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THE STRAITS TIMES

Long Island set to be reclaimed off East Coast could add 800ha of land

Area can be used for new homes, other amenities, and create S'pore's 18th reservoir

Ng Keng Gene
and Shabana Begum

Three tracts of land could be reclaimed off East Coast Park in the coming decades, creating about 800ha of land for new homes and other amenities, as well as a new reservoir.

Called the Long Island, these land tracts – collectively about twice the size of Marina Bay – are Singapore's response to the threat of rising sea levels and inland flooding in the East Coast area.

Land in the area is largely lower than 5m above the mean sea level, the extent that sea levels are projected to rise to by the end of this century if extreme high tides coincide with storm surges.

On Nov 28, National Development Minister Desmond Lee announced that public agencies will carry out technical studies for the Long Island project over five years, starting from early 2024.

Over the next few years, members of the public will be consulted for their ideas and suggestions for the project, which will take several decades to plan, design and develop.

The current plan is for three elongated tracts of land to be re-



The beach and coastline at East Coast Park. Plans for reclamation off East Coast were first unveiled in 1991, as part of the Urban Redevelopment Authority's Concept Plan. ST PHOTO: JASON QUAH

claimed in the area, extending from Marina East to Tanah Merah. The easternmost land tract will start from Tanah Merah, while the westernmost tract will be an extension of Marina East. Between these two tracts, a third tract will be reclaimed.

A large tidal gate and pumping station will be built in between each new land mass. These will control the water level in a new reservoir bordered by East Coast Park and the new land masses, and, in the process, reduce flood risks in the East Coast area.

National water agency PUB said the reclamation project is likely to create Singapore's 18th reservoir.

Like the gate at Marina Barrage, the two gates at the new reservoir in East Coast will open to release excess storm water into the sea during heavy rain when the tide is low. At high tide, the pumps will be used instead to release the storm water.

Mr Lee said the new reservoir can also be used for water activities such as canoeing and dragon-boat-ing.

Besides offering flood protection

20km

Stretch of new coastal and reservoir parks that could be added, tripling the length of waterfront parks in the East Coast area.

and increasing Singapore's freshwater supply, the project will help meet future development and recreation needs, said Mr Lee.

Waterfront homes are expected to be built on the reclaimed land, along with amenities and industrial facilities. About 20km of new coastal and reservoir parks could be added, tripling the length of waterfront parks in the East Coast area, he said.

Plans for reclamation off East Coast were first unveiled in 1991, as part of the Urban Redevelopment Authority's (URA) Concept Plan. It was envisioned then that a series of reclaimed islands would provide waterfront housing and leisure opportunities.

At the 2019 National Day Rally, Prime Minister Lee Hsien Loong said reclaiming a series of islands offshore and linking them up with barrages could protect existing low-lying areas and create a freshwater reservoir.

URA showcased a possible concept for reclamation works at its long-term plan review exhibition in 2022.

In his speech on Nov 28, Mr Desmond Lee said the Government has been studying various coastal protection options, including building a sea wall up to 3m tall that would stretch from Marina East to Tanah Merah.

The wall would be accompanied by 12 sets of tidal gates and pumping stations – one set at each of the 12 existing outlet drains along East Coast. The gates would stop seawater from flowing inland during high tide, while the pumping stations would pump storm water from the drains into the sea when the gates were closed.

Mr Lee said this option is technically feasible but not ideal for East Coast Park, as large stretches of the park would have to be closed to the public when building the sea wall. When completed, it would permanently limit park users' access to the waterfront for recreation and sports.

The 12 tidal gates and pumping stations would take up a lot of space within East Coast Park – about the area of 15 football fields – resulting in the loss of existing greenery and recreational facilities.

Mr Lee noted that the public hopes to retain unimpeded access to the waterfront, as well as preserve the heritage and recreation spaces along the coast.

A more optimal solution is to integrate coastal protection measures with reclamation plans for the area, he added.

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SEE THE BIG STORY • A4

Paralysed men can walk again after spinal implant

Judith Tan
Correspondent

Mr Sam Subian, 49, was a competitive jockey for 25 years until his horse Silver Spoon stumbled during training in June 2017, flinging him onto the track.

"Silver Spoon died and I fractured my spine. I could not sense anything below my chest. I was told I would never stand or walk again," Mr Sam said.

It took him a few years to come to terms with not being able to walk, let alone compete, and he was worried about who would care for his mother.

But for the past seven months, Mr Sam has been able to walk unassisted, thanks to an implant that helps overcome the damage to the nerve pathways in his spinal cord – and lots of hard work.

He was the first of three participants in a new clinical trial here, called Restores (restoration of rehabilitative function with epidural spinal stimulation), which may spell hope for people who would otherwise never walk again.

Spinal cord damage disrupts the transmission of electric impulses or signals that control movement and sensation from the brain to parts of the body like the arms and legs, depending on where the damage is. These signals travel over nerve pathways.

The procedure involves implanting a spinal cord stimulator – an electrode powered by a battery pack inserted into the lower back and connected to the covering of the spinal cord below the damaged area.

"The aim of the trial is to bridge the damaged part of the spinal cord and boost signals from the brain to the muscles by tapping residual pathways that are still via-



Mr Sam Subian (left), being assisted by principal physiotherapist Phua Min Wee, and Mr Asyraf Ghazali (right), being assisted by senior principal physiotherapist Wee Seng Kwee, relearning how to walk at the Centre for Advanced Rehabilitation Therapeutics at Tan Tock Seng Hospital on Nov 28. ST PHOTO: LIM YAOHUI

ble," said neurosurgeon Wan Kai Rui from the National Neuroscience Institute (NNI).

The stronger signals can stimulate a person to walk again.

After the implant operation, participants undergo advanced robotic rehabilitation.

The researchers study how this helps improve nerve and muscle functions in patients paralysed

from the chest down.

The procedure is the first of its kind in the region, and is being trialled by NNI, Tan Tock Seng Hospital (TTSH) and the Agency for Science, Technology and Research, with grants from the National Medical Research Council and the Ng Teng Fong Healthcare Innovation Programme.

The second participant is finan-

cial adviser Asyraf Ghazali, 28. He was in a road accident in 2018 that severed his spine and left him paralysed from the chest down.

"I was in the prime of my life when it happened. Like Sam, I made up my mind to move on with life, but I continuously looked for treatments to help me walk again," he said.

He received his implant in

March, a month after Mr Sam had his operation. The third, a woman, will get an electrode implanted in January 2024.

Dr Wan said TTSH and NNI in total treat about 100 new cases of spinal cord injury a year, and about 95 per cent of "motor complete" spinal cord injury patients –

CONTINUED ON PAGE A2

Travel • Changi Airport rebound on track

Changi Airport's post-pandemic rebound looks to be on track, with overall passenger figures in October recovering to 90.7 per cent of 2019 levels – the highest percentage since Covid-19 struck.

Passenger traffic between Singapore and South Korea eclipsed pre-pandemic levels by 36 per cent in October, making it the airport's fastest-growing market in 2023.

SEE THE BIG STORY • A2

Nanotech lab • NTU, Nanofilm in R&D tie-up

A \$66 million corporate lab that will boost the development of nanotechnology solutions in Singapore was officially launched at Nanyang Technological University (NTU) on Nov 28.

The 19,000 sq ft facility, slated to be ready by the second half of 2024, is a five-year tie-up between NTU and Nanofilm Technologies.

Work on 10 industry-focused projects under four main research areas has already begun.

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Changi Airport traffic crosses 90% of pre-pandemic levels for first time

Jump in passenger traffic between S'pore, South Korea helps drive rebound

Kok Yufeng
Transport Correspondent

Passenger traffic between Singapore and South Korea eclipsed pre-pandemic levels by 36 per cent in October. This makes South Korea the fastest-growing market for Changi Airport in 2023, the airport's operator said on Nov 28.

This growth has, in turn, helped to drive the airport's post-pandemic rebound, with overall passenger figures in October recovering to 90.7 per cent of 2019 levels, the highest percentage since Covid-19 struck.

This is also the first time monthly passenger traffic has crossed 90 per cent of pre-pandemic levels, said Changi Airport Group (CAG).

The previous peak was in May, when the recovery stood at 89.5 per cent.

Since then, the recovery rate has been hovering below 90 per cent, due to the number of visitor arrivals to Singapore, CAG said.

In October, 5.12 million travellers passed through the airport, compared with 5.65 million in October 2019, according to data released by CAG and the Civil Aviation Authority of Singapore.



In October, 5.12 million travellers passed through Changi Airport, compared with 5.65 million in October 2019. About 28,700 commercial flights took off from or landed at the airport, amounting to 89.8 per cent of the flights in October 2019. ST PHOTO: KUA CHEE SIONG

About 28,700 commercial flights took off from or landed at Changi, amounting to 89.8 per cent of the flights in October 2019.

CAG said the South Korean market has seen the strongest recovery so far in 2023 among the airport's top 10 markets. Behind it are India, which is at 102 per cent of pre-pandemic levels compared with 2019, and Australia, at 94 per cent.

About 209,000 passengers travelled between Singapore and

South Korea in October, compared with 153,000 in October 2019. In the first 10 months of 2023, 1.8 million passengers travelled between the two countries, compared with 1.32 million over the same period in 2019.

For comparison, Changi Airport's top market in October was Indonesia, with 605,876 passenger movements. Markets with similar passenger traffic numbers as South Korea in October include the Phi-

ippines (210,878) and Vietnam (195,346).

CAG said passenger traffic between South Korea and Singapore had recovered to above 2019 levels since January, outperforming pre-Covid-19 numbers by at least 25 per cent each month.

It attributed this to the growth in traffic between the Republic and the South Korean cities of Seoul and Busan, as well as low-cost carrier Scoot's launch of flights to and

from Jeju island in June 2022.

CAG said Seoul is now Changi Airport's sixth-largest city link by passenger traffic. It was 12th in 2019. In October 2023, 186,000 passengers travelled between Changi Airport and Seoul's Incheon Airport, compared with 142,000 in October 2019.

Another factor behind the growing demand has been a corresponding increase in flight capacity by airlines.

In May 2022, T'way Air became the first South Korean low-cost carrier to operate between Singapore and Seoul, with two flights a week. It now runs daily services.

Meanwhile, Scoot flies between Singapore and Seoul seven times a week, compared with thrice a week in January 2020.

Passenger traffic between the port city of Busan and Singapore has grown the fastest, said CAG, with passenger movements in October 2023 more than double that of January.

CAG noted Jeju Air's reinstatement of flights between Singapore and Busan in June 2022. The frequency has also risen from twice-weekly to six times a week.

Singapore Airlines, too, resumed flights to the city in August.

CAG said there are now six airlines operating flights between Singapore and South Korea, compared with five before the pandemic.

Mr Lim Ching Kiat, CAG's executive vice-president for air hub and cargo development, said the injection of flight capacity and services by low-cost carriers, such as T'way Air, has improved accessibility to South Korea and increased options for consumers.

Ms Chung Tak Ing, assistant general manager of tour agency ASA Holidays, said the company observed a 30 per cent to 40 per cent increase in Singaporeans signing up for its tour packages to South Korea in the last quarter of 2023, compared with the same period in 2022.

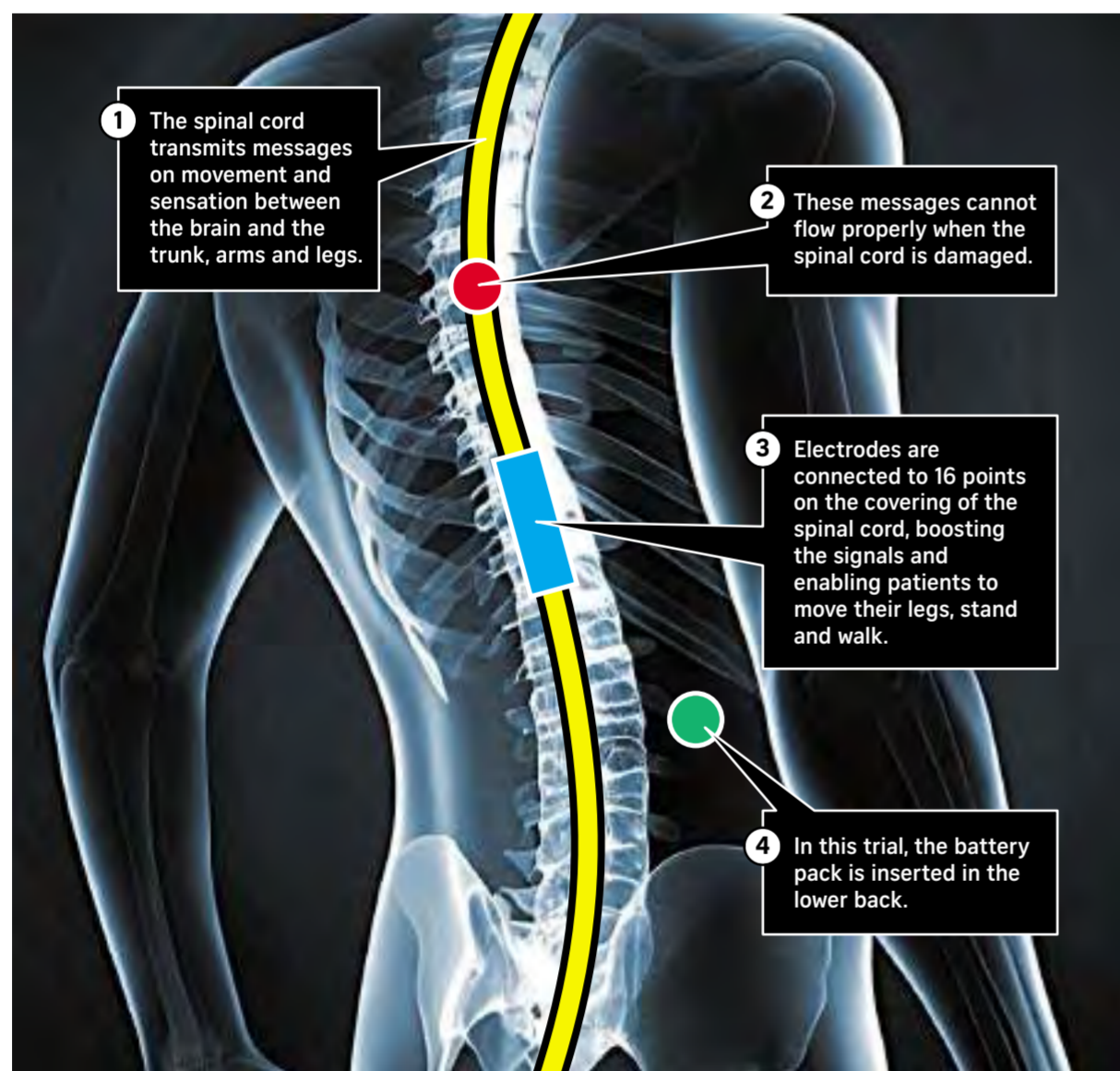
October is a peak travel period to South Korea. Ms Chung said some people could have travelled there to see the autumn foliage.

She predicts travel demand to South Korea will remain strong, with more families travelling during the year-end school holidays.

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• Additional reporting by Esther Loi

How the spinal implant works



Sources: NATIONAL NEUROSCIENCE INSTITUTE, TAN TOCK SENG HOSPITAL STRAITS TIMES GRAPHICS

Phase two of trial to proceed with 15 patients

FROM A1

those with no sensation below the site of injury – have no neurological improvement five years after their injury.

A month after their surgery, both Mr Sam and Mr Asyraf were put through intense rehabilitation to get them to stand on their own and walk with a walking frame.

They were fitted into a robotic exoskeleton suit to simulate walking, increase the number of repeat steps taken and strengthen their trunk and leg muscles.

Senior principal physiotherapist at TTSH Wee Seng Kwee said motor imagery is also used.

"This is to have them imagine a movement, despite not being able to actively move. With mind over matter, the patients could eventually move parts of their legs that they could not before," said con-

sultant Valerie Ng. But while they can move, they do not feel themselves moving.

"I was sceptical at first because prior to this, I suffered spasms. When the (medical) team told me that my toes were moving, I did not believe them and put it down to spasms until I started moving my knee," Mr Asyraf said.

The men progressed quickly, moving from the use of the robotic exoskeleton to walking with a ceiling hoist in slightly over a month, and then to daily physiotherapy sessions overground in just seven months.

The results have surpassed what other similar programmes have achieved, said Dr Wan.

One programme in Texas, in the United States, carried out conventional rehabilitation twice a day for 1½ years to 2½ years "to achieve what we did in six

months", she said.

A recent one carried out in Switzerland had its own implants created, "which limits scalability and accessibility", Dr Wan added.

At Restores, apart from using pre-existing implants that are easily available, the team also came up with a rehabilitation programme and programming recommendations that allow for efficient improvement.

The team will be moving into phase two of the trial with about 15 patients with spinal cord injury.

"We will also be looking at those with paralysis from the neck down. We want to see how such electrode stimulation can help with the movement in their arms," Dr Wan said.

Mr Sam, a sports adviser at sports goods retailer Decathlon, is a fan of the 1970s television series The Six Million Dollar Man, about a former astronaut who was "re-built" with bionic implants after a test flight accident.

"With the electrode and battery pack in me to help me walk, I feel like I'm a One Million Dollar Man."

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Condo resale volume recovers slightly, price growth slows in Oct

Joyce Lim
Senior Correspondent

The resale condo volume recovered slightly in October, with prices rising marginally for the third consecutive month.

From September to October, prices inched up by 0.4 per cent, lower than the 0.8 per cent in September and 0.9 per cent in August, according to flash data released by real estate portals 99.co and SRX on Nov 28.

The resale condo volume was up 14.7 per cent between September and October.

The report by the property portals showed that prices grew by 1.9 per cent in the rest of central region (RCR) and 2.5 per cent in the outside central region (OCR), but fell 1.5 per cent in the core central region (CCR).

Overall prices climbed by 7.5 per cent compared with October 2022.

Mr Luqman Hakim, chief data and analytics officer at 99.co, said the sustained strong growth in OCR and RCR sectors seemed to indicate strong demand for resale condos in these areas despite overall pessimistic market conditions and high prices.

He expects prices to reach a ceiling soon as market supply increases with vacancy rates reaching their highest levels in five years.

PropNex head of research and content Wong Siew Ying said the hike in additional buyer's stamp duty (ABSD) likely continued to weigh on the CCR segment among investors and foreign buyers.

Huttons Asia chief executive Mark Yip said: "Buyers of resale condos are resisting higher prices and adjusting their budget as the mortgage interest rates continue to stay high. Year to date, resale condo prices have increased by 6.3 per cent."

Citing Urban Redevelopment Authority Realis caveat data, Ms Wong pointed out that the average unit prices of resale condo transactions expanded across all regions in October.

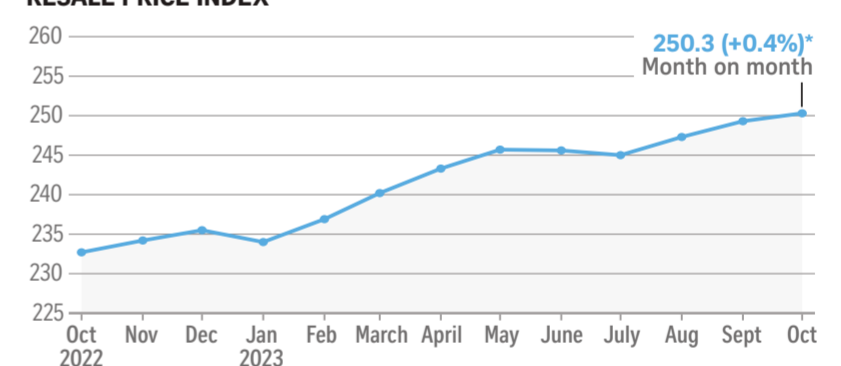
The RCR saw average unit prices rise by 4.7 per cent to \$1,788 per square foot (psf), from September to October.

In the CCR, resale condo prices grew by 1.8 per cent to \$2,068 psf, while OCR logged a 2.3 per cent expansion to \$1,418 psf, she said.

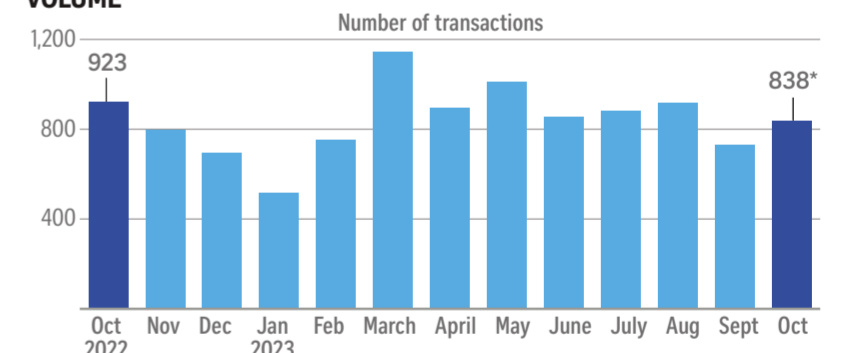
Ms Wong noted that about 95.5 per cent of CCR resale condos were transacted at below \$5 million in October, up from 90.4 per cent in September.

Condo resale prices, volume rise

RESALE PRICE INDEX



VOLUME



NOTE: *Flash estimate.

Sources: 99.co, SRX STRAITS TIMES GRAPHICS

"With CCR home prices staying relatively flat, more opportunistic buyers have been entering the market to pick up reasonably priced CCR homes, spurring some momentum in the segment," she added.

Mr Yip noted that "some astute buyers are taking this opportunity to hunt for a CCR home, and that has pushed up the volume by 25.4 per cent in October".

According to the flash report, an estimated 838 resale units were transacted in October, up from 731 in September. About 51.8 per cent of the units were from OCR, 29.4 per cent from RCR, and 18.8 per cent from CCR.

Compared with October 2022, the volume is lower by 9.2 per cent. It is also 12.7 per cent lower than the five-year average volume for October, noted the report.

The top transaction for the month was a 6,082 sq ft ground-floor unit at Bishopsgate Residences in the CCR that fetched \$22 million.

The overall median capital gain for resale condos rose by \$6,000 from September to \$350,000 in October, with districts 15 and 20 posting the highest at \$667,000 and district 1 the lowest at minus \$98,000.

Of the nine transactions linked

to foreigners, seven involved buyers from the United States, and one each from Switzerland and Oman, Ms Wong noted.

Under existing free trade agreements, buyers from the US and Switzerland do not need to pay ABSD for their first residential home in Singapore.

"We expect Singaporean and Singapore permanent resident buyers to continue to dominate... In October, (they) accounted for 98.9 per cent of non-landed private home resale transactions," said Ms Wong.

Analysts anticipate moderate growth in resale home prices in the coming months, given the restrictive ABSD rates for investors and foreigners, elevated interest rates and macroeconomic uncertainties.

The Housing Board has also ramped up the supply of Build-To-Order flats, leading to more choices for buyers.

"Despite that, owners of resale condos should still enjoy some price upside, supported by the growing price gap between resale condos and new-launch condos, as well as resilient owner-occupier demand buoyed by local home buyers," Ms Wong noted.

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