



# CREATING TOMORROW'S INDUSTRY SPACES

**ANNUAL REPORT**

**FY2017**



*Artist's Impression of Punggol Digital District*

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# MISSION

To develop industrial infrastructure to catalyse the growth of new industries and transform existing enterprises



*Artist's impression of Punggol Digital District*

**JOINT MESSAGE BY**

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**CHAIRMAN AND CEO**



In FY2017, we made available 183,900 sqm of industrial space through our newly completed developments and 26.5 hectares of industrial land via the Industrial Government Land Sales (IGLS) Programme. We also allocated 243.8 hectares of land to 124 companies and 164,200 sqm of space to 267 companies over the year to support the growth of industries and enterprises.

To accelerate industry transformation and reduce business costs, we continued with the development of customised solutions and completed facilities including JTC Food Hub @ Senoko and JTC Space @ Tuas. At CleanTech Park in Jurong Innovation District (JID), we have also completed LaunchPad that will house advanced manufacturing, cleantech and engineering startups.

To better support industrialists in their business growth, Housing Development Board's industrial properties and land were transferred to JTC on 1 January 2018. This consolidation of all public sector industrial land and properties under a single government agency will provide our customers with a one-stop access to the full range of public sector industrial facilities, and better support for their land and space needs across the different stages of business growth.

During the year, we stepped up our efforts to plan and develop next-generation industrial estates that aim to bring together businesses, talent, students and the community. These estates will also serve as living labs to catalyse the development of new urban solutions.

One example is Singapore's first autonomous vehicle (AV) test centre in JID. The 2-hectare Centre of Excellence for Testing and Research of Autonomous Vehicles – NTU was developed jointly with the Nanyang Technological University and Land Transport Authority, and will spearhead the development of AV testing requirements for their safe deployment on public roads. The Centre will anchor Singapore's position in supporting the testing and eventual widespread deployment of AVs.

one-north was also designated as Singapore's first drone estate to facilitate the trial of innovative unmanned aircraft systems technologies and commercial use cases. Under this drone estate initiative, approved operators and research users can carry out trials and operations at one-north without compromising safety and security. Experiences gleaned from this initiative will serve to inform how we can better design future precincts to incorporate new technologies, and accelerate their adoption.

In January this year, JTC, together with the Urban Redevelopment Authority, Infocomm Media and Development Agency and the Singapore Institute of Technology (SIT), jointly unveiled the Punggol Digital District (PDD) Masterplan. PDD is planned as part of Singapore's strategy to sustain long-term economic growth by creating new development areas island-wide, and bringing good jobs and social amenities closer to home. Situated in Punggol North, the District is envisioned to

be a vibrant and inclusive district underpinned by cutting-edge technology, as well as urban and social innovation which will make everyday living more convenient and sustainable. As Singapore's first Enterprise District, PDD will provide flexibility for the land use mix and scale to be curated at district level, enabling deeper integration and synergy of different uses and spaces to realise the vision of the District. Sited with SIT and community facilities, JTC's business park buildings will house key growth sectors of the digital economy such as cybersecurity and Internet of Things, which will in turn drive the wider transformation efforts for the Singapore economy.

FY2017 also saw our continued drive to more sustainably and innovatively manage our buildings and estates. In February this year, we commissioned the J-Ops Command Centre, the centrepiece of JTC's facilities management (FM) transformation journey. As one of the first integrated command centres set up for FM in Singapore, the Command Centre integrates a group of smart systems to allow comprehensive oversight of FM operations in our developments and estates.

We also launched a new business model for the utilisation of our rooftops to generate solar energy to be exported fully to the national grid. Named SolarRoof, the new business model is the outcome of successful test-beds conducted since 2015 on two of our industrial buildings. Under SolarRoof, JTC's rooftops generate solar energy that will be sold by generation companies in the open energy market. This effectively allows more industrialists, businesses and residential consumers to access solar generated electricity, regardless of roof constraints and high capital costs of solar PV installations.

All these would not have been possible without the guidance of the JTC Board and the support of our customers and partners. We would like to express our appreciation to the JTC Board for their counsel and direction. On behalf of the board and management, we would like to thank the board members who have stepped down, including Mr Ngiam Shih Chun, Lieutenant-General Perry Lim Cheng Yeow and Mr Yeoh Oon Jin.

We would also like to thank our customers, business associates and partners for their confidence and support, as well as all JTC colleagues for their commitment and hard work. In FY2018, we will continue to push boundaries, build resilient business communities and create tomorrow's industry spaces, with innovation and sustainability remaining at the core of our work.



**Dr Loo Choon Yong**  
Chairman  
JTC Corporation



**Mr Ng Lang**  
Chief Executive Officer  
JTC Corporation

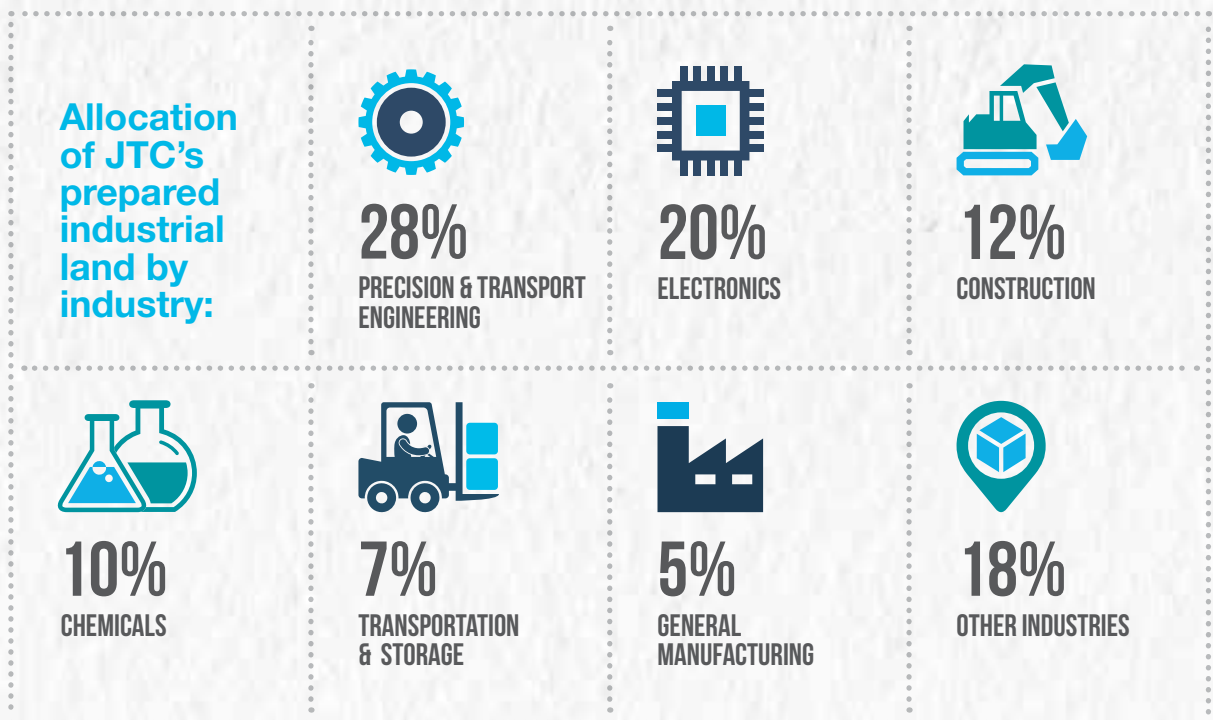
# FY2017

## HIGHLIGHTS

Gross allocation  
of JTC's prepared  
industrial land\*

Land Area (HA) **243.8**

No. of companies **124**



\*Excludes Prepared Industrial Land that is tendered out as part of the IGLS programme

## Gross allocation of JTC's ready built facilities

Floor Area ('000 sqm) **164.2**

No. of companies **267**

### Allocation of JTC's ready built facilities by industry:



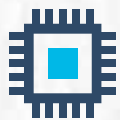
**15%**  
PRECISION  
ENGINEERING



**13%**  
GENERAL  
MANUFACTURING



**6%**  
INFORMATION &  
COMMUNICATION



**10%**  
ELECTRONICS



**10%**  
PROFESSIONAL,  
SCIENTIFIC &  
TECHNICAL ACTIVITIES

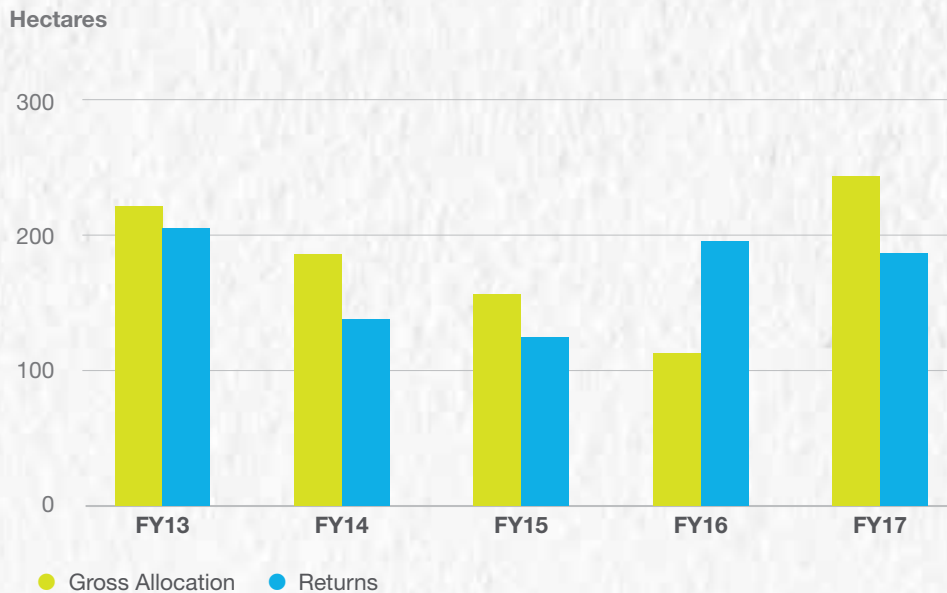


**6%**  
TRANSPORT  
ENGINEERING



**40%**  
OTHER INDUSTRIES

## Gross Allocation and Returns for JTC's Prepared Industrial Land,\* FY2013 to FY2017

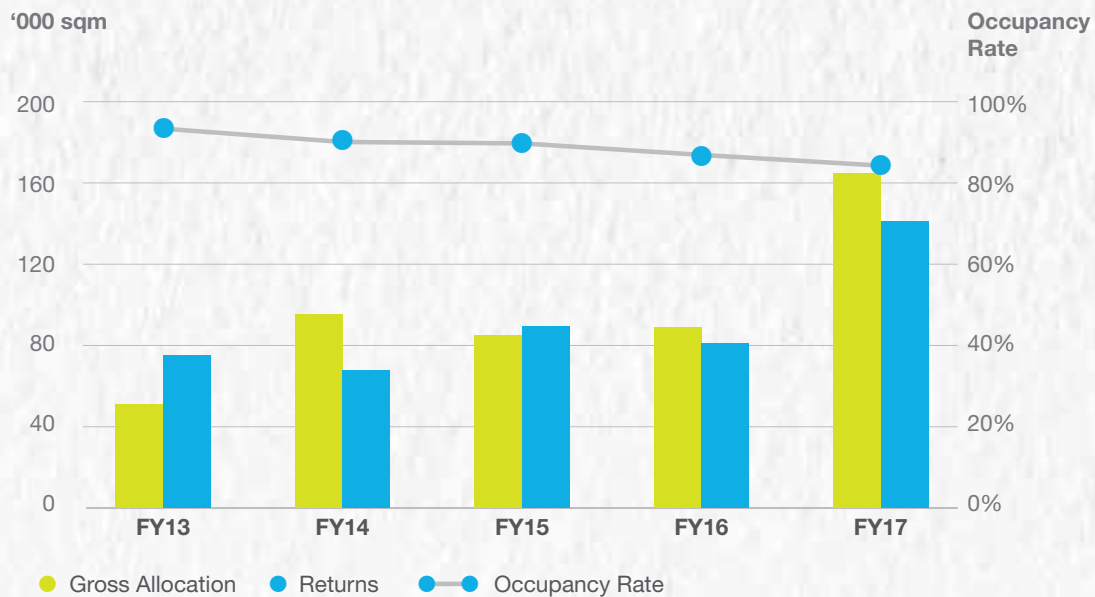


\*Gross Allocation for Prepared Industrial Land data excludes IGLS allocations

*FY2017 figures include previous HDB industrial properties that were transferred to JTC in January 2018*



## Gross Allocation, Returns and Occupancy Rate for JTC's Ready-Built Facilities, FY2013 to FY2017



*FY2017 figures include previous HDB industrial properties that were transferred to JTC in January 2018*

# BOARD MANAGEMENT

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For FY2017

## CHAIRMAN

### DR LOO CHOON YONG

Chairman  
JTC

Executive Chairman and Co-Founder  
Raffles Medical Group

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## MEMBERS

### MR VINCENT CHONG

President and Chief Executive Officer  
ST Engineering Ltd

### MR GUY HARVEY-SAMUEL

Chairman  
HSBC Singapore

### MS KWA KIM LI

Managing Partner  
Lee & Lee Advocates & Solicitors

### MS LAI WEI LIN

Deputy Secretary (Policy)  
Ministry of Education

### MR OLIVIER LIM

Chairman  
Certis CISCO Security Pte Ltd

### LIEUTENANT- GENERAL PERRY LIM

Chief of Defence Force  
Ministry of Defence  
*Till 31 March 2018*

### MR NG CHEE KEONG

Chairman  
Jurong Port Pte Ltd

### MR NGIAM SHIH CHUN

Deputy Secretary (Industry)  
Ministry of Trade & Industry  
*Till 31 January 2018*

### MS JEANETTE WONG

Group Executive  
Institutional Banking Group  
DBS Bank

### MS JESSIE YEO

Executive Secretary  
Union Centric  
Metal Industries Workers' Union

### MR YEOH OON JIN

Executive Chairman  
PricewaterhouseCoopers LLP  
*Till 31 March 2018*

### MR NG LANG

Chief Executive Officer  
Urban Redevelopment Authority  
*Till 31 August 2017*

Chief Executive Officer  
JTC

*From 1 September 2017*

### MR PNG CHEONG BOON

Chief Executive Officer  
JTC  
*Till 31 August 2017*

# SENIOR MANAGEMENT

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For FY2017

## MR NG LANG

Chief Executive Officer  
From 1 September 2017

## MR PNG CHEONG BOON

Chief Executive Officer  
Till 31 August 2017

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## MR HEAH SOON POH

Assistant Chief Executive Officer  
Engineering & Operations Group

## MR ALVIN TAN

Assistant Chief Executive Officer  
Industry Cluster Group

## MR DAVID TAN

Assistant Chief Executive Officer  
Development Group

## MR TERENCE SEOW

Assistant Chief Executive Officer  
Corporate, Policy & Planning Group  
Enterprise Cluster Group

Vice-Dean  
JTC Academy

## MR SEAH KEE POK

Dean  
JTC Academy  
Advisor

## MS CHEE WAN CHIN

Group Chief Financial Officer  
Director  
Billing & Reporting

## MS CINDY CHOU

Director  
JTC Academy

## MR GOH THONG

Director  
Audit & Advisory

## MS LEE CHUAY NOI

Director  
Human Resources

## MR HAROLD SOONG

Director  
Treasury & Payments

## MS CHRISTINE WONG

Director  
Communications

## INDUSTRY CLUSTER

### MR LEOW THIAM SENG

Group Director  
Cluster Group

### MS MA PING NEE

Group Director  
Cluster Group

Director  
Logistics & Land Transport

### MS JOANNE TAN

Group Director  
Cluster Group

### MR CHEANG TICK KEI

Director  
Precision Engineering & Construction

**MS SUSAN GOH**

Director  
SHiFT Project Office

**MS KHOO WEE LIN**

Director  
InfoComm Media & Startup  
*Till 31 Dec 2017*

**MS CINDY KOH**

Director  
Energy & Chemicals

**MR LEONG HONG YEW**

Director  
Food & Lifestyle

**MR HAROLD SOONG**

Director  
Emerging Clusters

**MS GLORY WEE**

Director  
Aerospace, Marine & Urban Solutions

**MR CHEONG WEE LEE**

Acting Director  
Biomedical & Electronics Cluster

**MR LIM JUNWEI**

Acting Director  
InfoComm Media & Start-Up

**MS WEE PEI YEAN**

Acting Director  
Products Division

**ENTERPRISE CLUSTER****MR KHOO TENG SEONG**

Group Director

**MR HO TING HOR**

Director  
Industrial Redevelopment

**MR LEE SAY KEE**

Director  
Industrial Lands

**MS TANG LI FUN**

Director  
Industrial Properties Management

**MS YAP CHUNG LEE**

Director  
Industrial Facilities Management

**DEVELOPMENT****MS JOSEPHINE LOKE**

Group Director  
Land Planning & Redevelopment

**MR ANIL DAS**

Director  
Innovation Programme Office

**MS VIVIEN TAN**

Director  
Land Redevelopment

**MS TANG HSIAO LING**

Director  
Land Planning

**MS FINN TAY**

Director  
New Estates Division 1

**MR TAY TER LONG**

Director  
Contracts & Procurement

**MR AARON THAM**

Director  
New Estates Division 2

**ENGINEERING & OPERATIONS****MR MARK KOH**

Group Director  
Facilities & Estates Management

Director  
Estates & Facilities Planning

**MR PNG GIOK HUA**

Group Director  
Infrastructure Development

**MR CALVIN CHUNG**

Director  
Reclamation & Infrastructure

**MR KOH CHWEE**

Director  
Technical Services

**MR ONG CHIA CHOONG**

Director  
Security

**MR TEO TIONG YONG**

Director  
Public Projects

**MR JASON FOO**

Acting Director  
Building Management

**MR WONG WEI LOONG**

Acting Director  
Innovative Space

**CORPORATE, POLICY & PLANNING****MR ANIL DAS**

Director  
Corporate Planning

**MR WILLIAM LIM**

Advisor

**MS YVONNE LIM**

Director  
Policy & Research

**MR MOHD HAFIZ BIN SAYUTI**

General Counsel  
Legal Services

**MS SIEW YIM CHENG**

Chief Information Officer  
Information Technology

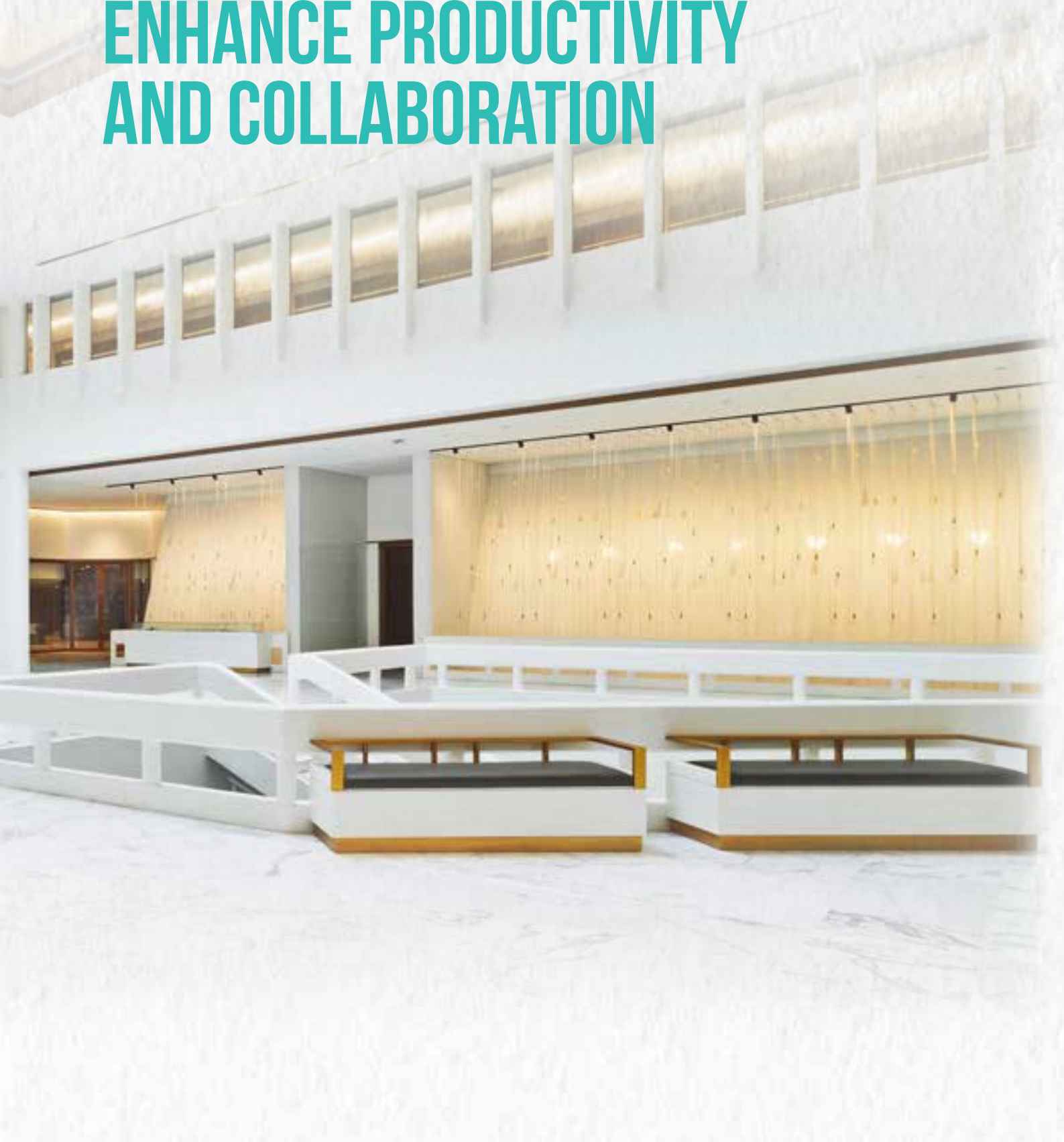
**MS VIVIEN TAN**

Director  
Organisation Excellence



*The refurbished Jurong Town Hall is one of Singapore's national monuments.*

# CREATING INNOVATIVE INDUSTRY SPACES TO ENHANCE PRODUCTIVITY AND COLLABORATION



# COMPLETED FACILITIES

## IN FY2017



### JTC FOOD HUB @ SENOKO

JTC Food Hub @ Senoko is a seven storey ramped-up development with an integrated cold room and warehouse facility for companies in the food manufacturing industry. The shared facility helps reduce companies' initial start-up and operations costs as they would not need to build and maintain their own cold rooms, or invest in their own delivery fleet. The development comprises modular units of about 1,100 sqm, with the flexibility to combine units to form larger spaces.

**GFA:**  
**85,800 sqm** | Completed in  
**Jul 2017**

**50** modular factory units  
(avg. 1,130 sqm per unit)

**cold room & warehouse** (15,800 sqm)



### JURONG TOWN HALL

Officially opened by Prime Minister Lee Hsien Loong in November 2017, the six storey building comprises refurbished spaces such as business spaces and shared facilities like an auditorium, theatrette, and meeting and training areas. Home to close to 30 trade associations today, this 43-year-old building was gazetted a national monument in 2015.

**GFA: 30,500 sqm**

**Restoration**  
**works completed in Sep 2017**





**JTC SPACE @ TUAS**

JTC Space @ Tuas caters to both multinational companies and small and medium enterprises from a diverse range of industries including oil and gas, precision engineering and general manufacturing. The seven land-based factories on the ground floor have high floor-to-ceiling height and heavy floor loading, catering to companies involved in heavier manufacturing activities, while the flatted factories units on the upper floors are suitable for light manufacturing activities.

**GFA: 159,800 sqm** | Completed in **Dec 2017**

**7** land-based factories  
(from 2,800 sqm)

**36** ramp-up factories  
(from 1,600 sqm)

**87** flatted factories  
(from 160 sqm)

**JTC LAUNCHPAD @ JURONG INNOVATION DISTRICT**



JTC LaunchPad @ Jurong Innovation District is an expansion of JTC's LaunchPad initiative to support startup activities in Singapore. This new node in CleanTech Park will support a startup cluster focusing on, but not limited to, advanced manufacturing, engineering and urban solutions. The close proximity of the LaunchPad to Nanyang Technological University and the network of corporations and research institutions within CleanTech Park will facilitate collaborations and the cross-fertilisation of ideas. The presence of a small-scale rapid prototyping facility within the development will help startups with their small batch and single-piece prototyping needs, without the need for them to incur high upfront capital expenditure.

**GFA: 3,600 sqm**

Completed in **Jun 2017**

**35** units of startup and enabler space  
(25 - 200 sqm per unit)

**2** units of workshop space  
(540 sqm per unit)

# UPCOMING FACILITIES

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## TRENDSPACE

trendspace is Singapore's first high-rise multi-tenanted development to cluster furniture, design and lifestyle-related companies. It will house furniture manufacturers, interior fit-out specialists, material suppliers and designers under one roof, creating a thriving ecosystem of design and innovation. The development will also feature a training institute, collaborative spaces for designers, as well as an Experience Centre to showcase product designs with interactive and immersive user experiences.

**GFA:**  
**68,400sqm** | **Completing in**  
**2019**

**63** modular units (500 - 1,000 sqm per unit)

## TIMMAC @ KRANJI



TimMac @ Kranji is a first of its kind development in Singapore to cluster small and medium enterprises from the metals, machinery and timber industries. Its high design specifications will support these companies' operational requirements and productivity initiatives. Jointly conceptualised with industry associations, TimMac will offer shared services managed by the Singapore Cranes Association and Singapore Timber Association to drive industry transformation and increase productivity of companies at the facility.

**GFA:**  
**137,000 sqm** | **Completing in 2020**

**36** metals and machinery production units  
(avg. 1,400 sqm per unit)

**52** timber production units  
(520 - 1,200 sqm per unit)



## DESIGN ORCHARD

**Total GFA:**  
**2,350 sqm** | **Completing in end 2018**

A multi-agency effort by JTC, Singapore Tourism Board and Enterprise Singapore, the two and a half storey Design Orchard aims to nurture home-grown brands and profile local design talents. Housing retail, incubation and event spaces under one roof in the heart of Orchard Road, Design Orchard will foster collaboration and offer varied opportunities for designers to test-bed and commercialise their products.



*Artist's Impression of Jurong Innovation District*

# PLANNING FUTURE-READY AND COMMUNITY-CENTRIC NEXT-GENERATION DISTRICTS



# PUNGGOL DIGITAL DISTRICT

## MASTERPLAN LAUNCH

A multi-agency effort by JTC, Infocomm Media and Development Agency, Singapore Institute of Technology (SIT) and Urban Redevelopment Authority, Punggol Digital District (PDD) is Singapore's first district to adopt an integrated masterplan approach designed to create an inclusive and sustainable environment where technology and social innovations will transform the way we work, live, play and learn. Officiated by Guest-of-Honour Deputy Prime Minister Teo Chee Hean, the masterplan launch of PDD was held in January this year at Waterway Point.



**50**  
hectares

**12,000**  
students

**28,000**  
new jobs

The 50-hectare district is envisioned to support companies and talents in key growth areas of digital and cybersecurity. These growth industries are set to create about 28,000 jobs for the future economy. PDD will be the first district in Singapore that brings together a business park and a university, surrounded by community facilities and public spaces right from the planning stage. This integrated masterplan approach allows for district-wide infrastructure and technologies to be designed and implemented, thus optimising use of land, energy and resources.

**AN ENTERPRISE DISTRICT**



**JTC Facilities in SIT Building**  
Industry R&D spaces

**SIT Facilities in JTC Building**  
Incubator spaces  
Learning facilities  
Research labs

PDD adopts a new land zoning approach with greater land use flexibility at the district level. JTC, as the master developer of PDD, is able to optimise and integrate the different land use needs across the District. For instance, SIT’s research labs and learning facilities could be located inside JTC business park buildings. Similarly, JTC could also host industry R&D facilities and create startup spaces within SIT buildings.

As different land uses can be sited within each building, this “exchange” of space will encourage the co-location of complementary activities and potentially result in greater synergies between academia and businesses, facilitating the creation, test-bedding and prototyping of new ideas and innovations.

**POTENTIAL ESTATE LEVEL INITIATIVES**



**Hub Parking**



**Urban Logistics Hub**



**Pneumatic Waste Conveyance System**



**Personal Mobility Devices (PMD)-Friendly Facilities**



**District Cooling System**

## COMMUNITY FACILITIES AND PUBLIC SPACES

The PDD community and Punggol residents can look forward to a variety of public spaces and community facilities such as a Campus Boulevard, Heritage Trail, and Market Village at the waterfront.



### CAMPUS BOULEVARD

The 800m pedestrianised street will stretch between the SIT campus and JTC's business park buildings, serving as a key gathering space, providing a direct connection to the waterfront, as well as offering easy access to the Punggol Coast MRT Station. It will be designed for active mobility options such as walking, cycling and PMDs, with various retail and F&B offerings along the Boulevard.

### HERITAGE TRAIL

The existing Punggol Road will be transformed into a 1,300m pedestrianised green link from Punggol Waterway Park to the Punggol Promenade Park Connector. The trail will also connect Punggol Waterway, PDD and the upcoming residential district at Punggol Point. Existing greenery will be conserved to retain the area's unique topography.



### MARKET VILLAGE

Along the waterfront, a bustling Market Village is planned to offer retail, dining and leisure options, as well as public event spaces for the Punggol community to enjoy, relax and unwind. Coney Island Park will be within walking distance from the Market Village.





# ONE-NORTH

## SINGAPORE'S FIRST DRONE ESTATE

Conceptualised in 2001, one-north is a research and business park that serves as a fertile ground for research and innovation. JTC is the lead agency to master plan and develop this 200-hectare development. Today, one-north houses over 400 leading companies in key growth sectors, namely biomedical sciences, infocomm technology, media, startups, science and engineering. one-north is also home to more than 46,000 knowledge workers, researchers, entrepreneurs and students. The estate is a living lab where startups, technology owners and research institutions can leverage opportunities to test-bed their latest urban solutions, such as autonomous vehicles, drones and personal mobility device sharing systems.

In February, one-north was designated as Singapore's first drone estate, which aims to provide companies and research institutions with an urban environment to test-bed innovative unmanned aircraft systems (UAS). one-north was chosen as it offers an ideal location to test varying urban environment complexities for UAS operations. These comprise various typologies ranging from high-rise to low-rise buildings, as well as public spaces like parks. Under the initiative, approved operators and research users can carry out their trials and operations at one-north without compromising safety and security. For instance, JTC and H3 Dynamics are collaborating to enhance the quality and productivity of building inspections, by automating the current manual process with an autonomous drone data collection and analytics solution for building facades and vertical surfaces in one-north. In addition, Airbus is also at an advanced stage of its experimental project 'Skyways', to develop a safe and economically viable aerial unmanned parcel delivery system for use in dense urban environments.

# JURONG INNOVATION DISTRICT

## SINGAPORE'S LARGEST LIVING LAB

First announced in 2016 by Finance Minister Heng Swee Keat, the 600-hectare Jurong Innovation District (JID) covers Nanyang Technological University (NTU), JTC's CleanTech Park, as well as the Bulim, Bahar and Tengah areas. The district will play host to factories of the future and companies at the forefront of key growth sectors such as advanced manufacturing, urban solutions and smart logistics. It is envisioned to be a workplace of the future that will be home to researchers, students, innovators and businesses.

As Singapore's largest living lab for new technologies and urban solutions, the district will serve as a live test-bed environment for companies. LaunchPad @ JID will house startups, incubators and accelerators, and include makers' and co-working spaces that will help companies reduce the time to market for their solutions to become commercially viable, thereby reducing their business risk. It will also be open to other test-bedding activities such as the testing of autonomous vehicles. In November last year, a 2-hectare test facility located within the Jurong Innovation District was jointly unveiled by JTC, the Land Transport Authority and NTU. This test facility will support the Centre of Excellence for Testing & Research of AVs – NTU (CETRAN) to spearhead the development of testing requirements for Autonomous Vehicles (AV). The AV test circuit provides a simulated road environment for the testing and certification of AVs. The circuit also features a rain simulator and flood zone to test AVs' navigation abilities under different weather conditions.

These are some test-bedding activities that have kick-started in JID and more will take place as JID develops over the next few decades.





# WOODLANDS NORTH COAST

## FLEXIBLE ZONING TO FACILITATE TRANSFORMATION OF BUSINESS MODELS

In April 2017, Minister of National Development Lawrence Wong unveiled the “Star Destination of the North” exhibition that showcased the proposed plans for six new developments and enhancements to the existing Woodlands neighbourhood centres in the northern town. Set within the neighbourhood is also the Woodlands North Coast, the new heart of the Woodlands Regional Centre, jointly masterplanned by JTC and URA. Woodlands North Coast will be home to a future business hub which aims to address the evolving nature of Singapore’s manufacturing sector.

The first building in Woodlands North Coast will be part of a pilot flexible zoning approach at the building level, allowing activities to go beyond the current 60/40 rule. This will support manufacturing companies looking to co-locate their service-driven activities like R&D and after-sales support alongside their manufacturing operations. Companies that have offshored their lower value-added activities can also maintain their more knowledge-intensive activities here, while retaining close oversight of their operations overseas.

With the new Woodlands North MRT station of the upcoming Thomson-East Coast line situated within Woodlands North Coast, the 70-hectare development will be a significant employment cluster, bringing jobs closer to homes in the Northern Region.



*A car-lite, pedestrian-friendly district that provides a safe and comfortable environment for active mobility.*

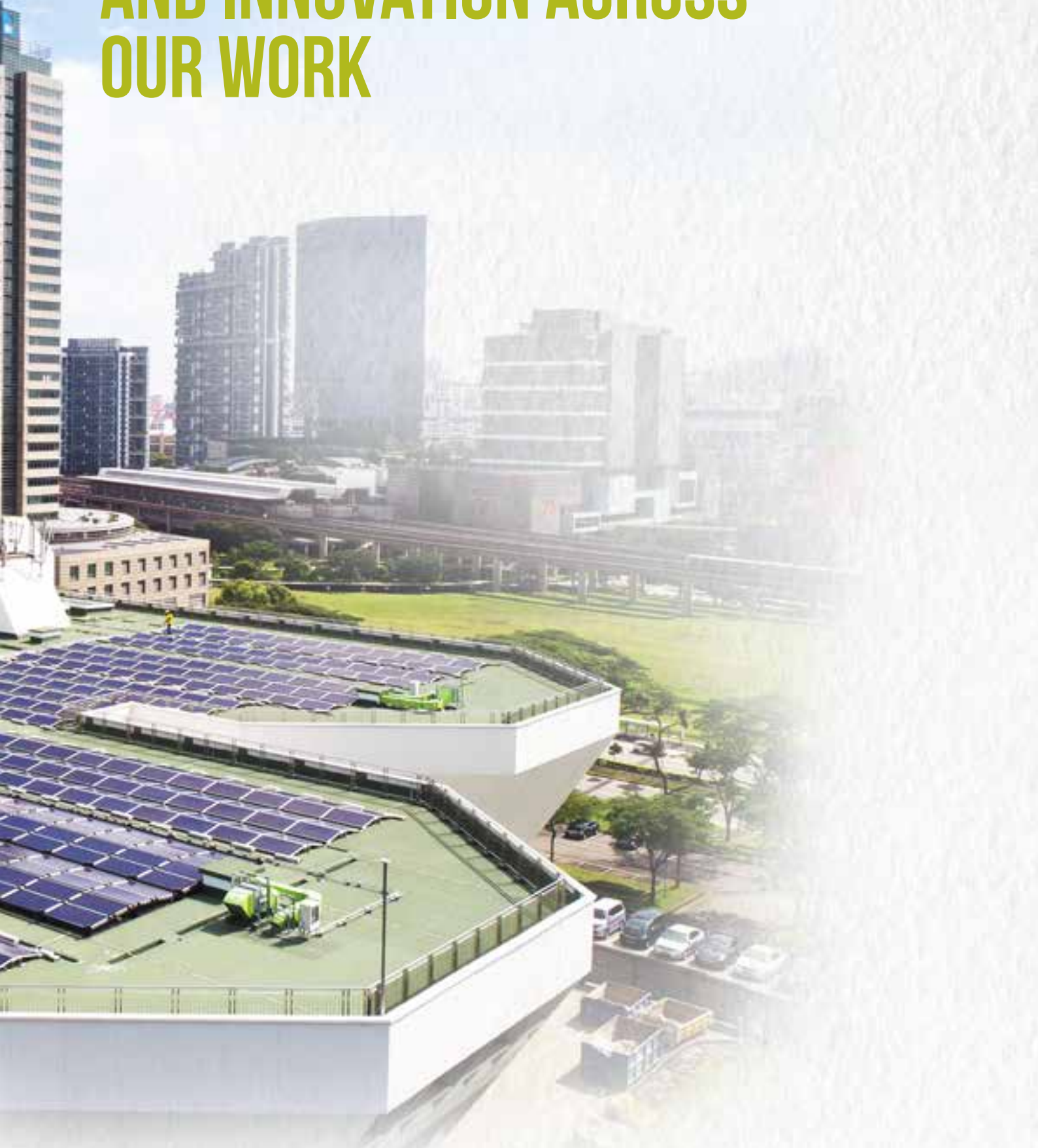


*An inviting, campus-like environment with outdoor public spaces that are seamlessly integrated with the buildings.*



*The iconic Jurong Town Hall building served as one of SolarRoof's test-bed locations.*

# DRIVING SUSTAINABILITY AND INNOVATION ACROSS OUR WORK



# TRANSFORMING FACILITIES MANAGEMENT AT JTC

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JTC embarked on its Facilities Management (FM) transformation journey in 2013 in response to challenges in the existing FM industry and to address changes in the FM landscape. Some of these challenges include labour crunch and an ageing workforce; rising operating and energy costs; and increased expectations on JTC as a building developer to seek more sustainable and productive solutions for better manpower and resource deployment. This is evident with JTC's growing portfolio of properties – from 1.3 million sqm in 2013 to more than 5 million sqm in 2017. To overcome this changing FM landscape, JTC worked on upskilling its staff, streamlining processes, and leveraging new technologies.

Launched in February this year, the J-Ops Command Centre exemplifies and validates JTC's transformation from traditional laborious FM to efficient, productive and sustainable FM practices

today. The Centre is one of the first integrated building and estate operations command centres in Singapore. It houses multiple smart FM systems with functions such as building optimisation, estate monitoring, and workflow automation to allow JTC to remotely monitor FM operations for the majority of its developments and estates across the island.

Commissioned by Second Minister for National Development Desmond Lee, the Command Centre allows JTC to achieve improvements in tenant comfort, reductions in energy leakages, and efficiencies in resource deployment. Beyond that, the team stationed in the Centre is able to pull and analyse data from pilot FM systems deployed in JTC developments. JTC is currently piloting systems to monitor lift performance, waste collection and user temperature preferences.



*The newly commissioned J-Ops Command Centre allows JTC to achieve improvements in tenant comfort, reductions in energy leakages and efficiencies in resource deployment.*

Smart FM systems housed in the J-Ops Command Centre include:

### The Building Optimisation System,

a cloud-based system that allows JTC to centrally and remotely monitor, analyse, and optimise performance of our buildings.

### The Automated Workflow System,

designed to be the backbone of JTC's FM digitalisation journey, digitalises all FM-related work orders as a bid to automate and improve existing work processes. Feedback provided by customers or tenants regarding facilities' faults is documented and tracked in the system, then re-routed to the respective facilities manager or technician to be resolved.

### An integrated Estate Monitoring System

that pulls video feeds from the CCTVs deployed at more than half of JTC estates and developments. The system has integrated customised video analytics to bring potential security occurrences to the attention of the security team, which could then activate the required response on the ground quickly.

### Pilot FM Systems:

JTC is currently test-bedding new FM systems, such as **Comfy** and **Bigbelly Bins**.

- Currently test-bedded in JTC Summit, **Comfy** is a mobile app designed to improve building occupants' comfort by allowing users to control the temperature in their workspace with the click of a button. Upon indication of their preference, the application sends a signal to the mechanical vents to open or close for a short span of 10 minutes. Through the amalgamation of user preferences, JTC is able to not only improve the workplace experience, but also leverage these data for better building and development designs in future.
- 88 **BigBelly** smart bins have been deployed across JTC's developments and estates. These smart bins are solar-powered, self-compacting and cloud-connected to improve productivity and eliminate bin overflows. The JTC team is also able to access the system dashboard from the J-Ops Command Centre to optimise collection routines, understand waste patterns and better deploy manpower.



# SOLARROOF

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To catalyse the growth of sustainable energy in Singapore, JTC has been working on several solar initiatives, including SolarRoof. This business model was launched in June 2017 to promote the adoption of solar energy. It was conceptualised to overcome some of the challenges faced by the local solar market such as roof constraints and high capital costs.

As part of this initiative, appointed generation company Sun Electric will be renting rooftop space on 27 JTC buildings to install solar panels capable of generating electricity. Unlike existing solar leasing models where solar energy generated primarily serves only the users of the building itself, this alternative model allows for power generated to be fully exported to Singapore's national grid. This means that occupants of buildings that have not been fitted with solar panels will also be able to purchase this renewable energy.

On the other hand, JTC will be able to optimise its roof space and provide more sustainable energy options to our customers. By leading the way with this new SolarRoof model, JTC hopes to encourage more solar installations in Singapore, since building owners will now be able to generate revenue from the use of their roof space, regardless of their own energy demands.







*The SolarRoof test-bed included rooftops of JTC's standard factories in Tuas.*



*Aerospace Day at Seletar Aerospace Park*

# BUILDING VIBRANT AND COLLABORATIVE COMMUNITIES



# SELETAR AEROSPACE PARK

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## STRENGTHENING COMMUNITIES THROUGH SOCIAL AND INDUSTRY ENGAGEMENT

As the region's leading hub for aerospace activities, the 320-hectare Seletar Aerospace Park (SAP) has since transformed from a sleepy enclave into a world-class aerospace park. Over 60 global and local aerospace industry players have made Seletar their 'Home in Asia'. These companies include some of the industry's biggest names such as Airbus, Bombardier, GE Aviation, Pratt & Whitney, Rolls-Royce, and Safran, as well as home-grown companies like ST Aerospace and Wah Son, and a vibrant growing population of over 6,000 professionals.

In February 2018, JTC together with the Association of Aerospace Industries Singapore (AAIS), close to 30 aerospace companies, the local polytechnics and Institute of Technical Education (ITE) signed a Memorandum of Understanding for a series of student outreach initiatives to develop a pipeline of industry-ready talent for the fast-growing aerospace sector. This includes the inaugural Aerospace Day, where over 800 students from the polytechnics and ITE were taken on exclusive tours at aerospace companies' facilities in SAP, and participated in a range of aerospace-themed workshops, activities as well as a career fair. The event was specially planned to be held at SAP to expose students to the unique work environment.

To create a strong sense of belonging within the SAP community, regular inter-company sport competitions, exercise classes, workshops, focus groups, and networking sessions are also organised in collaboration with AAIS and companies.

Over the next couple of years, visitors to SAP can also look forward to a heritage trail along the stretch of Round-Island-Route through SAP that will exhibit the rich history of Seletar. This project is developed in partnership with Seletar Hills Estate Residents' Association, National Parks Board and National Heritage Board. It builds on SAP's rich heritage to give the Park a unique identity and enhance its attractiveness as a destination for both work and leisure.



BUILDING  
COMMUNITIES



# ONE-NORTH

## STEPPING UP COMMUNITY BUILDING

In order to make one-north a truly great place to work, live, learn and play, JTC goes beyond focusing on physical infrastructure by stepping up its community building initiatives with the introduction of programming at public spaces within one-north. Over the past few years, JTC has been working closely with partners to initiate and sustain regular social events such as the monthly Fantastic Fridays @ one-north, bi-monthly Lunch & Learn @ one-north, weekly Healthy Workplace Ecosystem activities and large-scale annual events like one-north Festival, one-north Run, RACE.EAT.PLAY, and Car-Free Sunday SG @ one-north.

### ONE-NORTH RUN



Greeted by clear weather, good food and a fun carnival, the annual one-north Run jointly organised by JTC and Agency for Science, Technology and Research (A\*STAR) attracted more than 2,000 running enthusiasts. It raised more than \$200,000 for the Singapore Children's Society, the Asian Women's Welfare Association (AWWA) and the Movement for the Intellectually Disabled of Singapore (MINDS).



### FANTASTIC FRIDAYS @ ONE-NORTH



On the first Friday of every month, JTC organises Fantastic Fridays @ one-north that brings an array of fun-filled activities to the community. Each month, it is held concurrently during lunchtime at a major node in both Biopolis and Fusionopolis. To cater to different interests, JTC curates the activities around quarterly themes, which include 'Sports and Games', 'Entertainment' and 'Wellness'. With this initiative, JTC aims to enhance the lunch time vibrancy in the estate and to encourage social interactions among the community members.





## ONE-NORTH FESTIVAL

Themed “Pioneering an Innovation Future”, the second edition of one-north Festival at Biopolis featured an exciting line-up of science and technological innovations. Jointly organised by JTC and A\*STAR, the two-day event featured expert talks, laboratory tours and open houses, five interactive workshops and 47 exhibition booths across three key thrusts – Future Living, Future Work and Future Health.

One of the key highlights of the festival was the inaugural RACE.EAT.PLAY organised by JTC. With the aim of making innovation fun to the one-north community and the general public, the event included one-north’s first soapbox race, which saw 14 teams competing using handmade, non-motorised cars powered by gravity. There were also drone flying workshops and Future Food Street where visitors tried new culinary concepts such as nitrogen desserts.

The festival brought together the one-north community, members of the public, and also the younger generation, promoting a better understanding of one-north’s industry ecosystem and hopefully inculcating a passion for engineering and R&D among the children.



# FINANCIAL HIGHLIGHTS AND REVIEW

## OVERVIEW

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### FINANCIAL RESULTS

FY2017 saw JTC Group reporting a healthy performance with a net surplus of \$0.9 billion.

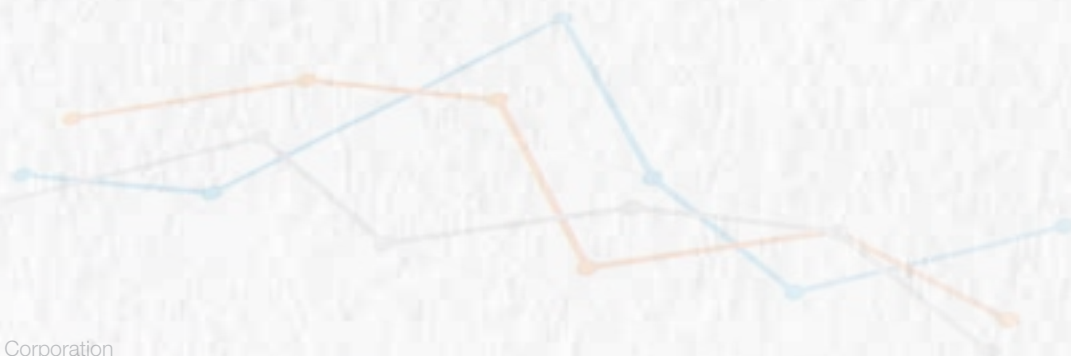
The Group achieved an increase in operating revenue to \$2.0 billion, with additional rental income from the transfer of previous HDB's industrial properties on 1 January 2018. Other income was reduced to \$0.6 billion, largely due to lesser gain on disposal of investment properties.

During the year, the Group continued its effort to develop industry spaces and invested a total of \$1.8 billion in capital expenditure, stemming from alienation of industrial land and development for building projects such as JTC Space @ Tuas, JTC Food Hub @ Senoko and trendspace.

### FINANCIAL POSITION

The Group's financial position remains strong with \$21.6 billion in equity.

As at 31 March 2018, total assets stood at \$27.1 billion. This was a 5% increase from the previous year, largely due to the ongoing investment in land and building developments. Investment properties increased by 38% to \$17.9 billion after the transfer of HDB's industrial properties. Investment properties, property, plant and equipment as well as other receivables accounted for 83% of total assets.





# GROUP FINANCIAL HIGHLIGHTS

## FINANCIAL HIGHLIGHTS

For the Year (\$'Mil)	FY2017	FY2016	Change
Operating revenue	1,989	1,957	1.6%
Non-operating income	645	826	-21.9%
Net surplus	944	1,071	-11.9%
Capital expenditure	1,824	1,725	5.7%

**\$944** MIL  
 -12%  
 NET SURPLUS

## FINANCIAL POSITION

At Year End (\$'Mil)	FY2017	FY2016	Change
Investment properties	17,941	12,965	38.4%
Total assets	27,102	25,757	5.2%
Total borrowings	428	459	-6.8%
Total liabilities	5,469	5,087	7.5%
Total equity (excluding non-controlling interest)	21,615	20,670	4.6%

**\$21.6** BIL  
 +5%  
 TOTAL EQUITY

## KEY FINANCIAL RATIOS

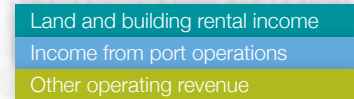
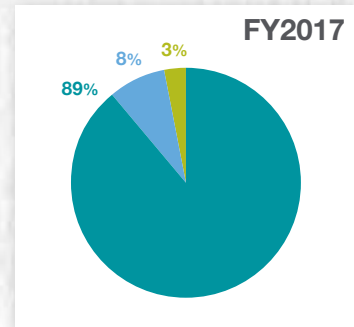
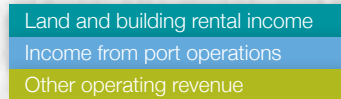
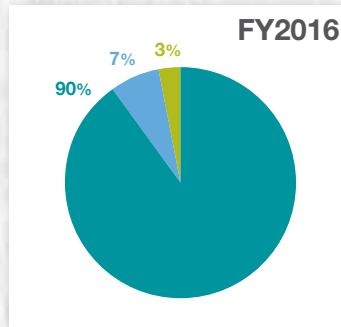
	FY2017	FY2016	Change
Debt-equity ratio (%)	2	2	0%
Interest coverage (times)	138	149	-7.4%
Return on total assets (%)	3.6	4.1	-0.5%
Return on capital employed (%)	4.4	5.1	-0.7%
Value added per employee (\$'Mil)	1.6	1.7	-5.9%

**4.4%**  
 -0.7%  
 RETURN ON CAPITAL  
 EMPLOYED

# FINANCIAL REVIEW

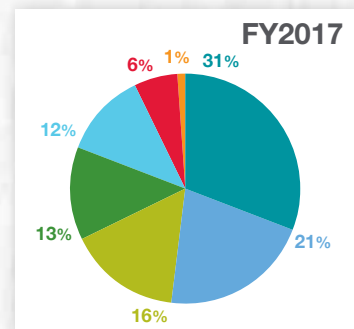
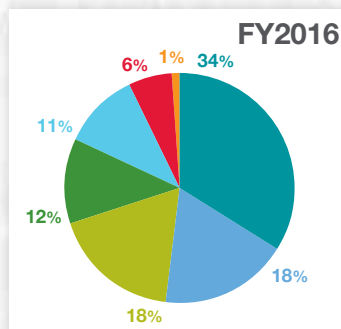
## OPERATING REVENUE

### Distribution of Group's Operating Revenue



## OPERATING EXPENSES

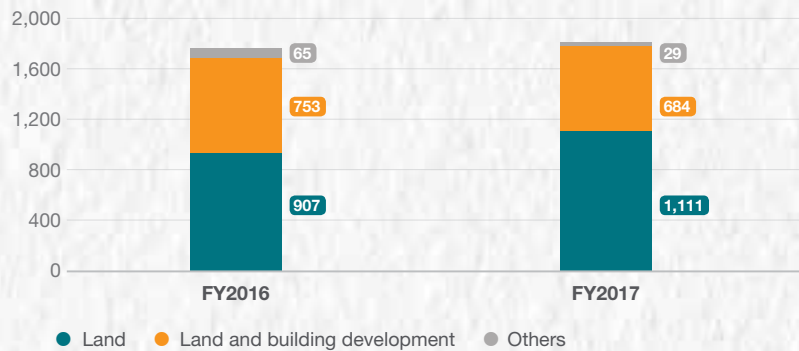
### Distribution of Group's Operating Expenses



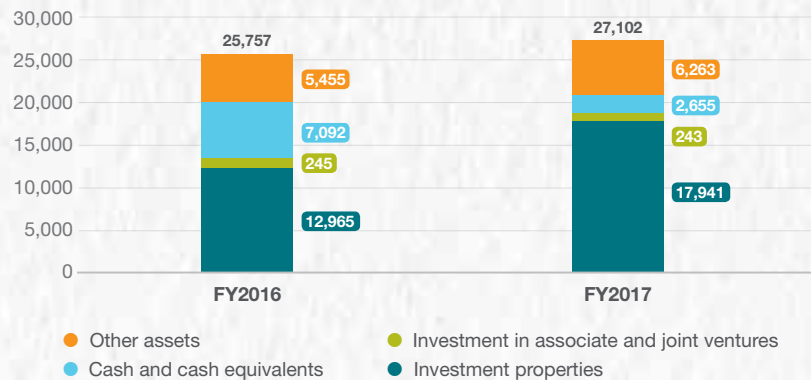
# FINANCIAL REVIEW

## GROUP CAPITAL EXPENDITURE (\$'MIL)

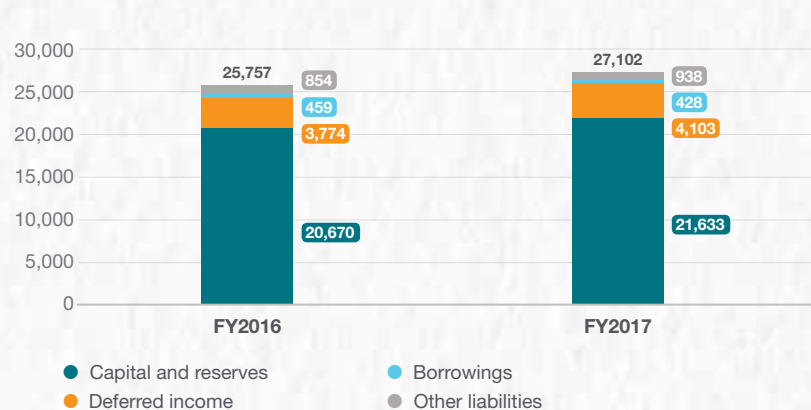
Group Capital Expenditure (\$'Mil)



Total Assets (\$'Mil)



Capital, Reserves and Liabilities (\$'Mil)





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**#JTCcreates**



Jurong Port

**RELY  
ON US**



# THE NEXT LAP

## OF TRANSFORMATION

In FY17, Jurong Port (JP) completed the first phase of its transformation journey from being a landlord to becoming an operator. In October 2017, a key milestone in our transformation journey was attained when port users, customers and industry stakeholders such as the Singapore Shipping Association (SSA) accepted the implementation of a new tariff for steel handling by JP and stevedoring companies. This marked the successful culmination of a 3-year journey which JP undertook to professionalise the stevedore workforce in partnership with the stevedore companies and the industry. JP is now directly responsible for more than 80% of all cargo handling, compared to less than 40% before 2015. With our successful transition into an operator model, JP will no longer just be a provider of facilities and port infrastructure, but will also contribute our multipurpose port expertise in national strategic initiatives.

In addition, as part of an independent benchmarking survey conducted by the Maritime and Port Authority (MPA) of 30 global and regional multipurpose ports, JP was ranked among the world-class ports, and was ahead of all the regional multipurpose ports that were surveyed. The 3 key areas of evaluation were Port Utilisation, Cargo Handling Productivity/Service Quality and Pricing. Roland Berger, the consultant engaged by MPA, surveyed over 30 ports to gather data for the study, which included steel and cement terminals from well-known ports in Europe, USA, Asia and Australia. The encouraging results confirmed that JP's productivity improvements, achieved as part of our transformation journey, have been pivotal towards our ranking among other best-in-class ports.

Now, as we steer the course ahead as a multipurpose port operator, we are in a stronger position to unlock value in supply chains for industries through a suite of enhanced competencies in areas such as safety and operations. Our expertise will allow JP to seek out new growth opportunities through the development of port-centric eco-systems and leverage technology to develop the next generation multipurpose port.

Over the past 3 years, we are proud of our efforts which have delivered:

- 1 Record levels of cement, steel and container handling rates
- 2 Transformation of operating model from Landlord to Operator
- 3 Launch of Combi Terminal and Project Logistics Hub
- 4 Launch of JP Academy
- 5 Improvement in our safety culture, competence and compliance
- 6 Launch of Jurong Port Tank Terminals
- 7 Doubling our share of profits from our overseas joint ventures from FY16 to FY17



Against an ongoing challenging outlook in both the construction and offshore marine industries (that over the last 3 years has contributed to an overall fall in throughput of 24%), JP has recalibrated its strategy, mission and vision for the next lap of transformation, to drive growth in general and bulk cargo volumes, and to diversify its businesses. JP will also increasingly leverage technology to achieve its vision as a next generation multipurpose port. Going forward, JP will adopt a strategic national perspective and work closely with national agencies to reap efficiencies by connecting landward and seaward supply chains, while seeking growth initiatives that will reinforce Singapore's maritime hub status.

# CORE COMPETENCIES



## CEMENT HANDLING PRODUCTIVITY

▲ **6%** **577** <sup>TPH</sup> (FY17)

The productivity improvements for cement operations was achieved through 2 key thrusts which firstly, focused on improving our operators' skillsets through training, and the tracking of daily performance; and secondly, introduced dual discharge operations by deploying a second unloader midway through the discharge process, thereby reducing vessel port stay time. Other ongoing collaborative efforts include consignee and stevedore engagement to improve their vessel selection and trimming operations respectively.



## STEEL HANDLING PRODUCTIVITY

▲ **18%** **277** <sup>TPH</sup> (FY17)

The higher Tonnes Per Hour (TPH) was achieved through improvements in the allocation of stevedore workforce resources since we took over as operator in October 2017, and tightening monitoring efforts over vessel operations by the staff to reduce unproductive time. Other measures include the deployment of optimal gangs per vessel without compromising safety, as well as enhancements to cargo handling such as the use of higher grade lifting chains to increase the lifted weight per cycle.



## OPERATIONAL SAFETY

**43%** improvement in  
Accident Frequency  
Rate (AFR)

**5.38 to 3.07**  
per million manhours  
over the course of FY17

Key initiatives included the introduction of the Monthly Management Safety Walkabout, a new Digital Safety Handbook for all staff, OHSAS 18001 and SS506 recertification and the creation of a new Safety Video to raise safety awareness.



## PORT SECURITY

Perimeter fence upgrading with the installation of a new Fence Intrusion System was completed in FY17 for Jurong Port's mainland perimeter. A long-term contract with CISCO was signed which incorporated various security-related requirements in the contract including the provision of security guards, CCTV installation/maintenance and management of pass office.

Key initiatives that commenced in FY17 included the set-up of a new Integrated Command Center, and the implementation of Phase 1 of CCTV renewal/installation to provide better coverage in supporting Security, Operations and Safety.

LOCAL

# GROWTH



## OVERALL VOLUMES

▼ 7%

13.9 MILLION TONNES (FY17)

Outlook in FY17 continued to be challenging due to the downturn in the local construction and offshore marine sectors.

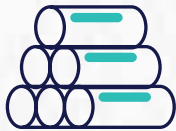


## CONTAINERS

▼ 1%

311,000 TEUs (FY17)

JP primarily serves multipurpose vessel and barge container operators which saw volumes remaining steady in FY17.



## GENERAL CARGO

▼ 4%

6.2 MILLION TONNES (FY17)

Demand for steel for new rigs continued to be negatively impacted by the overhang of rig capacity in FY17.



## OFFSHORE MARINE CENTRE (OMC) AND LIGHTER TERMINALS

▲ 7%

0.9 MILLION TONNES (FY17)

Lighter Terminals outperformed in line with strengthening demand for ship supplies due to increased vessel calls to Singapore.



## BULK CARGO

▼ 11%

6.8 MILLION TONNES (FY17)

Demand for cement was weak in line with reduced construction contract values in Singapore.





## LAUNCH OF JURONG PORT TANK TERMINALS

Jurong Port and partner, Oiltanking, celebrated the launch of the joint venture, Jurong Port Tank Terminals, on 20 September 2017. The event was graced by Senior Parliamentary Secretary, Ministry of Education and Ministry of Trade and Industry, Ms Low Yen Ling. It was attended by more than 90 guests from the petroleum, port and maritime industries. The development of the new liquid bulk terminal will be an important milestone for Jurong Port as it will reinforce Singapore's international maritime energy and chemicals hub status. Operationalisation of Phase 1 is expected to take place in 2019.



## READY-MIX CONCRETE (RMC) ECOSYSTEM TO SERVE CONSTRUCTION INDUSTRY

JP received support from JTC, BCA and URA to engage the construction industry on the potential development of an RMC facility at JP to supply construction materials for the Western region. Industry engagement efforts started in end 2017.



## COMPLETION OF CEMENT TERMINAL 1 (T1) UPGRADING

Commissioning was completed at the end of FY17 and extended dual unloading capabilities to T1. This will increase T1 productivity by up to 35% while reducing the port stay of cement vessels.

OVERSEAS

# GROWTH



FY17's total cargo volumes from the overseas portfolio was 22 million tonnes, a 16% increase over FY16.

## RIZHAO SHANDONG, CHINA

▲ **8%** **13.2** million tonnes (FY17)

THROUGHPUT

Demand for imports remains strong in China, but expect potential headwinds from US trade protectionism ahead.

## MARUNDA JAKARTA, INDONESIA

▲ **55%** **3.9** million tonnes (FY17)

THROUGHPUT

In May 2017, Marunda Center Terminal was granted a 65-year concession by Indonesia's Ministry of Transport to operate as a Public Terminal. In July 2017, the construction of Terminal 1B was completed. Operations started in August 2017.

## YANGPU HAINAN, CHINA

▲ **23%** **5.3** million tonnes (FY17)

GENERAL AND BULK  
CARGO THROUGHPUT

FY17 general and bulk volumes benefited from increased marketing efforts, while container volumes remained steady. Potential future expansion in grain and cement clinker volumes.

**256,000** TEUs (FY17)

CONTAINER THROUGHPUT  
REMAINED STEADY

## Organisational Excellence and Key Corporate

# EVENTS



### RECALIBRATED STRATEGY FINALISED AT STRATEGY WORKSHOP 2017

Key outcomes included a recalibrated Strategy, Mission and Vision statement to drive JP towards the Next Lap of Transformation. Going forward, leveraging technology for deployment in day-to-day operations and business decision making will be a key focus area, and will be guided by a Technology Development Committee comprising senior management.



### MOU SIGNED BETWEEN MPA, JP & NATIONAL TRANSPORT WORKER'S UNION (NTWU) AT THE SEA TRANSPORT INDUSTRY TRANSFORMATION MAP (ITM) LAUNCH

This tripartite co-operation will equip port employees with future-ready skills to enhance capabilities, while increasing workplace safety and productivity, to support JP's transformation into a next generation multipurpose port. JP will focus on competency development and talent management by driving the redesigning of jobs towards higher value-added activities.



### JURONG PORT ACADEMY (JPA) RECEIVED APPROVED TRAINING ORGANIZATION (ATO) STATUS

In preparation to offer courses for the multipurpose port industry under the Skills Framework, JPA worked closely with SkillsFuture Singapore (SSG) to attain Approved Training Organisation (ATO) status on 1 November 2017. The first course under the Skills Framework for Sea Transport - Port, Pedestal Crane Operation Course - was accredited on 11 June 2018.



## LAUNCH OF JURONG PORT LIVING LABS

Jurong Port (JP) and NTU inked an MOU at the Singapore Maritime Institute Forum 2017 on 31 October 2017 to jointly pursue collaboration in areas such as Smart Multi-Energy Systems, Alternative Energy Source Applications and Environmental Monitoring Solutions. The MOU signing was witnessed by Dr Lam Pin Min, Senior Minister of State for Transport and Health. The launch signals our commitment towards open collaboration in line with other industry Living Labs by PSA and MPA.



## RE-ORGANISATION OF STRATEGIC PLANNING, BUSINESS DEVELOPMENT DIVISIONS AND WORKPLACE SAFETY & HEALTH (WSH) DEPARTMENT

A new Strategic Planning & Optimisation Division (SPOD) has been constituted from the Strategic Planning Office with an expanded scope to oversee Strategic Planning, Research, Process Optimisation and Corporate Relations & Communication. The Business Development Division has been concomitantly reorganised with a leaner structure. The WSH department has also been restructured to reflect the enhanced operational safety readiness under JP's Operator role.



## CONVENING OF INAUGURAL JURONG PORT GOLF INVITATIONAL & LOHEI DINNER

JP organised the above inaugural event as part of its stakeholder and customer engagement efforts. The event was well received and attended by 200 management representatives from our key customers, business partners and stakeholders including senior management of JTC, MPA, PSA, industry associations (SSA and SASS) and representatives from our joint venture partner Oiltanking.

# CORPORATE

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## SOCIAL RESPONSIBILITY



### SUPPORT FOR SPD FUND RAISING

Over 80 staff and family members showed our support for people with disabilities at this year's SPD Ability Walk. This is the second year running that SPD has organised the walk, with more than 1,500 participants turning up. Through this event, SPD also managed to raise \$160,000 for their programmes and services. JP has been a key sponsor since the inaugural SPD Ability Walk.



### SUPPORT FOR UNDERPRIVILEGED FAMILIES UNDER SOUTHWEST CDC

For the second year running, JP is working with Fei Yue Community Services to organise activities for children from less privileged families in the Taman Jurong area. As South West CDC's CSR partner, JP was introduced to Fei Yue to collaborate on community events and activities that could benefit from our corporate support.



### SUPPORT FOR EARTH HOUR

For the fourth year running, Jurong Port has switched off non-essential lights in our ports and terminals to raise awareness on the effects of climate change. This year, JP further stepped up awareness efforts among the staff through the screening of "Bill Nye's Global Meltdown", a documentary on the effects of climate change.



### LAUNCH OF OVERSEAS CSR INITIATIVE UNDER MARUNDA JOINT VENTURE

Our overseas JV in Indonesia has partnered with Sekolah Tinggi Ilmu Pelayaran (STIP) (Higher Education Maritime Institute), a premier national maritime academy of Indonesia, to open up internships and recruitment tie-ups for STIP students and graduates.



### SUSTAINING BLOOD DONATION DRIVE IN SUPPORT OF RED CROSS

Started in 2016, this staff-led initiative has now become a regular blood donation exercise to the Red Cross, and is sustained by a core group of 15 employees.

# AWARDS

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## AND ACCOLADES



### RECOGNITION AS HUMAN CAPITAL PARTNER BY TAFEP (TRIPARTITE ALLIANCE FOR FAIR AND PROGRESSIVE EMPLOYMENT PRACTICES)

Jurong Port was officially recognised as a Human Capital Partner (HCPartner) by TAFEP with support from Workforce Singapore (WSG) and our Tripartite partners - SNEF, MOM and NTUC. HCPartner is a programme for organisations who are committed to growing their business and staying competitive by having progressive employment practices and developing their human capital.



### FINALIST FOR LLOYD'S LIST ASIA-PACIFIC AWARDS FOR TERMINAL OPERATOR OF THE YEAR 2017

JP reached the final round of judging comprising finalists which included other Asian port operators, such as PSA, Hutchison and ICTSI.




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