to establish Sentosa as a cool oasis

SINGAPORE, 7 October 2025 – Sentosa Development Corporation (SDC) today unveiled the Cooling Sentosa Roadmap – a strategic island-wide initiative aimed at sustainably enhancing guest thermal comfort amidst a confluence of greater public awareness of urban heat and the availability of practical innovations in the field.

The strategic roadmap balances immediate term measures with medium and longer term infrastructure and development interventions. The roadmap charts a comprehensive three-pronged approach and sees SDC enabling a whole-of-Sentosa effort in leveraging technological and nature-based solutions to enhance guest experience on the island. At the heart of the Cooling Sentosa Roadmap is the creation of the Sentosa Cooling Network, a series of cool nodes and zones where SDC is targeting an improvement of at least 4 degrees Celsius[1], as measured in Physiological Equivalent Temperature (PET). This roadmap is also aligned with the Singapore Green Plan for a resilient future, including prioritising strategies to moderate the rise in urban heat.

The roadmap builds on existing efforts by SDC as well as businesses on the island to deliver an enjoyable guest experience. These include efforts to install shade and canopies for shelter, increasing air flow via fans and coolers, and ensuring sufficient hydration points.

Guest Experience Centric approach to Heat Mitigation

Laying the Groundwork for Sustainable Cooling Strategies

[1]Physiological Equivalent Temperature (PET) is an internationally recognised metric widely used in urban comfort studies, particularly for hot and humid climates, and is one of the standards endorsed by Singapore's Building and Construction Authority. PET is an indication of the combined effect of air temperature, humidity, mean radiant temperature, and wind on the human body.

As a strategic foundation for the Cooling Sentosa Roadmap, SDC commissioned global environmental design consultant Atelier Ten in March 2025 to conduct a comprehensive study on outdoor thermal comfort (OTC) conditions across the island. Using advanced computational modelling and on-ground field measurements, the study first established a heat map of Sentosa – the island's OTC baseline - upon which to target future improvements. The OTC study then identified locations where interventions are needed and recommended both immediate and long-term solutions to improve thermal comfort.

The studies found that Sentosa's abundant natural greenery is an important asset in cooling the island, with areas in close vicinity to greenery considerably cooler. Meanwhile, porous building structures and ventilation corridors facilitate wind flow which further cools the island. An example which incorporates some heat mitigation efforts is Sentosa Sensoryscape. The structure creates a Northeast-Southwest wind corridor along the central spine of Sentosa island and facilitates air flow. The two-layer structure of Sensoryscape provides a shaded walk on the lower level during the day, while the upper deck allows guests to enjoy the evening breeze and light projections at night. Other features include high-volume low-speed fans to improve air circulation at the lower deck, while greenery and water features further alleviates heat from the hardscape.

The study's findings will also guide the development of future heat mitigation strategies, ensuring that sustainable and effective cooling solutions will be incorporated into future areas on Sentosa.

Creation of the Sentosa Cooling Network

To achieve its vision of transforming Sentosa into a cool oasis, and backed by the baseline understanding from the study, SDC will be implementing the **Sentosa Cooling Network**, comprising a series of cool nodes and cool zones across the island. While *cool nodes* serve as smaller, accessible pit-stops that provide a quick and cool respite, *cool zones* will anchor larger precincts with purpose-built infrastructure and urban design solutions that deliver a step-change in thermal comfort. Additionally, guest services and experiential offerings would be incorporated into cool zones, making it an attractive purpose-of-visit for guests. From now until 2030, 10 of such cool nodes and cool zones have been planned for, with the upcoming ones focused along the beachfronts. More information about the locations of the cool nodes and zones can be found in Annex A.

One such example is the ongoing Cool Node trial at Siloso Beach, where a public area has been refreshed with a wall and floor mural utilising Nippon Paint COOL-TEC cool coating, Panasonic misting system, and increased shade to offer guests easily accessible respite from the heat. While the trial is scheduled to run until April 2026, an interim survey of more

than 200 guests revealed that three in four respondents were highly satisfied with the cooling features at the node. SDC will continue monitoring the efficacy of measures implemented at the Siloso Beach Cool Node, through measures such as guest satisfaction surveys. More information about the Siloso Beach Cool Node can be found in Annex B.

Another example of a cool node will be the upcoming refresh of Central Beach Bazaar forecourt, which is informed by learnings from the Siloso Beach cool node as well as recommendations from the OTC study. Located within in the vicinity of the Beach Station transport hub, Central Beach Bazaar will become a *cool node,* with a suite of cooling solutions to elevate guest experience to be incorporated, as recommended by the OTC study. Works on the 2,400 sqm space (approximately half a football field) is expected to commence in the last quarter of 2025 and to be completed in 2026. Please refer to Annex C for more details.

'No regrets' initiatives to provide immediate relief

While exploring future innovations beyond the Sentosa Cooling Network, SDC is also implementing immediate and practical "No Regrets" measures to improve guest experience. These include the replacement and installation of new fans and water coolers, the introduction of soil-less green roofs to lower surface temperatures, and continued tree planting efforts to expand natural shade.

Together, these initiatives provide tangible relief for guests today, while also laying the groundwork for more comprehensive cooling solutions in the years to come. More information on these initiatives can be found in Annex D.

Synergising Design, Technology and Nature for Improved Thermal Comfort

Sentosa as a testbed for novel innovations

Sentosa will also serve as a living testbed for innovative cooling solutions that can potentially be adapted for use across mainland Singapore.

Given the availability of novel technological innovations, SDC will also collaborate with industry partners to trial proof-of-concept pilots, such as those under the Sustainability Open Innovation Challenge (SOIC). In the coming months, SDC will be trialling two novel cooling solutions on Sentosa, with Envicom and Delta Sirius respectively. These trials will contribute to a stronger knowledge base and support the scaling of the most impactful measures. More information on the upcoming Envicom trial can be found in Annex E.

Advancing nature-based solutions

As an island destination that is continuously developing with natural landscapes, SDC is also exploring nature-based solutions as a more sustainable, nature-oriented pathway towards island-wide heat mitigation and habitat enhancement. One such example is the implementation of a regenerative tropical MicroForest, as part of the Central Beach Bazaar forecourt cool node.

The MicroForest is done in collaboration with NUS Cities and NUS Centre for Nature-based Climate Solutions, where a team of academic and practicing experts advise on MicroForest design and optimisation, conduct research and data collection to monitor biodiversity, microclimate, and user perception.

Findings from this study will provide evidence-based, real-time recommendations on how SDC can optimise nature-based solutions on Sentosa to cool the surroundings, while enhancing biodiversity and overall guest enjoyment.

Island-wide efforts to solidify Sentosa's reputation as a sustainable premier destination

As part of the Cooling Sentosa Roadmap, SDC will also engage businesses on the island and other key stakeholders to align sustainability efforts and foster cross-island collaborations. These include government agencies, local businesses, and other industry partners.

Meanwhile, SDC will continue to rally businesses on the island (also known as Island Partners) on improving OTC, to further strengthen Sentosa's appeal for generations to come. This includes sharing insights from the commissioned OTC study as well as lending expertise and resources for Island Partners to implement such measures. One such Island Partner which has already embarked on such efforts is Resorts World Sentosa and the newly opened WEAVE mall. The mall utilises enhanced ethylene tetrafluoroethylene (ETFE) roofing to deflect heat and reduce temperature increases from ambient sunlight. To improve thermal comfort, the design incorporates Jet and High-Volume Low-Speed (HVLS) fans to enhance air flow with an automatic control system, while also utilising cold water by-products generated by the hot water usage in Resorts World Sentosa hotels to cool the air that feeds into public spaces in the mall.

In addition to Resorts World Sentosa, Mount Faber Leisure Group, Raffles Sentosa Singapore, and Sofitel Hotel Sentosa Singapore are amongst some of the Island Partners

that have committed to collaborate on improving guest experience through heat mitigation as part of Cooling Sentosa. More information on this can be found in Annex F.

Reaffirming Sentosa's Commitment to Climate-Smart Tourism and Guest Well-Being

Drawing from the results of studies, learnings, and stakeholder feedback, the Cooling Sentosa Roadmap lays the foundation for SDC to continually refine and enhance the cooling approach across the island. In the longer term, SDC will incorporate infrastructural designs to enhance the OTC of guests on the island, as part of planning considerations for the Greater Sentosa Master Plan.

Ms Thien Kwee Eng, Chief Executive Officer of Sentosa Development Corporation, said, "As an island destination, there are lots to be discovered especially in Sentosa's natural environment. Our commitment to a sustainable future drives the Cooling Sentosa roadmap. By embracing innovative cooling technologies and smart infrastructure, we aim to leverage science-driven and nature-based solutions to ensure a comfortable, eco-friendly environment for residents and visitors alike. This roadmap is not just about cooling. It's about shaping a climate-resilient, green Sentosa that sets a benchmark for sustainable destination stewardship."

The Cooling Sentosa Roadmap reaffirms Sentosa's commitment to being a climate-smart, sustainable tourism destination – one that prioritises both environmental responsibility and the enhancement of guest experiences through innovative heat-mitigation strategies and long-term, eco-friendly solutions.

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Images can be downloaded here. (credit to Sentosa Development Corporation, unless otherwise stated)

Media Contacts:

Sentosa Development Corporation
Strategic Communications & Public Relations
communications@sentosa.gov.sg

About Sentosa
Sentosa, where discovery never ends, is Asia's leading leisure destination and Singapore's premier island resort getaway, located within 15 minutes from the central business and shopping

districts. The island resort is managed by Sentosa Development Corporation, which works with various stakeholders in overseeing property investments, attractions development, and operation of the various leisure offerings and management of the residential precinct on the island.

The 500-hectare island resort is home to an exciting array of themed attractions, award-winning spa retreats, lush rainforests, golden sandy beaches, resort accommodations, world-renowned golf courses, a deep-water yachting marina and luxurious residences – making Sentosa a vibrant island resort for business and leisure. Sentosa is also home to Singapore's first integrated resort, Resorts World Sentosa, which operates Southeast Asia's first Universal Studios theme park.

Situated on the eastern end of Sentosa Island is Sentosa Cove, an exclusive waterfront residential enclave bustling with more than 2,000 homes, quayside restaurants, retail and specialty shops. The island is also proud to be home to Sentosa Golf Club and its two acclaimed golf courses, The Serapong and The Tanjong. Sentosa Golf Club has hosted a number of high-profile professional and amateur tournaments, including the Singapore Open and HSBC Women's World Championship, welcoming international star players and world-class golf professionals from across the world.

Welcoming a growing number of local and international guests every year, Sentosa is an integral part of Singapore's goal to be a global destination to work, live and play. For more information, please visit: www.sentosa.com.sg.

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About Sentosa Development Corporation

Sentosa Development Corporation (SDC) was established on 1 September 1972 as a Statutory Board under the Ministry of Trade and Industry. As a master planner, its charter since inception has been to oversee the development, management, marketing and promotion of the island of Sentosa as a resort destination for locals and tourists.

SDC wholly owns its subsidiaries Sentosa Cove Resort Management Pte Ltd and Sentosa Golf Club. SDC also owns the Singapore Cable Car Sky Network, managed by Mount Faber Leisure Group Pte Ltd, a wholly owned subsidiary which operates as an autonomous commercial arm.

As a testament to its commitment to sustainability, SDC has been conferred the Global Sustainable Tourism Council – For Destinations (GSTC-D) certificate, making Sentosa the first island destination in Asia to receive this accolade.

Translated terms

Thien Kwee Eng Chief Executive Officer, Sentosa Development Corporation	田桂英 圣淘沙发展局局长
Lee Shi Ruh Chief Executive Officer, Resorts World Sentosa	李溪茹 首席执行官, 圣淘沙名胜世界
Cristina Kuo Lin Divisional Director, Environmental, Atelier Ten (Asia) Pte. Ltd.	克里斯蒂娜·郭·林 环境部总监, Atelier Ten (亚洲) 私人有限公司
Environmental design and sustainability consultancy	环境设计与可持续发展顾问公司

Quote Sheet

Resorts World Sentosa

Ms Lee Shi Ruh, Chief Executive Officer, Resorts World Sentosa said:

"At Resorts World Sentosa, our priority is to ensure that every guest enjoys a seamless and comfortable experience. In outdoor areas such as WEAVE and Universal Studios Singapore, we have invested in advanced solutions – from ETFE roofing and high performance glass that minimise solar heat, to heat pump cooling technology, jet fans and high-volume-low-speed fans that circulate fresh, chilled air. These technologies not only enhance comfort in our spaces, but also align with Sentosa's broader vision of a smarter, more sustainable destination for all to enjoy."

Atelier Ten

Ms Cristina Kuo Lin, Divisional Director, Environmental at Atelier Ten (Asia) said: "Traditionally, urban planning treats thermal comfort as a nice to have, often secondary to cost or aesthetics. We reset the brief around human experience. Combining on the ground measurements with macro and micro simulations, we mapped how people feel heat and pinpointed where cooling will deliver the greatest benefit. We tested strategies and delivered a pilot cool node on the Sentosa testbed, with more to come. SDC's thermal comfort and people centred focus is a data driven approach that offers a model for Singapore's liveability, urban planning and tourism precincts."

Annex A: Sentosa Cooling Network

10 Cool Nodes and Cool Zones have been planned to be implemented on Sentosa:

Immediate term (Now till 2027)

1. WEAVE at Resorts World Sentosa Cool Zone [completed]
2. Siloso Beach Cool Node [completed]
3. Siloso Beach Rest Stop Cool Node
4. Central Beach Bazaar Forecourt Cool Node
5. Imbiah Lookout Cool Node
6. Fort Siloso Gateway Cool Node

Middle term (2028 – 2030)

7. Palawan Bus Stop Cool Node
8. Tanjong Beach Cool Node
9. Palawan Cool Node
10. Palawan Green Cool Node

Annex B: Siloso Beach Cool Node trial

The Siloso Beach Cool Node is the first of 10 cool nodes and zones within the Sentosa Cooling Network. The Siloso Beach Cool Node features several measures to enhance guests' thermal comfort:

1) An interactive mural wall by local artist William Lee, painted on both the wall and the floor using Nippon Paint's COOL-TEC cool coating. The specially formulated paint reflects solar heat, lowering surface temperatures by up to 2°C, which helps keep the space cooler for everyone who walks through, especially for barefooted beachgoers.
2) Silky Fine Mist misting system by Panasonic which sprays ultra-fine water droplets (approximately 6μm in diameter or more than 10 times smaller than a strand of hair) that cools guests down without leaving them feeling drenched.
3) Native trees and shrubs to provide natural shading, contributing to the space's aesthetics.
4) Hydration point where guests can refill their water bottles while out and about.
5) Parasols and seats further enhance overall guest experience, allowing guests to rest comfortably.

Key learnings thus far

While the cool node is on trial from June 2025 to April 2026, an interim guest survey conducted with more than 200 visitors found that about three in four surveyed were highly satisfied with the cooling efforts at the node.

Preliminary assessments made by SDC found 2 degrees Celsius reduction in floor surface temperature. SDC also found that the floor painting did not reduce slip resistance of the pavement, and no paint peeling or cracking of the cool paint were observed. The misting system was also did not encounter any issues operating in a beachfront environment.

Annex C: Heat mitigation initiatives implemented at Central Beach Bazaar forecourt refresh

The next cool node that SDC will be trialling will be at the Central Beach Bazaar forecourt.

These measures include:

1. Planned parasol canopies and landscape over seating areas to provide shading;
2. Consistent air movement from high-volume low-speed (HVLS) fans;
3. Additional cooling from misting system; and
4. Reduce heat absorption by using high solar reflectance paving.

Based on modelling done as part of the Outdoor Thermal Comfort study, the additional measures will achieve an improvement of minimum of 4 degrees Celsius (as measured in Physiological Equivalent Temperature, PET).

Works are expected to commence in the last quarter of 2025 and be completed in 2026.

Artist impression of the Beach Station Precinct Cool Node once completed in 2026

Annex D: List of 'no regrets' initiatives

Measures	Details
Fans (to increase air movement and ventilation)	Almost 200 fans have been installed across guest-fronting areas of Sentosa. ***NEW AND ADDITIONAL*** Three additional high-volume-low-speed (HVLS) fans have been installed at the two Siloso Beach Pavilions (Emerald and Sapphire Pavilions), and Sentosa Express (Imbiah Station).
Watercoolers (providing hydration for guests)	***NEW AND ADDITIONAL*** SDC has installed three new watercoolers at Palawan Kidz City, Beach Station Bus Bay, and Fort Siloso, bringing the total to 26 across the island.
Tree planting (natural shade)	***ADDITIONAL*** 400 additional trees have been planted along the three beaches (Siloso, Palawan, Tanjong) and along Artillery Avenue.
Soil-less green roof (reduces urban heat island effect)	***NEW AND ADDITIONAL*** About 2900m^2 of soil-less green roof will be installed by first quarter of 2026 over the covered walkways around Imbiah Lookout, Siloso Point, and the three beaches (Siloso, Palawan, and Tanjong Beach).

Annex E: Collaborating with technological partners through Sustainable Open Innovation Challenge (SOIC)

Sentosa Development Corporation (SDC) is continuously exploring new technology and innovation to enhance guest experience, particularly in Sentosa's outdoor environment.

Through the Sustainability Open Innovation Challenge (SOIC) organised by Enterprise Singapore, SDC participated under the heat mitigation theme by issuing a challenge statement titled "Cooling Sentosa Technologies," which aims to address the urgent issue of rising temperatures through innovative technological solutions that could improve guest comfort in Sentosa's outdoor spaces. Following SOIC's evaluation process, two solution providers have been selected for pilot installations in Sentosa.

Envicom Pte Ltd will showcase their locally developed cool composite insulation technology, which can be integrated with building materials such as cement and screed, at an open space along Siloso Beach.

Annex F: Addressing outdoor thermal comfort across businesses on Sentosa

Businesses on Sentosa have also embarked on efforts to address guests' outdoor thermal comfort, with some examples listed below.

Business on Sentosa	Measures
Mount Faber Leisure Group	• Solar protection film applied at glass canopy at SkyHelix Sentosa • Solar protection film applied on cable car cabins on Singapore Cable Car (Mount Faber and Sentosa Line) • Wall-mounted and HVLS fans at all cable car stations. • Green roof installed at Singapore Cable Car (Sensoryscape Station) • Retail outlets carrying items such as USB handheld fans, caps, umbrellas, sunscreen, chilled drinks and ice cream.
Raffles Sentosa Singapore	• Signature Raffles Jungle Print umbrellas provide shade at the Resort Pool, The Lookout, Royal China al fresco seating area, and Raffles Sentosa Spa poolside.
Resorts World Sentosa	• Ethylene tetrafluoroethylene (ETFE) roofing throughout the integrated resort for 80% reduction in solar heat gain. • State-of-the-art District Cooling Plant (DCP) centralises and optimises cooling processes. • High-performance shopfront glass for Envelope Thermal Transfer Value (ETTV) heat conduction below 38 W/m^2. • At WEAVE, jet fans circulate fresh air from mechanical ventilation units and HVLS pole fans circulate air at hot spots. • Cold air byproduct from heat pumps is harnessed in the cold water supply that is recycled and used to serve the free cooling Air Handling Unit (AHUs)/ Fan Coil Unit (FCUs) during hot weather. Estimated energy savings from using byproduct instead of providing cooling load from DCP: 1,204,500 kWh.

	This allows RWS to save 567.3 tonnes of carbon emissions annually.
Sofitel Hotel Sentosa Singapore	• Air-coolers filled with water deployed in the al fresco seating areas of restaurants, Kwee Zeen, LeBar, and The Cliff.