

TRANSFORMING MARITIME SINGAPORE EMERGING STRONGER TOGETHER

SUSTAINABILITY/INTEGRATED REPORT 2020



ABOUT THIS REPORT

The seventh edition of the Maritime and Port Authority of Singapore's (MPA's) Sustainability/Integrated Report is divided into four parts. Part I details the key thrusts of MPA in driving digitalisation and innovation as well as decarbonisation and sustainability in Singapore's maritime industry. Part II shares the story of MPA's fight against COVID-19 alongside Maritime Singapore. In Part III, MPA reflects the vital, versatile and resilient character of Singapore's maritime sector. The 2020 edition of MPA's Sustainability/Integrated Report concludes with Part IV, which casts a spotlight on the culture of excellence in MPA and features the statutory board as a choice employer.

The MPA Sustainability/Integrated Report 2020 is prepared in accordance with the Global Reporting Initiative Sustainability Reporting Standards (GRI Standards) based on the Comprehensive option. It is also aligned with the United Nations Sustainable Development Goals (UN SDGs) and the principle-based International Integrated Reporting <IR> Framework issued by the International Integrated Reporting Council.

MPA's Sustainability Report and its Financial Report are published separately. They cover the material information on MPA's operations in the financial year between 1 January 2020 and 31 December 2020. Together, the two reports constitute the 2020 edition of MPA's Integrated Report.

For feedback and enquiries on this report, please reach out to Mr Stefan Tan at Stefan_Tan@mpa.gov.sg.

CONTENTS

| | |
|---------------------------|----|
| Chairman's Message | 02 |
| Chief Executive's Message | 04 |
| Board of Directors | 06 |
| Senior Management | 08 |
| Corporate Governance | 10 |
| Organisation Structure | 12 |
| About MPA | 14 |
| About Maritime Singapore | 15 |
| 2020 Performance Summary | 16 |
| Key Material Issues | 18 |
| MPA's Business Model | 20 |

PART I: OUR THRUSTS

| | | |
|-------------------|--|----|
| CHAPTER 01 | DIGITALISATION & INNOVATION | |
| | Maritime Digitalisation | 24 |
| | Technology Development | 27 |
| | Supporting Start-Ups | 30 |
| CHAPTER 02 | DECARBONISATION & SUSTAINABILITY | |
| | Sustainable Shipping | 34 |
| | Public Outreach on Marine Environmental Protection | 39 |
| | Eco-Office | 41 |

PART II: OUR COVID-19 STORY

| | | |
|-------------------|---------------------------------------|----|
| CHAPTER 03 | OUR FIGHT AGAINST COVID-19 | |
| | Crew Change | 46 |
| | Floating Accommodation | 47 |
| | COVID-19 Safe Management Measures | 50 |
| | Supporting Maritime Companies | 53 |
| | Supporting the Seafaring Community | 54 |
| | Keeping Maritime Trade Going Globally | 56 |
| | #MaritimeSGSteadyLah | 57 |

PART III: THE MARITIME SINGAPORE SPIRIT

| | | |
|-------------------|---|----|
| CHAPTER 04 | VITAL | |
| | Building Digital Infrastructure to Strengthen Port Operations | 60 |
| | Developing a Safety@Sea Culture | 64 |
| | Standards and Licensing | 69 |
| | Next-Generation Port at Tuas | 71 |
| | Advancing Singapore's Maritime Interests on a Global Stage | 74 |

| | | |
|-------------------|--|----|
| CHAPTER 05 | VERSATILE | |
| | Building an Attractive International Maritime Centre | 80 |
| | Running Maritime Business Events | 82 |

| | | |
|-------------------|---|----|
| CHAPTER 06 | RESILIENT | |
| | Workforce Development | 86 |
| | Building the Future Maritime Workforce | 88 |
| | Promoting Maritime Singapore and Industry Professions | 89 |

PART IV: ORGANISATIONAL EXCELLENCE

| | | |
|-------------------|------------------------------|-----|
| CHAPTER 07 | CULTURE OF EXCELLENCE | |
| | MPA Values | 96 |
| | Stakeholder Engagement | 97 |
| | Supplier Management | 98 |
| | Awards Received in 2020 | 99 |
| | MPA's Awards Milestone | 101 |

| | | |
|-------------------|-----------------------------|-----|
| CHAPTER 08 | CHOICE EMPLOYER | |
| | digitalMPA | 106 |
| | talentMPA | 107 |
| | oneMPA | 110 |
| | Workplace Safety and Health | 113 |
| | Labour Relations | 115 |
| | 2020 Employee Demographics | 116 |

| | | |
|--|--|-----|
| | Glossary | 120 |
| | MPA's Approach to Integrated Reporting | 126 |
| | GRI Content Index | 127 |
| | UN SDGs Index | 135 |
| | Our Contributors | 138 |

CHAIRMAN'S MESSAGE

The COVID-19 pandemic has had a profound impact on the global maritime industry. It has threatened port closures overseas and disruptions to the global supply chain. While Singapore has not been spared from the fallout caused by the pandemic, the maritime sector stood resilient.

The Port of Singapore registered a container throughput of 36.9 million twenty-foot equivalent units in 2020, which is close to the record-high throughput achieved in 2019. Bunker sales volume reached close to 50 million tonnes, maintaining Singapore's position as the top bunkering hub in the world. The Singapore Registry of Ships remains the fifth largest in the world, recording 95 million gross tonnage in 2020. Singapore also retained its top spot as the 'Best Seaport in Asia' at the 2020 Asian Freight, Logistic and Supply Chain Awards. Complementing its position as a major global hub port, Singapore continues to be recognised worldwide as a leading international maritime centre. In 2020, the Xinhua-Baltic International Shipping Centre Development Index ranked Singapore as the top international shipping hub for the seventh consecutive year.

Despite the pandemic, the maritime sector in Singapore has continued to push ahead with digitalisation and decarbonisation. A digitally enabled and technology-driven maritime sector not only enhances Singapore's competitiveness as a global maritime hub, but also reinforces the vital role that Singapore plays in international trade as a key transport node in the global supply chain.

Many maritime companies have accelerated their digitalisation efforts to seize new opportunities. To support companies in their digitalisation journeys, MPA launched the Maritime Digitalisation Playbook to help businesses, especially small and medium enterprises, formulate digitalisation plans and implement strategies to improve productivity and competitiveness. MPA also extended the Sea Transport Industry Digital Plan to the bunkering sector to provide a step-by-step guide on the digital solutions that bunkering players could adopt at various stages of growth.

In digitalising the maritime industry, MPA drives the digitalisation of transactions across the sector. It worked with the Infocomm Media Development Authority to amend the Electronic Transactions Act, which now applies to transferable documents and instruments such as bills of lading. Electronic bills of lading help shipping and other companies benefit from fast processing, cost savings and decreased fraud risks.

MPA continues to develop digital infrastructure and capabilities amidst the pandemic to enhance its competitiveness as a global hub port. Phase 1 of digitalPORT@SG™ was completed in 2020. Over 2,000 companies onboarded Singapore's Maritime Single Window, which serves as a one-stop digital portal for maritime regulatory and port services transactions. MPA is developing Phase 2 of digitalPORT@SG™, which will offer customers a seamless digital experience through cross-platform service integration and data exchange. Its just-in-time services will enable customers to carry out direct berthing on arrival and on-time departures. MPA is working with its partners to develop and adopt common data standards and Application Programming Interface specifications that will support Open or Common Exchange And Network Standardisation under MPA's digitalOCEANS™ initiative. digitalOCEANS™ is envisioned to serve as an efficient conduit for global connectivity by facilitating end-to-end services along the maritime transport chain.

In 2020, MPA also launched Phase 1 of GeoSpace-Sea to support sustainable development in the maritime sector. The national repository of harmonised marine and coastal geospatial data, which is accessible to participating government agencies, facilitates port, marine and coastal planning, environmental management, marine conservation and climate change adaptation. In upcoming phases, GeoSpace-Sea will be accessible to academia, research institutions and public user groups for marine science research, incident reporting and the development of end-user applications such as marine models and simulations.

To build cyber resilience in the maritime sector as it undergoes digitalisation, MPA launched the Port Authorities Chief Information Officer Cybersecurity Network (PACC-Net) in 2020. PACC-Net strengthens collaboration on cybersecurity and enhances incident response amongst the 10 participating port authorities. It developed a plan on sharing cyber information amongst its members to counter cybersecurity threats.

On the decarbonisation front, MPA spearheads efforts to seek opportunities for green growth in the maritime sector. It is developing the Maritime Singapore Decarbonisation Blueprint 2050, which will chart strategies to mitigate Singapore's maritime transport emissions and drive long-term sustainable growth.

In 2020, MPA continued to develop the Port of Singapore as a bunkering hub to supply liquefied natural gas (LNG). To

support the growing demand for LNG bunker, MPA issued a request for proposal on end-to-end LNG bunkering solutions to award a new LNG bunker supplier licence in early 2021. From 2021, Singapore will have an LNG bunker supply capacity of up to 1 million tonnes per annum. Two MPA co-funded LNG bunker vessels will be delivered to Singapore by 2021 to enable ship-to-ship LNG bunkering in the Port of Singapore.

Singapore continues to actively support international bodies in promoting safe, efficient and sustainable shipping. Together with the International Maritime Organization (IMO), MPA introduced "NextGEN" ("Green and Efficient Navigation") to facilitate information sharing on decarbonisation initiatives and develop platforms for collaboration amongst Member States, industry stakeholders and academia. In addition, Singapore is working with the Netherlands on a proposal for the International Association of Marine Aids to Navigation and Lighthouse Authorities regarding the development of guidelines to prepare vessel traffic services for Maritime Autonomous Surface Ships (MASS).

As maritime is a global business, MPA's work extends to the international maritime community. MPA championed to keep port operations and maritime trade going amidst the pandemic to ensure that global supply lines remained uninterrupted. It successfully rallied over 50 port authorities globally to make a joint declaration on keeping their ports open to seaborne trade and facilitating the transport of essential supplies around the world during the pandemic. Through sharing the Singapore Crew Change Guidebook, Singapore urged countries to adopt safe and pragmatic crew change protocols that would enable seaborne trade to be carried out safely while minimising health risks to crew and local populations.

In 2020, Singapore was re-appointed as Member of the International Hydrographic Organization (IHO) Council. MPA proposed the establishment of a joint IHO-Singapore Innovation and Technology Laboratory. The proposal was endorsed and approved by the IHO Council and IHO Assembly. The laboratory will support long-term planning and accelerate innovation in the hydrographic domain with stakeholders in the private sector.

The industry's resilience and forward-thinking character have enabled Maritime Singapore to brave the COVID-19 pandemic collectively. The pandemic presents an impetus for the maritime sector in Singapore to re-invent itself. I am confident that MPA can partner the industry once again to advance and ride on a new wave of growth.

Niam Chiang Meng
Chairman

Maritime and Port Authority of Singapore



CHIEF EXECUTIVE'S MESSAGE



COVID-19 has been a major disruptor to global seaborne trade. As a major transshipment hub and an international centre for maritime businesses, Singapore continues to support global trade while keeping the local community safe from the pandemic. The Port of Singapore stays open to allow essential goods such as food and medical supplies to reach where they are needed worldwide.

Since March 2020, MPA has facilitated crew changes through Singapore for over 140,000 crew, majority of foreign nationalities. They have come from more than 8,200 ships of various flags. To minimise health risks to the local population, MPA and its industry partners converted an existing floating accommodation into a Crew Facilitation Centre. It housed transit crew for up to 48 hours prior to ship boarding when vessel and flight schedules did not match.

In addition, MPA also worked with tripartite and global partners to establish the Singapore Shipping Tripartite Alliance Resilience (SG-STAR) Fund. The SG-STAR Fund was the first global tripartite initiative that reached out to stakeholders in crew-supplying countries on implementing safe crew change practices and developing solutions for crew change. These solutions included trialling digital innovations such as tamper-proof smart wearable technologies and accrediting medical, holding and swabbing facilities in crew-supplying countries.

Since April 2020, MPA has been working closely with port operators as well as their suppliers and contractors to implement contactless cargo operations and run essential marine services to minimise disruptions to supply chains. MPA also put in place precautionary measures for ships calling at the Port of Singapore, as well as implemented safe management measures such as a Rostered Routine Testing regime and SmartEntry@Sea for shore-based personnel to minimise the risk of community transmission.

On top of the four national budgets, MPA provided timely support to maritime companies, employees and seafarers in the wake of the COVID-19 outbreak. It introduced a series of relief measures under the MaritimeSG Together Package. For instance, MPA granted 30% port dues concession to cargo vessels and non-passenger-carrying harbour craft. It also increased co-funding for certifiable and selected short courses, as well as extended financial support under the Seafarers Relief Package to Singaporean seafarers who were unable to secure shipboard employment due to the COVID-19 outbreak.

In 2020, MPA supported the establishment of the International Advisory Panel on Maritime Decarbonisation (IAP) by the Singapore Maritime Foundation to look into strategies for Maritime Singapore to support the IMO's targets on reducing greenhouse emissions in international shipping. The IAP will submit its recommendations in 2021. Additionally, MPA and its partners collectively set aside S\$40 million for the research, testing and adoption of low-carbon technologies under the Maritime GreenFuture Fund. MPA and the Singapore Maritime Institute (SMI) issued a joint Call For Proposals on the electrification of the harbour craft sector in Singapore with the support of S\$9 million from the Maritime GreenFuture Fund.

MPA is also studying alternative marine fuels with local and international partners. Together with the Port of Rotterdam Authority and Japan's Ministry of Land, Infrastructure, Transport and Tourism, MPA formed the Future Fuels Port Network in 2020 to develop a roadmap on the adoption of clean marine fuels, undertake research cooperation and run possible joint bunkering trials with identified shipping lines. MPA also commenced the 'Biofuel Compatibility Study for Singapore Harbour Craft' with SMI. Led by the Maritime Energy and Sustainable Development Centre of Excellence at the Nanyang Technology University, the study examines the environmental, technical, operational and economic viability of bunkering biofuels.

Despite the COVID-19 pandemic, Singapore remained attractive as an Asian base for shipowners and operators. It is home to a strong core of more than 160 shipping groups and a comprehensive pool of maritime services such as shipbroking as well as maritime law and arbitration. In 2020, they collectively generated local business spending of nearly S\$5 billion. In the same year, Singapore attracted 19 companies to expand their operations and set up base in the city-state.

In promoting partnerships between the technology and maritime communities through Joint Industry Projects (JIP), MPA provided funding for consortium projects it awarded to address COVID-19 challenges and transform the way maritime operations would be carried out in the new normal. For example, MPA funded six JIP on additive manufacturing for the just-in-time provision of marine parts to enhance efficiency and cost savings for the shipping sector. These consortiums will trial the use of at least 26 3D-printed parts aboard Singapore-registered vessels and accelerate the deployment of certified and field-trialled 3D-printed marine parts.

To prepare the maritime workforce to ride on opportunities in the new normal, MPA supports employers in upskilling their workers during the pandemic through the Maritime Cluster Fund (MCF). In 2020, over 4,000 locals developed their competencies through training and reskilling with the support of MCF co-funding. MPA also worked with public agencies, maritime stakeholders and Institutes of Higher Learning to provide traineeships, company attachments and training opportunities under the SGUnited Jobs and Skills initiative. Individuals who took on these traineeships and attachments gained industry knowledge and acquired valuable working experience in the maritime sector.

MPA continued to offer the MPA Global Internship Award and the Tripartite Maritime Scholarship (TMSS) to deserving students with the support of maritime companies and seafaring unions. In 2020, MPA launched the Mid-Term TMSS for graduates of the Singapore Maritime Academy and Wavelink Maritime Institute who were Certificate of Competency 3 and 5 holders.

At the global level, MPA contributed to advancing decarbonisation and digitalisation of the maritime sector. MPA and the IMO co-organised the Future of Shipping webinars on maritime decarbonisation and digitalisation. The two webinars promoted stakeholder collaboration along the energy and maritime value chains, as well as championed digitalisation and data exchange to drive efficient, resilient and green shipping.

To support the development of MASS, MPA worked with representatives of flag, coastal and port authorities from seven other countries to launch the MASSPorts initiative in 2020. MASSPorts drives standard-setting for the trials and operation of MASS across ports. Furthermore, MPA supported the successful completion of the Wärtsilä-PSA Marine IntelliTug Project and the sea trials of the Smart Maritime Autonomous Vessel ran by ST Engineering Marine, American Bureau of Shipping, Pacc Offshore and Marine and M1.

The global pandemic has put MPA and the industry to the test. We have worked closely as one to press on in our transformation efforts to enhance the resilience and competitiveness of Singapore's maritime sector. I would like to express my gratitude to our stakeholders for their strong support amidst a very challenging year.

Quah Ley Hoon
Chief Executive

Maritime and Port Authority of Singapore

BOARD OF DIRECTORS



Mr Niam Chiang Meng
Chairman,
Maritime and Port Authority of Singapore



Ms Quah Ley Hoon
Chief Executive,
Maritime and Port Authority of Singapore



RADM Aaron Beng
Chief of Navy,
Ministry of Defence
(w.e.f. 23 Mar 2020)



Ms Patricia Yim
General Manager,
Technology Group, IBM APAC
(w.e.f. 2 Feb 2021)



Mr Sng Seow Wah
Corporate Advisor,
Temasek International
(w.e.f. 2 Feb 2021)



Mr Teo Choo Wee
Executive Director,
Fleet Division,
Pacific International Lines Pte Ltd



Dr Vincent Lien
Managing Director,
Lien Properties Private Limited



Mr Abu Bakar Bin Mohd Nor
Group Chairman,
Infofabrica Holdings Pte Ltd
(w.e.f. 2 Feb 2021)



Ms Caroline Yang
President,
Singapore Shipping Association



Mr Chan Cheow Hoe
Deputy Chief Executive,
Government Technology Agency of
Singapore and Government Chief
Digital Technology Officer, Smart
Nation and Digital Government Office



Mr Chris Ong Leng Yeow
Chief Executive Officer &
Managing Director (Offshore),
Keppel Offshore & Marine



Mr Carl Krogh Arnet
Chief Executive Officer,
BW Energy Limited
(until 1 Feb 2021)



Mr Ishak Ismail
Regional Director,
Business Development (APAC),
BAE Systems Hägglunds AB
(until 1 Feb 2021)



Mr Kam Soon Huat
President & Chief Operating Officer,
Singapore Organisation of Seamen
(until 1 Feb 2021)



RADM Lew Chuen Hong
Chief of Navy,
Ministry of Defence
(until 22 Mar 2020)



Mr Esben Poulsen
Executive Chairman,
Enesol Pte Ltd



Mr Han Kok Juan
Deputy Secretary (Hub Strategy),
Ministry of Transport



Mr Jermaine Loy
Principal Private Secretary to
Prime Minister - Designate,
Prime Minister's Office
(w.e.f. 2 Feb 2021)



Ms Mary Liew
President,
NTUC Central Committee and
General Secretary,
Singapore Maritime Officers' Union
(w.e.f. 2 Feb 2021)



Mr Luke Goh
Deputy Secretary (Trade),
Ministry of Trade and Industry
(until 1 Feb 2021)



Mrs Quek Bin Hwee
Director,
The Hongkong and Shanghai
Banking Corporation Limited
(until 1 Feb 2021)



Mr Walter Fernandez
Editor-in-Chief,
Mediacorp Pte Ltd
(until 1 Feb 2021)

SENIOR
MANAGEMENT

- 01

Mr Thomas Ting
Deputy Director, Innovation, Technology & Talent Development/
Chief Technology Officer (latter appointment w.e.f. 1 Jan 2021)
- 02

Mr Ng Yi Han
Director, Innovation, Technology & Talent Development
(w.e.f. 1 Apr 2021)
Acting Director, Innovation, Technology & Talent Development
(until 31 Mar 2021)
- 03

Mr Benjamin Wong
Director, International (w.e.f. 1 Jul 2020)
Acting Director, International (until 30 Jun 2020)
- 04

Mr Kenneth Lim
Assistant Chief Executive (Industry)
(w.e.f. 1 Jan 2021)
Senior Director, Innovation, Technology & Talent Development/
Chief Technology Officer
(until 31 Dec 2020)
- 05

Ms Caroline Goh
Director, Business Capability Development
- 06

Mr Tan Cheng Peng
Director, Special Projects
- 07

Ms Angela Png
General Counsel
- 08

Mr Tan Hoe Soon
Chief Corporate Officer (w.e.f. 1 Jan 2021)
Senior Director, Communications, International & Legal
(until 31 Dec 2020)
- 09

Ms Bernice Yeoh
Senior Director, Strategy & Policy
- 10

Er Tham Wai Wah
Senior Director, Engineering & Project Management/
Chief Engineer/ Chief Sustainability Officer
- 11

Captain M Segar
Assistant Chief Executive (Operations)
- 12

Ms Ong Seok Bin
Senior Director, Human Resource
- 13

Captain Daknashamoorthy Ganasen
Senior Director, Operations & Marine Services
- 14

Ms Quah Ley Hoon
Chief Executive
- 15

Ms Caitlin Fua
Director, Communications & Community
- 16

Mr Tan Suan Jow
Dean of MPA Academy
- 17

Ms Tan Beng Tee
Senior Advisor (w.e.f. 1 Jan 2021)
Assistant Chief Executive (Development)
(until 31 Dec 2020)
- 18

Ms Cindy Sim
Director, Finance, Procurement & Admin
- 19

Mr Goh Chung Hun
Director, Shipping/ Director, Marine (until 31 Jan 2021)
- 20

Ms Tan Woei Tyng
Director, International Maritime Centre
- 21

Mr David Foo
Assistant Chief Executive (Operations Technology)
(w.e.f. 1 Jan 2021)
Senior Director, Operations Technology (until 31 Dec 2020)
- 22

Mr Cheah Aun Aun
Director, Shipping / Director, Marine (w.e.f. 1 Feb 2021)
Deputy Director, Shipping / Deputy Director, Marine
(until 31 Jan 2021)
- 23

Mr Thai Low Ying-Huang
Chief Hydrographer
- 24

Captain Kevin Wong
Port Master
- 25

Mr Koh Chin Yong
Deputy Director, Information Technology/
Chief Information Officer



CORPORATE GOVERNANCE

MPA is an autonomous agency instituted by Parliament under the MPA Act. The Board, headed by a non-executive Chairman, sets strategic directions for MPA to achieve its mission and fulfil its roles. Appointed by the Minister for Transport for a three-year term, Board Members include MPA’s Chief Executive, senior officials from the public sector and industry representatives.

The MPA Board comprises the following Board Committees and their members:



AUDIT REVIEW COMMITTEE

Chairperson
Dr Vincent Lien

Members
RADM Aaron Beng (w.e.f. 23 Mar 2020)
Mr Carl Krogh Arnet (until 1 Feb 2021)
Ms Caroline Yang
Mr Jermaine Loy (w.e.f. 2 Feb 2021)
RADM Lew Chuen Hong (until 22 Mar 2020)
Mr Luke Goh (until 1 Feb 2021)
Mrs Quek Bin Hwee (until 1 Feb 2021)
Mr Sng Seow Wah (w.e.f. 2 Feb 2021)

Secretary
Head (Internal Audit)



DATA AND CYBERSECURITY COMMITTEE



INVESTMENT COMMITTEE

Chairperson
Mr Niam Chiang Meng

Members
Mr Abu Bakar Bin Mohd Nor (w.e.f. 2 Feb 2021)
Mr Chris Ong Leng Yeow
Mr Luke Goh (until 1 Feb 2021)
Ms Quah Ley Hoon
Mrs Quek Bin Hwee (until 1 Feb 2021)
Mr Sng Seow Wah (w.e.f. 2 Feb 2021)
Dr Vincent Lien

Secretary
Director (Finance, Procurement & Admin)




MINT FUND STEERING COMMITTEE

Chairperson
Mr Ishak Ismail (until 1 Feb 2021)
Mr Han Kok Juan (w.e.f. 2 Feb 2021)

Members
RADM Aaron Beng (w.e.f. 23 Mar 2020)
Mr Carl Krogh Arnet (until 1 Feb 2021)
Mr Esben Poulsson
Mr Han Kok Juan (until 1 Feb 2021)
RADM Lew Chuen Hong (until 22 Mar 2020)
Ms Patricia Yim (w.e.f. 2 Feb 2021)
Ms Quah Ley Hoon

Industry Representative
Prof Lui Pao Chuen
Temasek Defence Professor
National University of Singapore

Secretary
Director (Innovation, Technology & Talent Development)

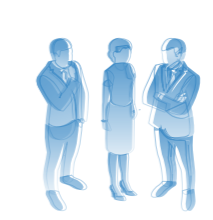


REGISTRATION COMMITTEE

Chairperson
Mr Ishak Ismail (until 1 Feb 2021)
Mr Teo Choo Wee (w.e.f. 2 Feb 2021)

Members
Ms Caroline Yang (w.e.f. 2 Feb 2021)
Mr Jermaine Loy (w.e.f. 2 Feb 2021)
Mr Kam Soon Huat (until 1 Feb 2021)
Mr Luke Goh (until 1 Feb 2021)
Ms Mary Liew (w.e.f. 2 Feb 2021)
Mr Teo Choo Wee (until 1 Feb 2021)

Secretary
Director (Shipping)

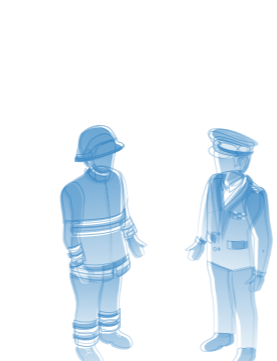


SENIOR PERSONNEL BOARD

Chairperson
Mr Niam Chiang Meng

Members
Mr Abu Bakar Bin Mohd Nor (w.e.f. 2 Feb 2021)
Mr Ishak Ismail (until 1 Feb 2021)
Ms Patricia Yim (w.e.f. 2 Feb 2021)
Ms Quah Ley Hoon
Mrs Quek Bin Hwee (until 1 Feb 2021)

Secretary
Senior Director (Human Resource)



WELFARE COMMITTEE FOR SEAFARERS

Chairperson
Mr Kam Soon Huat (until 1 Feb 2021)
Ms Mary Liew (w.e.f. 2 Feb 2021)

Members
Mr Esben Poulsson
Mr Teo Choo Wee
Mr Walter Fernandez (until 1 Feb 2021)

Singapore Shipping Association
Mr Deepak Arora
Deputy General Manager
Maritime Human Resources
NYK Shipmanagement Pte Ltd

PSA Corporation
Mr Adrian Sim (until 1 Feb 2021)
Assistant Vice President
Pasir Panjang Terminal

Mr Goh Teck Chin (w.e.f. 2 Feb 2021)
Assistant Vice President (Safety and Health)
HSSE Division

Jurong Port Pte Ltd
Mr Mohanaveel S/O Veerappa
Senior Manager
Cement Division

Seafarers' Missions
Rev Carl Bjarkam (w.e.f. 2 Feb 2021)
Port Chaplain
Danish Seamen's Church

Rev Sussie Nygaard Foged (until 1 Feb 2021)
Port Chaplain
Danish Seamen's Church

Mr Toh Soon Kok
Port Chaplain
The Mission to Seafarers Singapore

MPA
Senior Director (Engineering & Project Management)
Director (Shipping)

Secretariat
Assistant Director (Seafarers Management)

Board Meetings are scheduled on a bi-monthly basis to deliberate and approve important matters on governance, operations, policy and sustainability. These matters reflect the key material issues addressed in this report.

MPA’s 18 divisions are headed by divisional Directors, who are responsible for managing the day-to-day operations of their divisions. The MPA Senior Management Team, comprising the Chief Executive, Assistant Chief Executives as well as divisional Directors, is accountable to the Chairman of the MPA Board and to the Permanent Secretary of the Ministry of Transport.

DISCLOSURE ON COMPENSATION

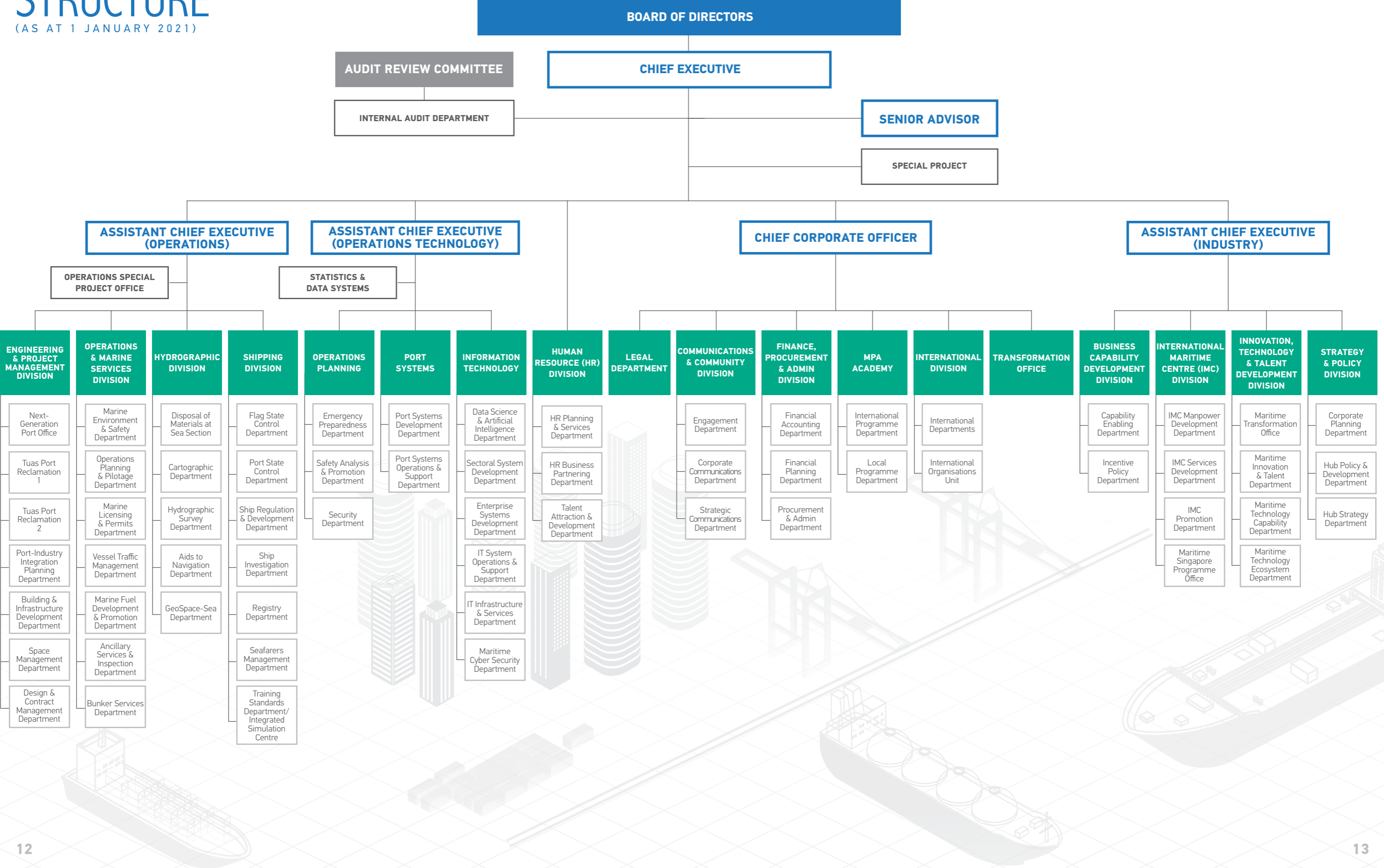
The remunerations for the MPA Board and the Senior Management Team are pegged to the guidelines of the Public Service Division.

The Sustainability Office, which reports directly to MPA’s Chief Executive, champions sound governance and practices in resource management and environmental sustainability within MPA and the maritime community. It tracks MPA’s sustainability performance and provides regular updates to the Board on the progress of sustainability initiatives. In addition to managing and coordinating MPA’s programmes on maritime sustainability, the Sustainability Office promotes awareness and champions collaborations amongst maritime stakeholders on sustainability issues.

In 2020, the ratio of the total compensation for the MPA Board and Senior Management to that of all employees stood at 0.07.

ORGANISATION STRUCTURE

(AS AT 1 JANUARY 2021)



ABOUT MPA

MPA was established on 2 February 1996 as a statutory board under the Ministry of Transport.

OUR VISION

A leading maritime agency driving Singapore's global maritime aspirations.

MPA works closely with industry partners and public agencies to enhance the safety, security and environmental protection of Singapore's port waters. In addition to facilitating port operations, MPA drives the expansion of Singapore's maritime ancillary services cluster while promoting maritime R&D and manpower development.

MPA undertakes the roles of a Port Authority, a Port Regulator, a Port Planner, an IMC Champion and a National Maritime Representative.

OUR MISSION

To develop and promote Singapore as a premier global hub port and an international maritime centre, and to advance and safeguard Singapore's strategic maritime interests.



Port Authority

MPA promotes safety, efficiency and sustainability in the Port of Singapore.



Port Regulator

MPA regulates and licenses port facilities and marine services. It ensures quality pilotage, towage and bunkering services for the smooth running of port operations.



Port Planner

MPA is responsible for the optimal use of sea space and waterfront land to meet the needs of Singapore's future. It is developing the next-generation port at Tuas.



IMC Champion

MPA grows a vibrant ecosystem of maritime services by maintaining a competitive and pro-business environment. It promotes maritime R&D and drives the manpower development of Singapore's maritime workforce.



National Maritime Representative

MPA advances Singapore's maritime interests by building strong relations with the international maritime community. It ensures that critical sea lines of communication remain open and secure.

For additional information, please visit MPA's corporate website at www.mpa.gov.sg.

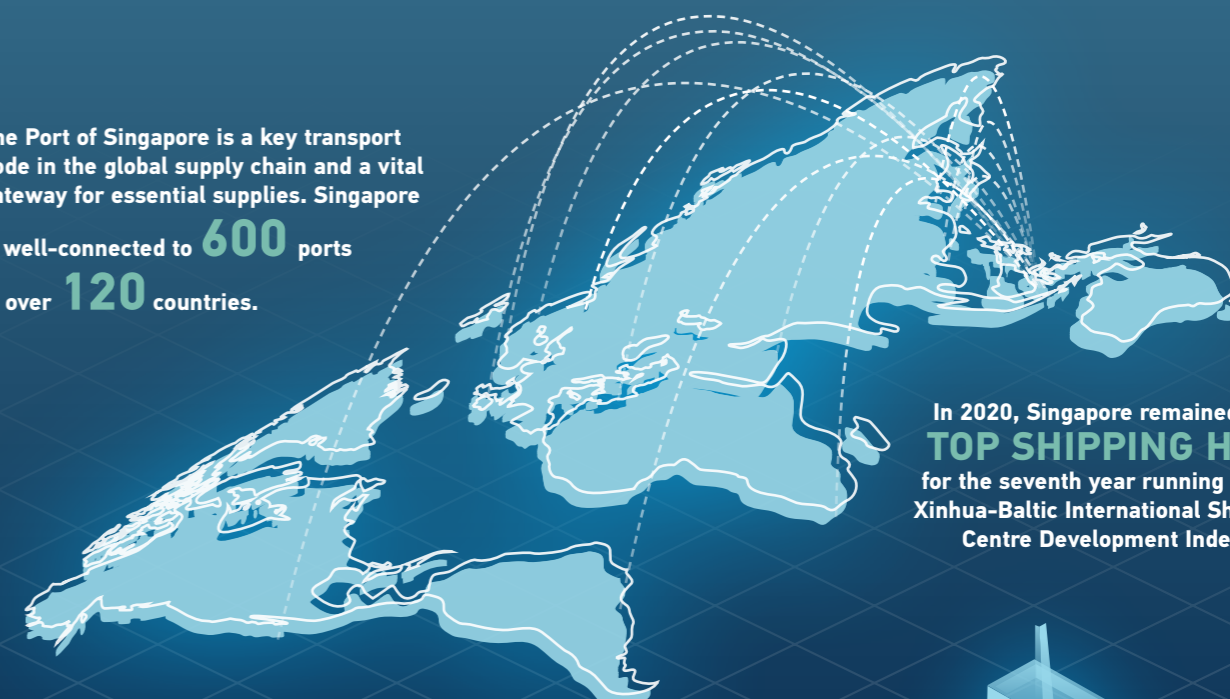
ABOUT MARITIME SINGAPORE



The Maritime Singapore logo is a symbolic representation of the local maritime ecosystem and an identity that unifies Singapore's maritime industry. It embodies the vital, versatile and resilient character of Maritime Singapore.

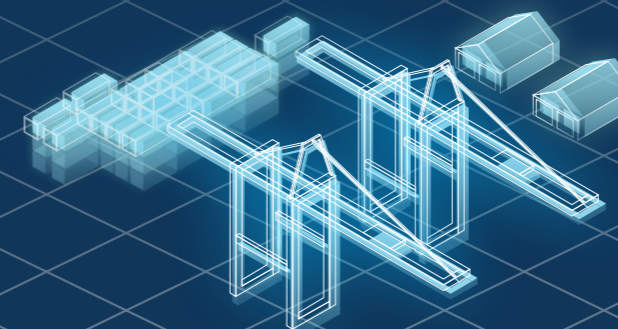
The Port of Singapore is a key transport node in the global supply chain and a vital gateway for essential supplies. Singapore

is well-connected to **600** ports
in over **120** countries.



In 2020, Singapore remained the **TOP SHIPPING HUB** for the seventh year running in the Xinhua-Baltic International Shipping Centre Development Index.

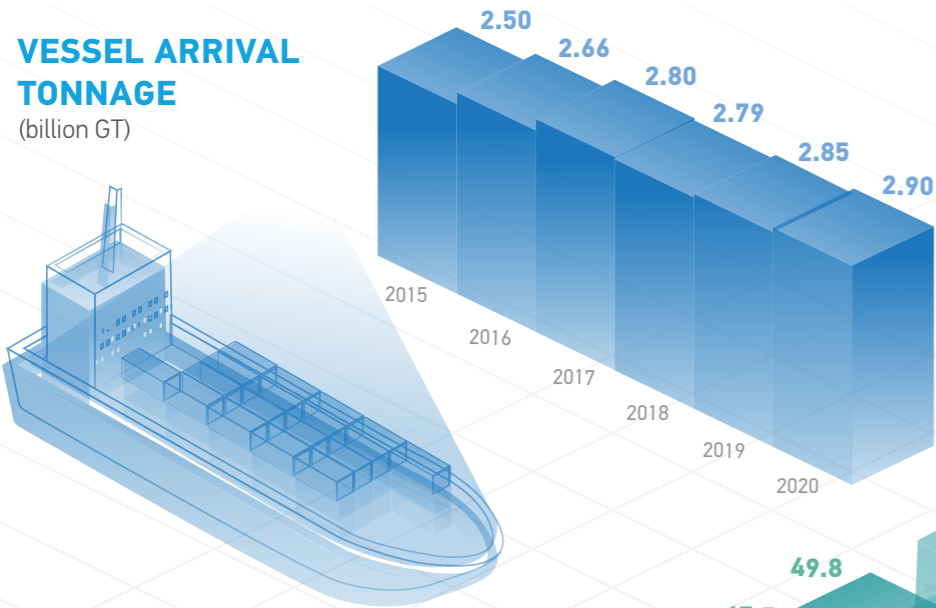
Singapore was crowned the **'BEST SEAPORT IN ASIA'** for the 32nd time at the 2020 Asian Freight, Logistics and Supply Chain Awards.



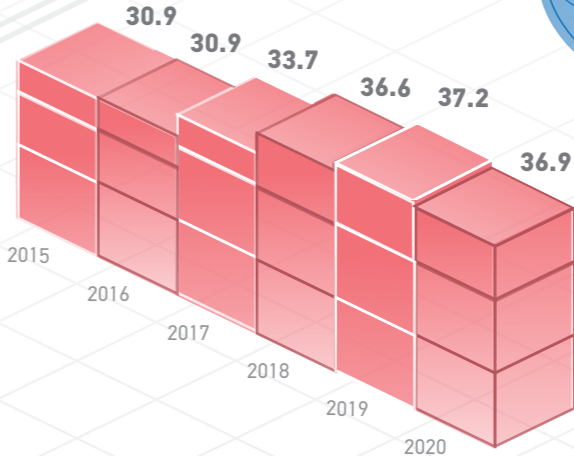
Today, the Singapore Registry of Ships is among the **TOP 5** largest ship registries in the world, with over **4,200** Singapore-registered vessels.

2020 PERFORMANCE SUMMARY

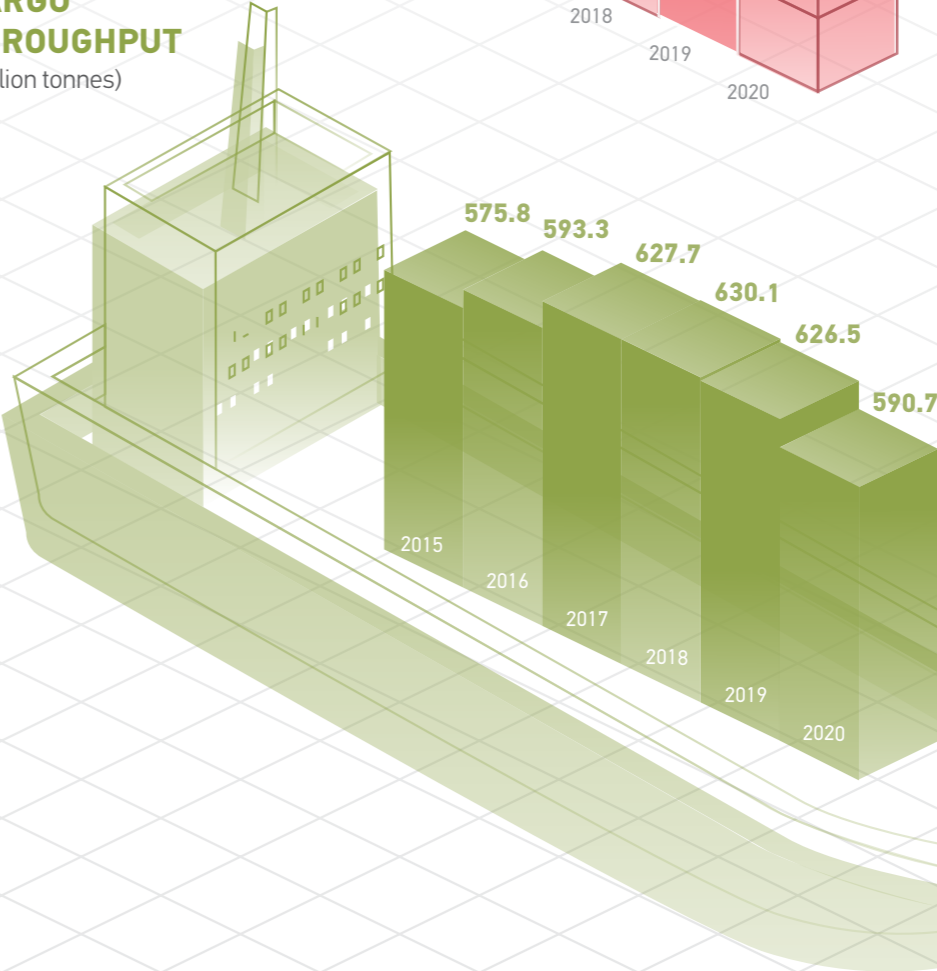
**VESSEL ARRIVAL
TONNAGE**
(billion GT)



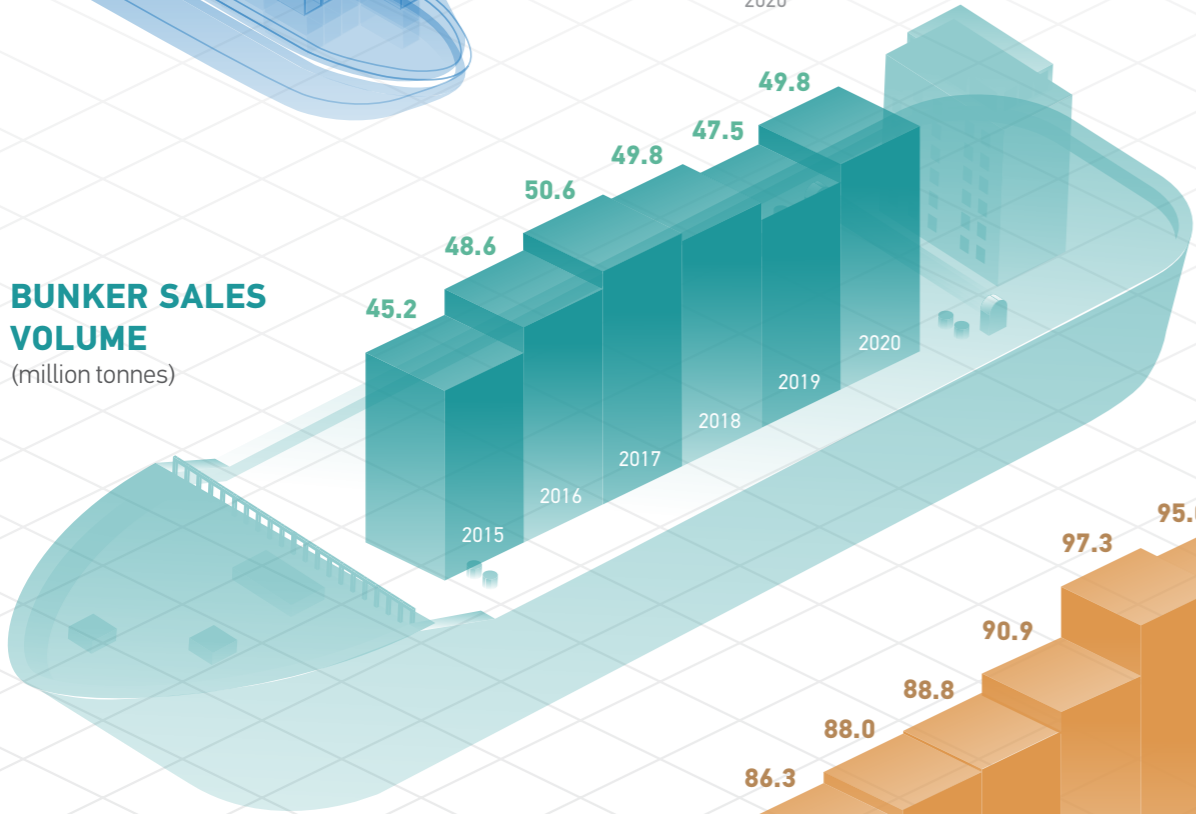
**CONTAINER
THROUGHPUT**
(million TEUs)



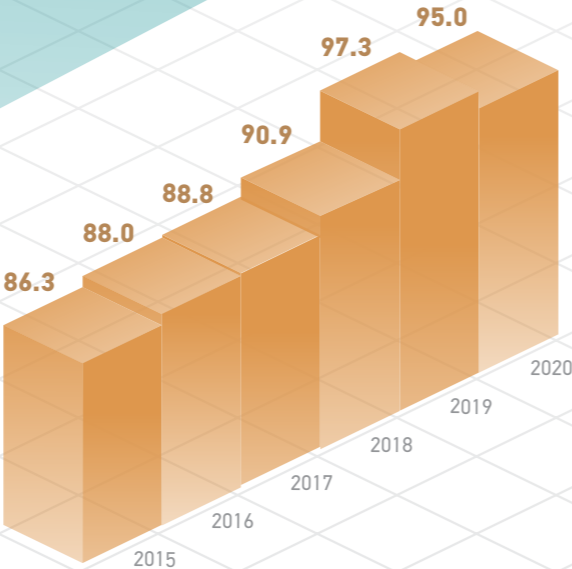
**CARGO
THROUGHPUT**
(million tonnes)



**BUNKER SALES
VOLUME**
(million tonnes)



**SINGAPORE
REGISTRY OF SHIPS**
(million GT)



KEY MATERIAL ISSUES

MPA applies the AA1000 AccountAbility Principles Standard, GRI Standards and the <IR> Framework to identify and prioritise the key sustainability issues that impact MPA and its stakeholders. In support of the United Nations’ 2030 Agenda for Sustainable Development, MPA aligns its efforts to address key material issues with the UN SDGs.



SAFE, EFFICIENT AND SUSTAINABLE GLOBAL HUB PORT

This material issue addresses the importance and impact of MPA’s role as the driving force behind Singapore’s maritime aspirations and developments. MPA works closely with diverse stakeholders to enhance safety, sustainability and operational efficiency in the Port of Singapore. It spearheads maritime digitalisation and technological innovation to drive safe, efficient and sustainable shipping. A digitally enabled and technology-driven maritime sector enhances Singapore’s competitiveness as a global hub port and reinforces the vital role that Singapore plays in international trade as a key transport node in the global supply chain.



ECONOMIC CONTRIBUTION

This material issue addresses the importance and impact of MPA’s contributions to Singapore’s economy. MPA fosters a pro-business environment to grow the attractiveness of Singapore as an international maritime centre. It supports maritime companies to establish their businesses in Singapore and expand their operations from the city-state. MPA also grows the capabilities of the maritime workforce in Singapore to strengthen industry resilience and seize opportunities as the maritime sector evolves.



ENVIRONMENTAL SUSTAINABILITY

This material issue addresses the importance and impact of MPA’s role in driving environmental sustainability in Singapore’s maritime industry. Spearheading the decarbonisation efforts in Maritime Singapore, MPA supports the research, trials and adoption of clean marine fuels and low-carbon technologies to reduce emissions. It also conducts public outreach on marine environmental protection.



INTERNATIONAL SUPPORT AND COMMUNITY ENGAGEMENT

This material issue addresses the importance and impact of building strong local and international partnerships. MPA advances Singapore’s maritime interests on the global stage and contributes to international efforts at promoting safe, efficient and sustainable shipping. MPA also engages local communities in a meaningful way to grow public awareness of Maritime Singapore and inspire talents to join the maritime sector.



FINANCIAL SUSTAINABILITY

This material issue addresses the importance and impact of MPA’s financial performance. MPA is a self-funded statutory board. Critical to its long-term financial viability, MPA maintains a competitive business and sustainable revenue streams.



OUR PEOPLE AND CULTURE

This material issue addresses the importance and impact of maintaining a skilled and productive MPA workforce. MPA develops its officers professionally and grows their careers in MPA while building a rewarding and engaging work environment. It also adopts technology and digitalises its work processes to foster collaboration, support job functions and drive efficiency at work.

MPA'S BUSINESS MODEL

A MATERIAL ISSUES

- Safe, efficient and sustainable global hub port
- Economic contribution
- Environmental sustainability
- International support and community engagement
- Financial sustainability
- Our people and culture

B INPUT

- Financial capital: Ensure that MPA remains financially sustainable
- Manufactured capital: Provide customer-centric services, and deliver operational and technological solutions
- Intellectual capital: Drive thought leadership in the maritime space
- Human capital: Become a choice employer and build a pipeline of talents for the maritime industry
- Social and relationship capital: Build strong partnerships with stakeholders
- Natural capital: Optimise scarce resources

C INITIATIVES

STRENGTHEN SINGAPORE'S POSITION AS A GLOBAL HUB PORT

- Develop technological innovations to enhance port safety and efficiency
- Champion maritime safety and strengthen emergency preparedness
- Promote the digitalisation of shipping documents and payment transactions
- Support R&D in low-carbon technologies and solutions in shipping
- Champion LNG bunkering and explore clean marine fuels
- Conduct public outreach to raise awareness of marine environmental protection
- Develop the next-generation port at Tuas and its capabilities

BUILD AN ATTRACTIVE INTERNATIONAL MARITIME CENTRE

- Offer strong business support
- Attract new maritime players and grow existing maritime companies in Singapore
- Foster strong connections with complementary international maritime clusters
- Strengthen interlinkages within the maritime ecosystem and with adjacent sectors

SAFEGUARD SINGAPORE'S MARITIME INTERESTS ON THE GLOBAL STAGE

- Maintain a leading and active presence at international and regional maritime platforms
- Promote Singapore's thought leadership on maritime affairs
- Support global maritime leadership development and the training needs of the international maritime community

GROW SINGAPORE AS A MARITIME INNOVATION HUB

- Accelerate maritime digitalisation
- Strengthen public-private sector and cross-industry collaboration on maritime R&D
- Provide support for maritime technology start-ups
- Support the development and testing of maritime technologies and innovative solutions
- Develop capabilities in early detection and response to cybersecurity threats

BUILD A FUTURE-READY MARITIME WORKFORCE

- Cooperate with institutes of higher learning, industry associations and seafaring unions to support training and reskilling of maritime employees
- Build a steady pipeline of local maritime talents
- Facilitate the entry of mid-career professionals into growth areas of the maritime sector

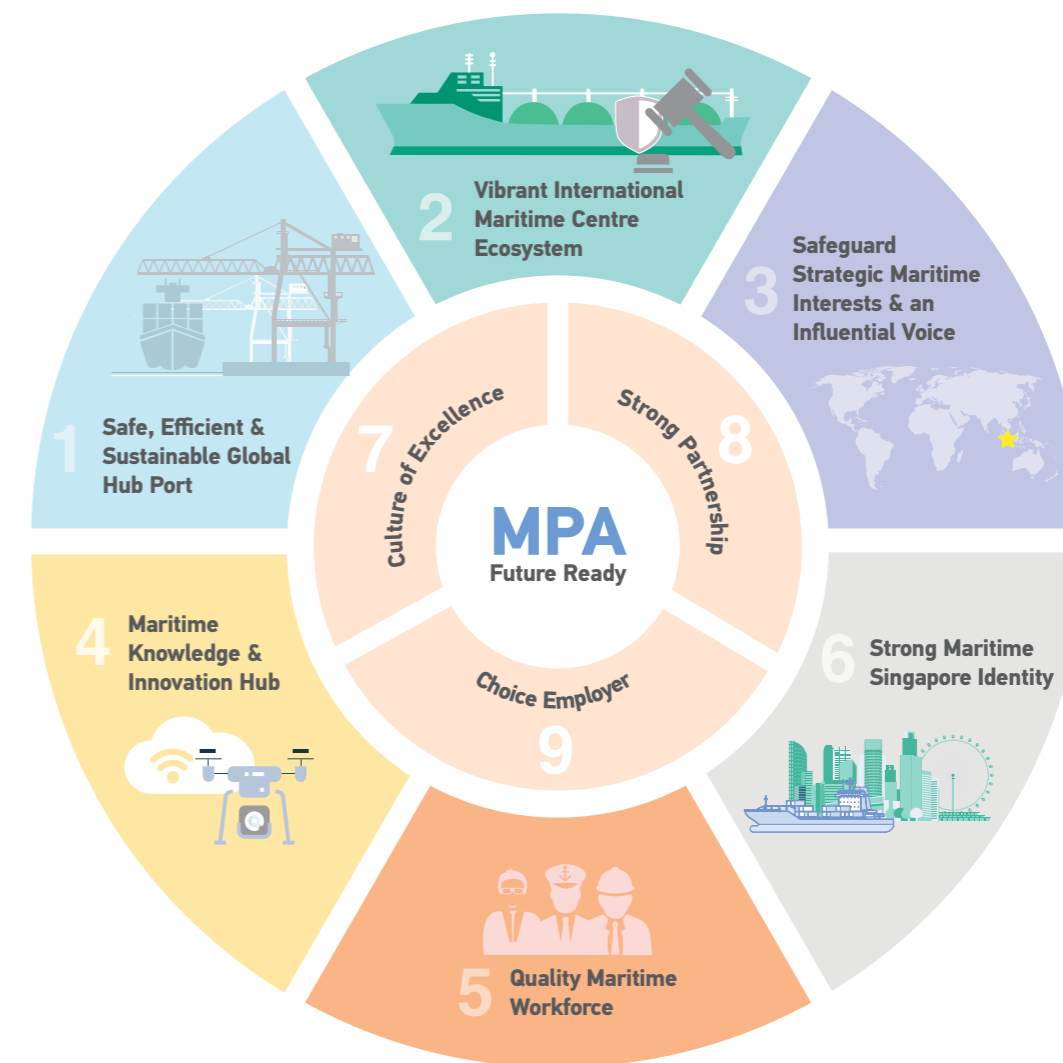
BUILD A STRONG MARITIME SINGAPORE IDENTITY

- Strengthen media engagement and publicity to grow awareness of Singapore's maritime industry
- Conduct public engagement programmes to raise the profile of Maritime Singapore and enhance the public image of the industry

DEVELOP INTERNAL CAPABILITIES

- Develop a digital MPA workforce
- Support the professional growth of employees
- Institute staff engagement as a regular exercise
- Enhance workplace safety and health

D OUTCOMES



E KEY PERFORMANCE AREAS

- Improve safety and risk management practices
- Enhance operational resilience and productivity in the Port of Singapore
- Drive environmental sustainability in the Port of Singapore
- Lead in setting industry standards
- Digitalise and improve port infrastructure
- Develop the next-generation port at Tuas
- Anchor and grow key players in Singapore's maritime ecosystem
- Promote a pro-business and conducive environment for maritime businesses
- Be an active voice on regional and international maritime platforms

- Strengthen relationships with international counterparts and the maritime community
- Implement all ratified international regulations and conventions effectively
- Promote maritime thought leadership
- Support maritime R&D and nurture a culture of innovation
- Drive sectoral manpower strategies
- Promote maritime careers by raising the profile of the industry and its careers
- Enhance public outreach and engagement to grow awareness of the maritime sector
- Reinforce Singapore's position as a choice venue for maritime events



The Maritime and Port Authority of Singapore (MPA) adopts a collaborative approach to transform Maritime Singapore through digitalisation and technological innovation. It works with industry partners, academia, government, technology providers and start-ups to co-create innovative solutions for the maritime industry. A digitally enabled and technology-driven maritime sector not only strengthens the competitiveness of Singapore as a global hub port and an international maritime centre, but also enhances the vital role that Singapore plays in international trade as a key transport node in the global supply chain.

MPA supports maritime companies in their digitalisation journeys. In 2020, MPA introduced the Maritime Digitalisation Playbook and expanded the Sea Transport Industry Digital Plan (IDP) to cover the bunkering sector. Both initiatives help maritime companies digitalise their businesses. MPA also champions the adoption of electronic bills of lading (eBL) and drives the digitalisation of financial services and payment transactions across Singapore's maritime industry. In 2020, it launched Phase 1

of GeoSpace-Sea, a national marine spatial data infrastructure that harmonises Singapore's marine and coastal geospatial data and information.

Additionally, MPA drives standard-setting for Maritime Autonomous Surface Ships (MASS) and grows additive manufacturing capabilities for application in Singapore's maritime industry. To promote technological innovation and partnerships between the technology and maritime communities, MPA awarded nine consortium projects to address the challenges and opportunities arising from the COVID-19 pandemic following an open call for Joint Industry Projects (JIP).

In building an innovative maritime ecosystem, MPA – in partnership with NUS Enterprise – runs the Smart Port Challenge (SPC) and the Port Innovation Ecosystem Reimagined @ BLOCK71 (PIER71) Accelerate programme to support start-ups in developing innovative and sustainable solutions for real-world challenges in the maritime industry. MPA also fosters public-private sector partnerships to co-invest in promising maritime technology projects.

CHAPTER 01

DIGITALISATION & INNOVATION

MARITIME DIGITALISATION

MARITIME DIGITALISATION PLAYBOOK

As part of industry transformation efforts, MPA, the Infocomm Media Development Authority (IMDA) and the Singapore Shipping Association (SSA) developed the Maritime Digitalisation Playbook (MDP) to support maritime companies uncover opportunities in digital transformation. The playbook helps maritime companies, especially small and medium enterprises (SMEs), formulate plans and implement strategies on digitalisation to improve productivity and competitiveness. It offers maritime companies information and resources on the digitalisation landscape in the maritime sector, examples of technology adoption and a digital transformation framework to identify digital-driven business strategies and priorities. Companies can apply for co-funding from MPA's Maritime Cluster Fund (Productivity Development) to develop their digitalisation solutions.

The MDP incorporated key findings from the IMDA-commissioned Digital Acceleration Index (DAI) survey for the



Maritime Digitalisation Playbook

sea transport sector. The survey, which collected data from over 200 maritime organisations on their digital maturity, identified digital trends and best practices in sectors such as shipping, harbour craft and ship management.

In championing MDP adoption, MPA launched the MDP Ambassadors programme in October 2020. MDP Ambassadors promote awareness and the use of the MDP, share best practices on digital adoption and support collaboration amongst maritime companies to drive digitalisation.

SEA TRANSPORT INDUSTRY DIGITAL PLAN



Sea Transport (Bunkering) IDP

MPA, in partnership with IMDA, Enterprise Singapore and SkillsFuture Singapore, expanded the Sea Transport IDP in 2020 to cover the digitalisation of the bunkering sector. As part of the SMEs Go Digital programme, the Sea Transport IDP, which is aligned with the Sea Transport Industry Transformation Map (ITM), was first launched for the ship agency and harbour craft sectors in 2019. Developed in consultation with the industry, the IDP provides SMEs with a step-by-step guide on the digital solutions to adopt at various stages of growth. The IDP also includes a Digital Roadmap on Training to ensure that employees are equipped with the required skills to adopt digital solutions.

The Sea Transport IDP will help bunker suppliers, traders, barge operators and surveyors identify digital solutions that meet their business needs. The digital tools can help companies streamline their processes, enhance their competitiveness and access additional revenue streams. SMEs can receive co-funding for the adoption of pre-approved digital solutions, which include the bunker barge planning system, bunker fuel data profiling and the bunker sales management system.

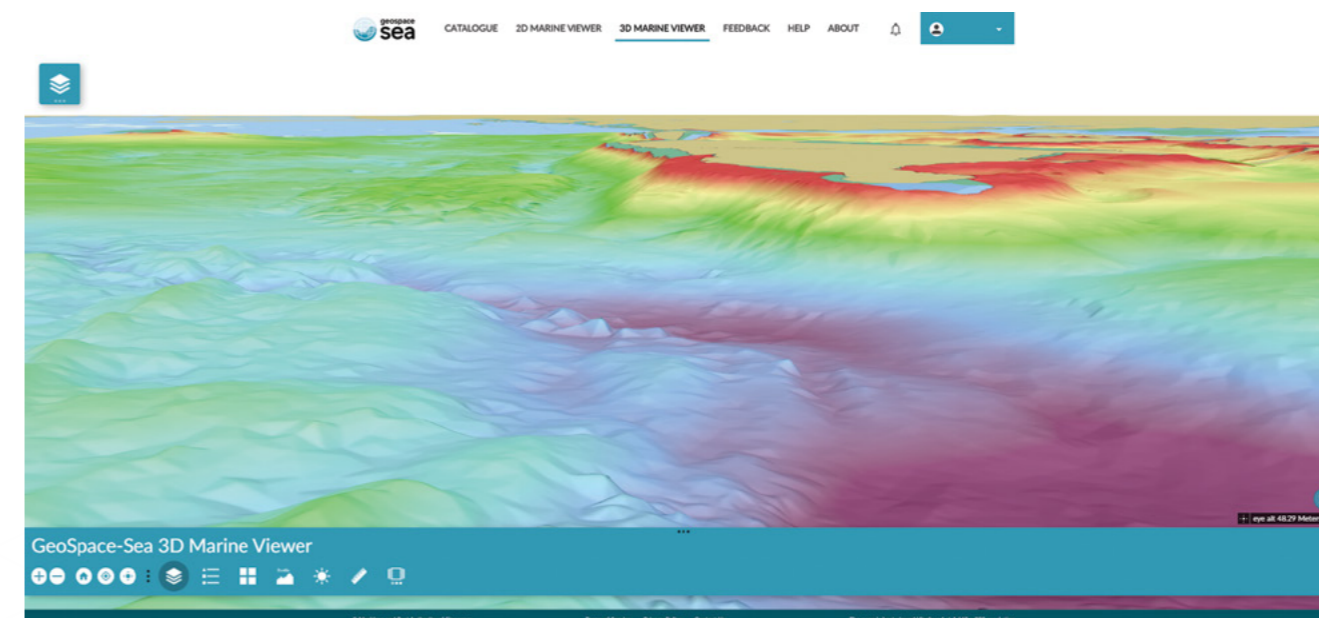
GEOSPACE-SEA

MPA launched Phase 1 of GeoSpace-Sea at International Safety@Sea Week 2020. GeoSpace-Sea is a national marine spatial data infrastructure that harnesses and harmonises Singapore's marine and coastal geospatial data and information from various sources.

Phase 1 of GeoSpace-Sea combines hydrographic data, marine environmental data, coastline details and habitat information to produce a comprehensive visual representation of Singapore's sea space. Participating government agencies¹ can now access the national repository of marine and coastal geospatial data from a central web platform.

In upcoming phases, the initiative will be extended to academia, research institutions and public user groups for marine science research, incident reporting and the development of end-user applications such as marine models and simulations.

GeoSpace-Sea will provide authoritative geospatial data for port, marine and coastal planning, marine science R&D, environmental management, marine conservation and climate change adaptation in a timely and efficient manner. In the long term, GeoSpace-Sea is envisioned to contribute to the global marine and coastal data ecosystem for sustainable development.



GeoSpace-Sea web portal

ELECTRONIC BILLS OF LADING

In promoting the digitalisation of shipping documents, MPA supported the amendment of the Electronic Transactions Act. The Act now applies to transferable documents and instruments such as bills of lading, a key legal document in maritime trade. The amendment facilitates electronic transactions for businesses in Singapore and helps businesses benefit from convenient and secure electronic transactions. It will enable the shipping industry to gain from fast processing, cost savings and decreased fraud risks.

The revised Electronic Transactions Act is aligned with the United Nations Commission on International Trade Law's Model Law on Electronic Transferable Records. Singapore is amongst the first maritime hubs to enact a legislative

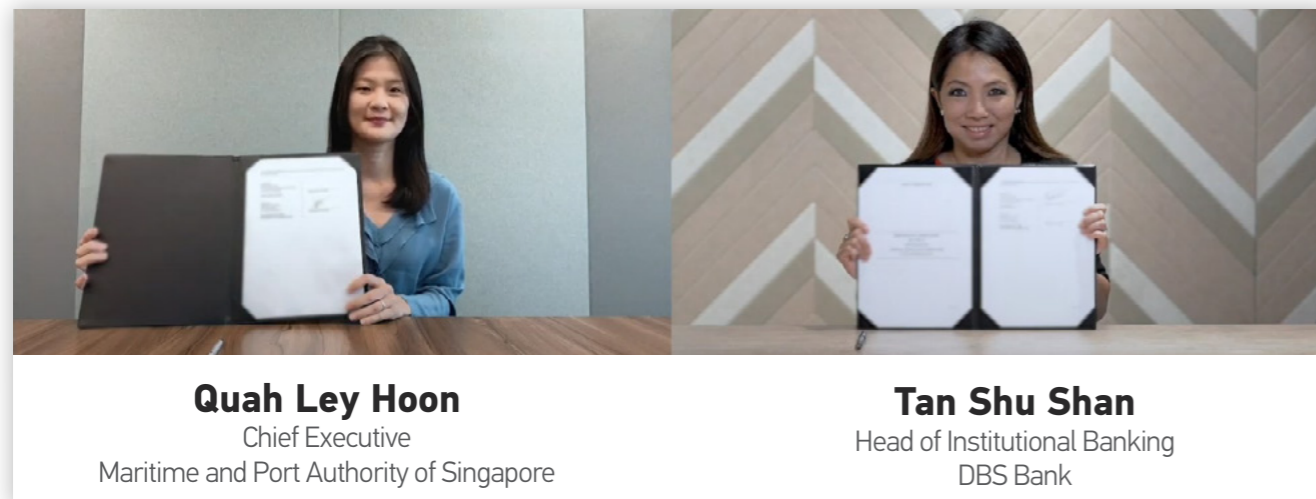
framework for electronic transferable records. MPA is working closely with industry partners to promote the adoption of eBL.

Since 2019, Singapore and the Netherlands have been cooperating on eBL implementation along the Europe-Far East trade route. Serving as key transshipment hubs along this trade route, Singapore and Rotterdam successfully completed an eBL interoperability trial involving the title transfer of bills of lading across the two ecosystems. The eBL delivery took less than 24 hours, compared to 6-10 days for the delivery of paper bills of lading. This trial was facilitated by MPA, IMDA, Port of Rotterdam Authority and technology providers DLTedgers and BlockLab.

¹ Besides MPA, the 11 other agencies behind GeoSpace-Sea are the Building and Construction Authority; Centre for Liveable Cities; Housing & Development Board; JTC Corporation; National Environment Agency; National Parks Board; National Research Foundation; PUB, Singapore's National Water Agency; Singapore Food Agency; Singapore Land Authority; and Urban Redevelopment Authority.

MPA-DBS MEMORANDUM OF UNDERSTANDING ON DIGITALISATION OF FINANCIAL SERVICES AND PAYMENT TRANSACTIONS IN THE MARITIME SECTOR

In September 2020, MPA signed a Memorandum of Understanding (MOU) with DBS Bank to drive the digitalisation and innovation of financial services and payment transactions across Singapore's maritime industry.



Signing of MPA-DBS MOU on Digitalisation of Financial Services and Payment Transactions in the Maritime Sector: Ms Quah Ley Hoon (left), Chief Executive of MPA; and Ms Tan Su Shan (right), Head of Institutional Banking at DBS Bank

Under the MOU, MPA and DBS identified areas of collaboration that included streamlining and enabling payment transactions amongst users of maritime services to expedite end-to-end payment life cycles. In addition to digitalising supporting documents for financing, MPA and DBS will also facilitate innovation and co-development of financial solutions for the sector with the maritime start-up ecosystem. This collaboration will enhance efficiency in

business transactions and improve cash flow, particularly for maritime SMEs.

Together with DBS, MPA held several roundtable sessions with maritime companies to promote the adoption of common digital payment solutions such as QR code payment and e-invoicing.

MARITIME FRONTIER E-NEWSLETTER

MPA launched the Maritime Frontier e-newsletter in September 2020. The quarterly e-newsletter aims to promote the initiatives and opportunities along the pillars of productivity, innovation, jobs and skills, and internationalisation championed by the Sea Transport ITM.

The inaugural issue of Maritime Frontier examined the integral role the Sea Transport ITM in charting the future of Maritime Singapore. Mr Kenneth Lim, MPA's Chief Technology Officer and Senior Director (Innovation, Technology & Talent Development), and Mr Ong Kim Pong, Regional CEO, Southeast Asia, PSA International, discussed the key initiatives of the Sea Transport ITM. Besides highlighting a case study on Tian San Shipping's adoption of the Sea Transport IDP, the first issue of Maritime Frontier also shared the experiences of SGUnited Traineeships Programme participants.



Maritime Frontier Issue 1

TECHNOLOGY DEVELOPMENT

CALL FOR JOINT INDUSTRY PROJECTS TO BUILD A RESILIENT AND COMPETITIVE MARITIME SECTOR

MPA and SSA jointly launched an open call for JIP to encourage the technology and maritime communities to forge partnerships in addressing the challenges and opportunities arising from the COVID-19 pandemic. Interested technology developers worked with maritime stakeholders to submit proposals on building industry capabilities and fostering a resilient and competitive maritime sector. The suggested topics for JIP included (i) enhancing customer service and minimising touchpoints at the piers; (ii) developing solutions and standards for

remote ship inspection and survey; (iii) improving ship supplies services; and (iv) supporting tele-consultation and medication for seafarers.

MPA awarded nine consortium projects involving over 60 industry partners and provided funding of up to 70% of qualifying project costs through the Maritime Innovation & Technology (MINT) Fund. Project trials will take place from early 2021.

MARITIME AUTONOMOUS SURFACE SHIPS

In August 2020, representatives of flag, coastal and port authorities from China, Denmark, Finland, Japan, the Netherlands, Norway, Republic of Korea and Singapore launched the MASSPorts initiative virtually. Representatives of the International Maritime Organization, the International Association of Marine Aids to Navigation and Lighthouse Authorities, as well as the International Association of Ports and Harbors joined the occasion.

MASSPorts is a network formed by like-minded states and organisations to align standards for the trials and operation of MASS across ports. The network's objectives include (i) developing detailed guidelines and conditions for MASS

trials within ports; (ii) establishing common terminology, form and standards of communication, ship reporting and data exchange standards to enable system interoperability across ports; and (iii) facilitating port-to-port MASS trials.

Additionally, MPA supported the successful completion of the Wärtsilä-PSA Marine IntelliTug Project in March 2020. The project, which was co-financed by the MINT Fund, marked Singapore's first MASS trial within the MASS regulatory sandbox that was established by MPA to facilitate the testing of MASS and autonomous technologies in a safe and controlled environment within the Port of Singapore.



Wärtsilä, PSA Marine and MPA officers on board PSA Polarix, which was retrofitted with a suite of Wärtsilä technology to enable autonomous navigation

In October 2020, ST Engineering Marine, the American Bureau of Shipping, Pacc Offshore and Marine and M1 successfully completed the sea trials of a fully autonomous tug under the Smart Maritime Autonomous Vessel project. These trials were performed at the Maritime Innovation Lab and the Raffles Reserve Anchorage regulatory sandbox. The captain stationed at the Maritime Innovation Lab operated the vessel at the anchorage remotely to perform a series of manoeuvres safely.



Smart Maritime Autonomous Vessel

Singapore will host the International Conference on Maritime Autonomous Surface Ship in 2022. The conference presents cutting-edge work on autonomous ships and discusses research activities on MASS technology and applications. It will foster dialogue and information exchange amongst MASS researchers and developers.

ADDITIVE MANUFACTURING

MPA awarded a total of S\$1.625 million to 11 JIP out of the 40 submissions it received from a joint Call For Proposals with SSA and the National Additive Manufacturing Innovation Cluster on maritime digitalisation and the additive manufacturing of marine parts.

Five of these projects address operational resilience and productivity needs. Scheduled for completion by 2021, these projects will strengthen the resilience and transform the way maritime operations will be carried out in the new normal.

Another six projects explore additive manufacturing for the just-in-time provision of marine parts. The

consortiums behind these six projects aim to deepen additive manufacturing capabilities in Singapore and trial the use of at least 26 3D-printed parts aboard Singapore-registered vessels. They will accelerate the deployment of certified and field-trialled 3D-printed marine parts. These projects are expected to be completed by 2022. Co-funded by MPA's MINT Fund, they will not only drive efficiency and cost savings for the shipping industry, but also advance Singapore's interest to become a global additive manufacturing hub for the maritime industry.

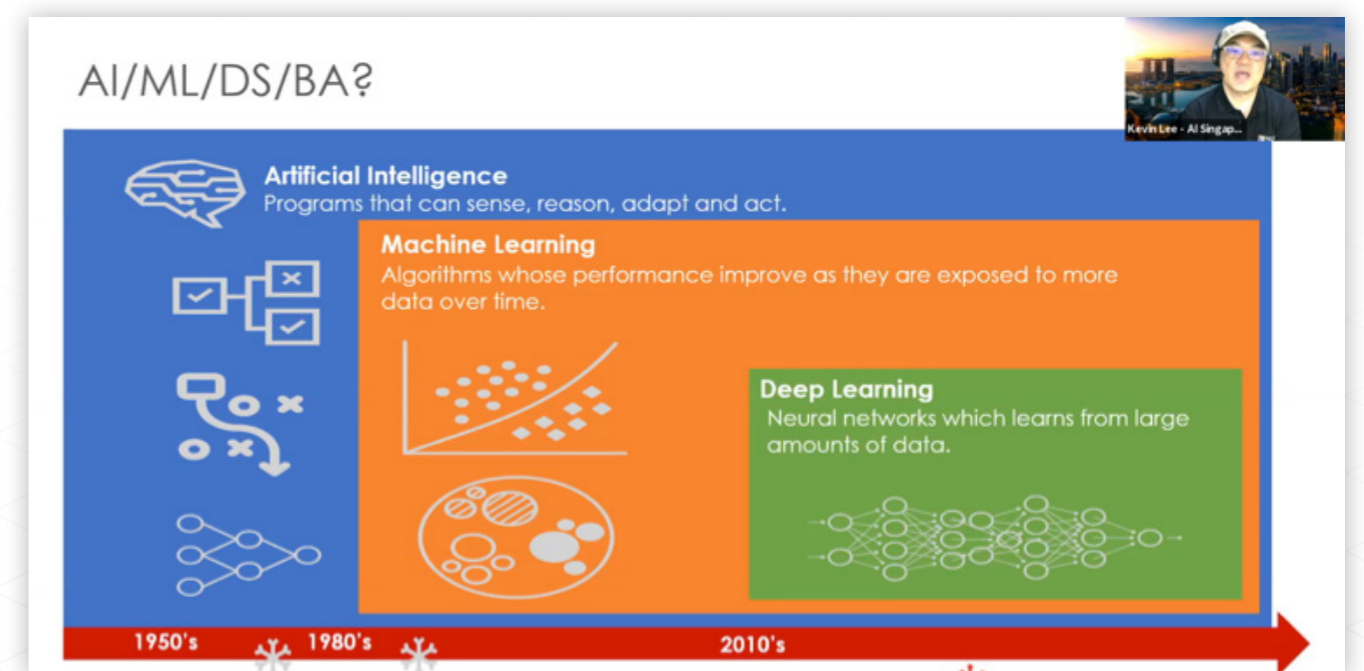


Signing ceremony of the Letter of Intent between Wilhelmsen and thyssenkrupp to establish a 3D printing joint venture (left to right): Mr Håkon Ellekjær, Head of Venture, Wilhelmsen Ships Service; Mr Nakul Malhotra, Vice President of Open Innovation, Wilhelmsen Ships Service; Mr Kenneth Lim, Chief Technology Officer and Senior Director (Innovation, Technology & Talent Development), MPA; Mr Jürgen Wöhrmann, Head of Region (Asia Pacific), thyssenkrupp; and Mr Kenlip Ong, Head of Additive Manufacturing, thyssenkrupp

ARTIFICIAL INTELLIGENCE CLINIC

MPA and AI Singapore jointly organised the Artificial Intelligence (AI) Clinic webinar in September 2020 to champion the application of AI in the maritime sector. More than 100 industry participants joined the webinar,

which discussed case studies on the successes of AI application and its benefits in the maritime industry. The AI Clinic guided participants on the use of AI to enhance business competitiveness.



Mr Kevin Lee, Head of AI Advisory, AI Singapore, delivering the opening presentation at the AI Clinic

SUPPORTING START-UPS

SMART PORT CHALLENGE 2020

The fourth edition of SPC² received 187 applications from start-ups across the world. These applications sought to provide solutions to automate processes and reduce the reliance on manpower in the maritime industry. Some of these solutions such as the virtual walkthrough of vessels for ship inspections and robots for hull cleaning were notably constructive in light of COVID-19 circumstances.

At the grand final of SPC 2020, eight shortlisted start-ups pitched their proposals to a panel of judges. BeeX, FUELSAVE and Vulcan AI emerged as first, second and third place winners respectively. They were judged on their proposed solution, business model, market opportunity, impact on the maritime industry and overall team capability.



Ms Irene Cheong, Director, NUS Industry Liaison Office, delivering the welcome address at SPC 2020



Ms Grace Chia (right), Chief Executive Officer of BeeX, receiving the top prize of SPC 2020 from Mr Chee Hong Tat, Senior Minister of State, Ministry of Transport and Ministry of Foreign Affairs

² SPC is a core programme of PIER71, a collaboration between MPA and NUS Enterprise, the entrepreneurial arm of the National University of Singapore (NUS). SPC is an annual competition for global technology start-ups to address challenge statements shared by maritime companies.



Mr Manik Bhandari, Chief Executive Officer and Founder of Vulcan AI, giving a pitch on creating a safe work environment with intelligent sensors and wearable AI

MARITIME START-UP CO-INVESTMENT FUND

SEEDS Capital – the investment arm of Enterprise Singapore (ESG) – appointed six co-investment partners in June 2020 following a Call For Partnership by MPA and SEEDS Capital to identify suitable investors in early stage maritime technology start-ups. Together with SEEDS Capital, Innoport, KSL Maritime Ventures, PSA unboXed, Rainmaking, ShipsFocus-Quest Ventures and TecPier would support promising maritime technology start-ups with up to S\$50 million in investment funds to develop innovative and sustainable solutions that improve safety and operational efficiency in the maritime sector.

Supported by MPA and ESG, the S\$50 million joint investment fund aims to strengthen Singapore's start-up ecosystem while driving transformation in the maritime industry through technological innovation and public-private sector collaboration. The co-investment partners will offer hands-on assistance to help early-stage start-ups accelerate commercialisation through mentorship and client connections. More than 50 promising Singapore-based start-ups are expected to benefit from the joint investments.



CHAPTER 02

DECARBONISATION & SUSTAINABILITY

The Maritime and Port Authority of Singapore (MPA) is committed to the development of Singapore as a sustainable global hub port. It is guided by the targets of the International Maritime Organization (IMO) to reduce total annual greenhouse gas (GHG) emissions from global shipping by at least 50% from 2008 levels by 2050.

MPA spearheads the decarbonisation efforts of Singapore's maritime industry. In 2020, MPA supported the Singapore Maritime Foundation's (SMF) establishment of the International Advisory Panel on Maritime Decarbonisation (IAP) to develop a strategy for the industry to achieve its decarbonisation goals. Together with its partners, MPA set aside S\$40 million for the research, testing and adoption of low-carbon technologies under the Maritime GreenFuture Fund. In addition to championing liquefied natural gas (LNG) bunkering in the Port of Singapore, MPA is studying alternative marine fuels with local and international partners to support the decarbonisation

of the shipping industry. This decarbonisation drive follows the successful implementation of the IMO 2020 sulphur regulations in the Port of Singapore.

In demonstrating Singapore's thought leadership in sustainable bunkering, MPA organised the 21st edition of the Singapore International Bunkering Conference and Exhibition (SIBCON) virtually and held a multi-agency joint oil spill exercise. Undeterred by COVID-19 circumstances, MPA also continued its public outreach efforts on marine environmental protection by working with diverse partners to develop meaningful social media content and online materials.

Additionally, MPA supports the Public Sector Taking the Lead in Environmental Sustainability (PSTLES) 3.0 initiative. It adopted eco-solutions, implemented environmentally friendly practices and cultivated eco-habits in the workplace.

SUSTAINABLE SHIPPING

INTERNATIONAL ADVISORY PANEL ON MARITIME DECARBONISATION

Supported by MPA, SMF established the IAP to make holistic recommendations on pathways to maritime decarbonisation in Singapore. These recommendations will include policy options and enablers that accelerate the industry's transition towards a low-carbon future.

Mr Andreas Sohmen-Pao, Chairman of SMF, and Mr Wong Weng Sun, Chairman of the Board and Governing Council of the Singapore Maritime Institute (SMI), co-chair the IAP. Recognising that sustainability is a multi-dimensional issue requiring diverse perspectives and partnerships, the panel

comprises 28 other leaders from shipping companies, port operators, academia, class societies, insurance and finance players, energy companies, engine makers, shipyards, shipping associations and the government.

The IAP convened its inaugural meeting in July 2020. The meeting was attended by Dr Lam Pin Min, then Senior Minister of State, Ministry of Transport and Ministry of Health; and Mr Kitack Lim, IMO Secretary-General. The IAP has since held several meetings and will submit its recommendations in 2021.



Inaugural IAP meeting on 1 July 2020

MARITIME GREENFUTURE FUND

In 2020, MPA and its partners collectively set aside S\$40 million for the research, testing and adoption of low-carbon technologies under the Maritime GreenFuture Fund. Besides public funding from MPA's Maritime Innovation and Technology Fund and the National Research Fund, Rainmaking committed up to S\$10 million to invest in promising start-ups that develop and test solutions to reduce GHG emissions in Singapore's maritime industry. Additionally, the EcoLabs Centre of Innovation for Energy at the Nanyang Technological University (NTU), together with its technology partner SDGX and co-investors Blue Ashva Capital, Origgin Ventures and Chrysalix Venture Capital, will support 40 cleantech maritime start-ups and small and

medium-sized enterprises with up to S\$100,000 per project, comprising in-kind contributions, investments and project co-funding.

With the support of S\$9 million from the Maritime GreenFuture Fund, MPA and SMI issued a joint Call For Proposals (CFP) on the electrification of the harbour craft sector in Singapore. The CFP sought solutions on developing commercially ready, fully electric harbour craft as well as interoperable shore charging infrastructure for electric harbour craft and other electric vessels operating in the Port of Singapore.

EXPLORING FUTURE MARINE FUELS

MPA, together with the Port of Rotterdam Authority and the Ministry of Land, Infrastructure, Transport and Tourism, Japan, signed a Memorandum of Cooperation (MOC) in October 2020 to form the Future Fuels Port Network. The port network will align the efforts of signatory partners in driving the development of clean fuels across participating ports.

Under the MOC, parties will undertake the development of a roadmap on the adoption of clean marine fuels in support of decarbonisation. Besides research and development (R&D), parties will cooperate on possible joint bunkering pilot runs with identified shipping lines to drive the decarbonisation of the shipping industry.



Future Fuels Port Network MOC: Mr Chee Hong Tat (Top), Senior Minister of State, Ministry of Transport and Ministry of Foreign Affairs; Mr Takada Masayuki (bottom left), Director-General of the Port and Harbours Bureau, Ministry of Land, Infrastructure, Transport and Tourism, Japan; Ms Quah Ley Hoon (bottom centre), Chief Executive of MPA; and Mr Allard Castelein (bottom right), Chief Executive Officer of the Port of Rotterdam Authority

Additionally, MPA and SMI commenced the 'Biofuel Compatibility Study for Singapore Harbour craft'. Led by NTU's Maritime Energy and Sustainable Development Centre of Excellence, the study focuses on alternative energy sources for Singapore's harbour craft sector. The

LNG BUNKERING

LNG serves as a viable and clean transitional marine fuel to reduce carbon emissions from ships. It cuts the emission of nitrogen oxides and GHG, while generating minimal sulphur and particulate emissions. By 2020, Singapore had safely conducted more than 330 truck-to-ship LNG bunkering operations.

To support the growing demand for LNG bunker, MPA issued a request for proposal (RFP) to award a new LNG bunker supplier licence in early 2021. The RFP called

study examines the environmental, technical, operational and economic viability of bunkering biofuels. It is part of MPA's R&D efforts to study alternative marine fuels and energy decarbonisation processes such as electrification and onboard carbon capture.

for parties seeking to supply LNG bunker in the Port of Singapore to submit proposals on their end-to-end LNG bunkering solutions.

From 2021, Singapore will have an LNG bunker supply capacity of up to 1 million tonnes per annum. This quantity translates to about 300 ship-to-ship LNG bunkering operations annually. Two MPA co-funded LNG bunker vessels will be delivered to Singapore by 2021 to facilitate regular ship-to-ship LNG bunkering in the Port of Singapore.



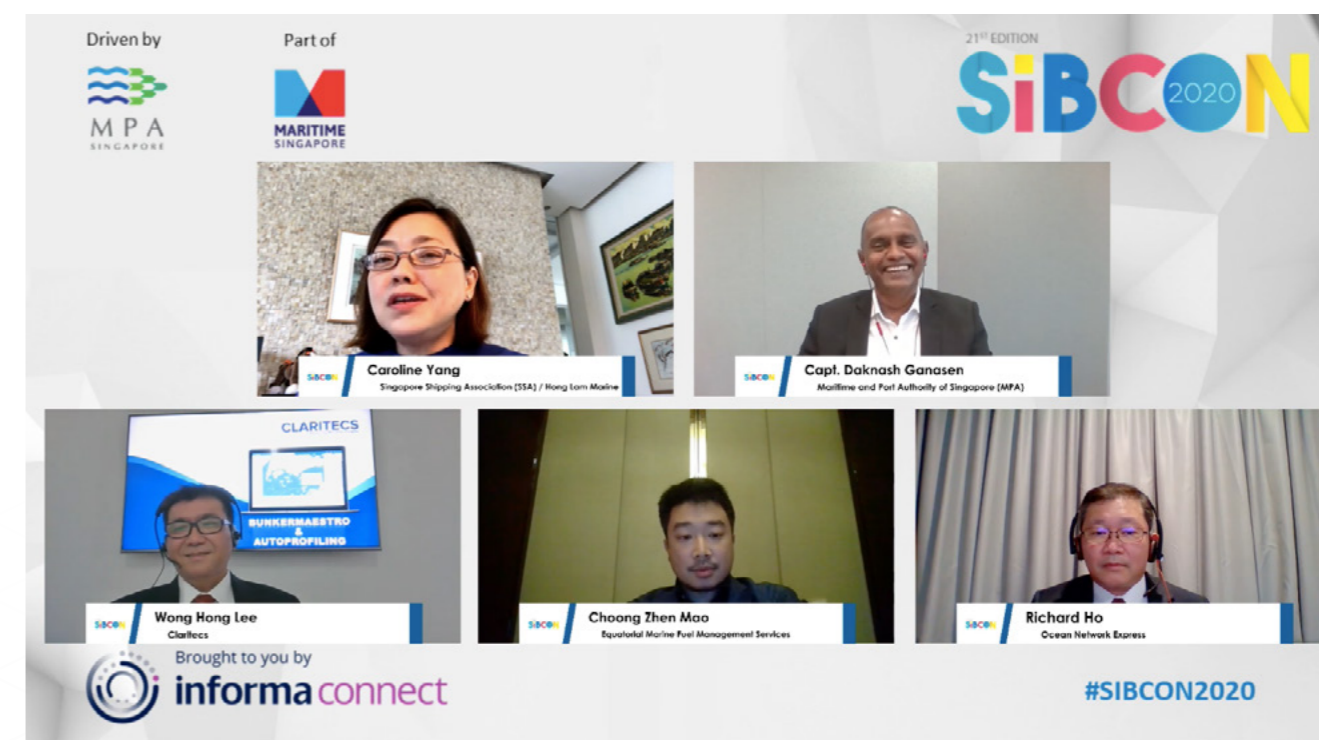
Naming ceremony of Singapore's first LNG bunker vessel, FUELING Bellina (left to right): Mr Chris Ong, Chairman of FUELING and Chief Executive Officer of Keppel Offshore & Marine; Mrs Sharon Chee, Lady Sponsor of the vessel; Mr Chee Hong Tat, Senior Minister of State, Ministry of Transport and Ministry of Foreign Affairs; Ms Quah Ley Hoon, Chief Executive of MPA; and Mr Nick Potter, General Manager, Asia Pacific Middle East, Shipping & Maritime, Shell (photograph from Keppel Offshore & Marine)

SINGAPORE INTERNATIONAL BUNKERING CONFERENCE AND EXHIBITION 2020

In October 2020, MPA ran the 21st edition of SIBCON, which took place on an interactive virtual platform for the first time. In line with growing industry focus on reducing GHG emissions, the theme of SIBCON 2020 was 'Powering Fuels of the Future, Driving towards Decarbonisation'. The conference covered topics ranging from emerging fuels and responsible shipping to issues on compliance and the impact of changes to global trade patterns.

The biennial event, which promoted the attractiveness of Singapore as the world's leading bunkering hub, gathered prominent industry players and thought leaders of the

marine fuel sector online to address challenges and opportunities to transform the bunkering sector amidst COVID-19 circumstances. Around 1,200 delegates from 42 countries participated in the virtual conference. They included bunker suppliers and traders, shipowners and operators, surveyors, port operators, representatives from oil and gas majors, as well as finance and legal professionals. The online platform enabled participants to customise their agenda, tune in to sessions on demand, participate in interest group discussions and network based on artificial intelligence-powered recommendations.



Panel discussion on 'Bunker 2030 and Beyond – The Singapore Vision': Ms Caroline Yang (top left), President of the Singapore Shipping Association (moderator); Captain Daknash Ganasen (top right), Senior Director (Operations & Marine Services) of MPA; Mr Wong Hong Lee (bottom left), Chief Executive Officer of Claritecs; Mr Choong Zhen Mao (bottom centre), Executive Director of Equatorial Marine Fuel Management Services; and Mr Richard Ho (bottom right), Deputy General Manager of Ocean Network Express

JOINT OIL SPILL EXERCISE 2020

In conjunction with SIBCON 2020, MPA held a joint oil spill exercise to test inter-agency coordination and response to oil spill incidents in the Port of Singapore. Participating agencies including the Police Coast Guard and the Singapore Civil Defence Force implemented a contingency response plan to manage the crude oil spillage arising from a simulated collision between two oil tankers.

MPA's next-generation patrol craft demonstrated their enhanced emergency response capabilities with the use of oil containment booms and the oil dispersant spray system. In addition, the spill response team deployed a drone from the next-generation patrol craft to gather aerial footage as part of onsite incident management.



Mr Chee Hong Tat (left), Senior Minister of State, Ministry of Transport and Ministry of Foreign Affairs; and Captain Kevin Wong (right), MPA's Port Master, observing a live drone video footage



MPA's next-generation patrol craft deploying an oil containment boom



An oil spill response craft deploying the Giant Octopus Skimmer for oil recovery

RENEWAL OF MPA-ITOPF MOU

In 2020, MPA and ITOPF Ltd renewed a Memorandum of Understanding (MOU) on oil spill claims compensation in Singapore. The MOU reflects an agreed schedule of rates for the resources deployed to conduct clean-up operations

during an oil spill. It facilitates the expeditious settlement of claims after an oil spill incident. The renewal is supported by the International Group of Protection and Indemnity Clubs and the International Oil Pollution Compensation Fund.



Renewal of MPA-ITOPF MOU: Captain Kevin Wong (left), MPA's Port Master; and Mr Richard Johnson (right), ITOPF Ltd's Technical Director

IMPLEMENTATION OF IMO 2020 SULPHUR REGULATIONS

MPA observed a high degree of compliance with IMO 2020 regulations in the Port of Singapore following active industry engagements, the provision of technical guidance and the maintenance of an adequate supply of compliant fuel in Singapore. Based on pre-arrival notifications submitted to MPA in 2020, about 95% of the ships that arrived in the Port of Singapore used compliant fuel.¹

In 2020, MPA conducted a total of more than 700 Port State Control (PSC) and Flag State Control inspections in the Port of Singapore. During these inspections, MPA found 25 ships, which were not fitted with scrubbers, using fuel that marginally exceeded the sulphur limit. Such non-compliance was likely due to remnant residues of high sulphur fuel in oil tanks and piping when the regulations first entered into force. MPA informed the managers and flag administrations of these ships about the non-compliance.

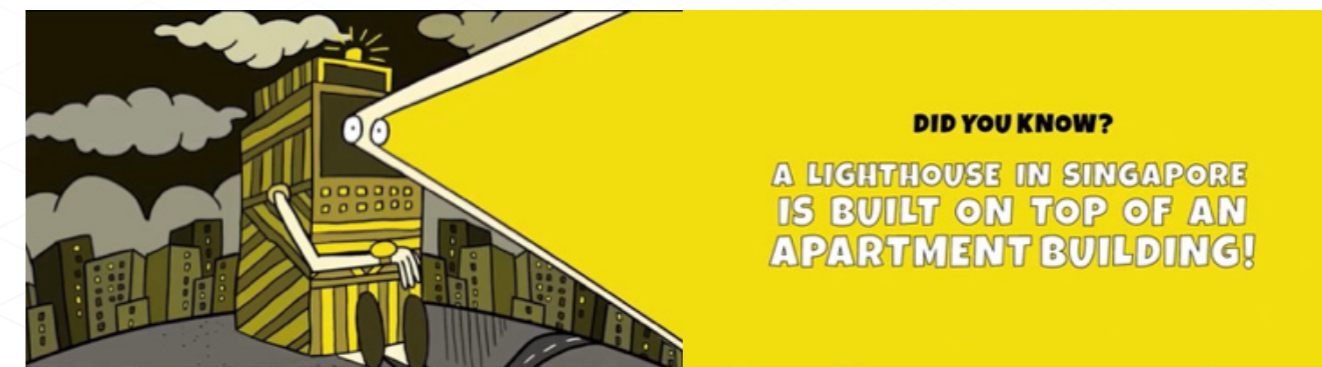
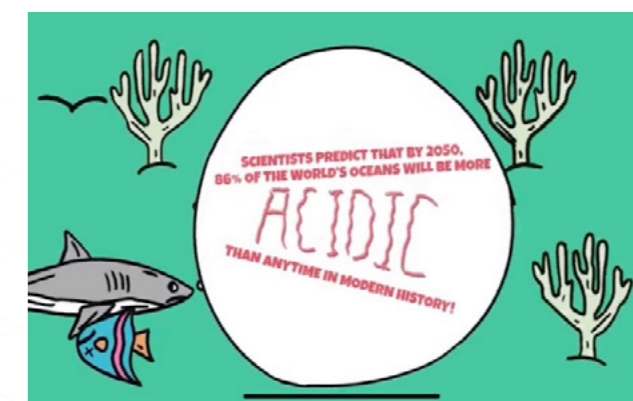
Additionally, two foreign-registered ships were found to be using non-compliant fuel. They were each issued a PSC detention order and were only allowed to depart the Port of Singapore after it was verified that they had switched to using compliant fuel.

In light of Singapore's prohibition on the discharge of wash water from open-loop scrubbers, no ship installed with the abatement equipment was found to operate its open-loop scrubber in the Port of Singapore.

In 2020, there was no Singapore-registered ship detained by port state authorities for non-compliance with the IMO 2020 regulations. One ship reported the non-availability of compliant fuel and submitted the required Fuel Oil Non-Availability Report.

PUBLIC OUTREACH ON MARINE ENVIRONMENTAL PROTECTION

To celebrate World Oceans Day, MPA worked with various partners to introduce a series of social media content on marine environmental protection. It collaborated with Nickelodeon Asia and social edutainment platform EYEYAH! on a series of 10 animated public service announcements. Supported by the Maritime Outreach Fund, the project promoted ocean protection and sustainability amongst young viewers. The series was aired on Nickelodeon channel during World Oceans Day. It featured animations from international illustrators, who used eye-catching graphics to examine topics such as ocean acidification, sea pollution and lighthouses.



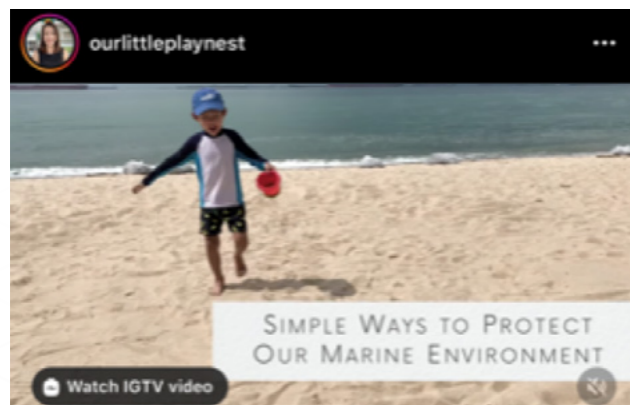
A series of animations promoting ocean protection and sustainability aired on the Nickelodeon channel during World Oceans Day

¹ This observation excluded ships installed with open-loop scrubbers that switched to compliant fuel upon arriving in the Port of Singapore.

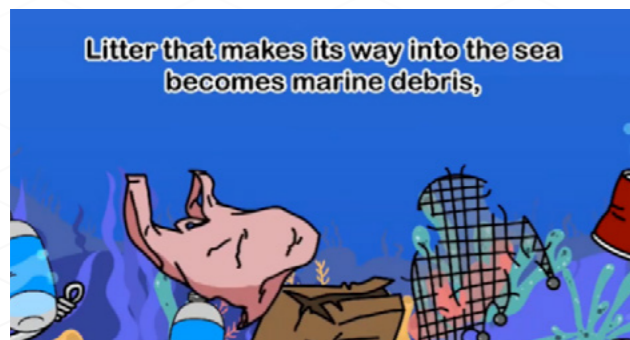
In addition, MPA collaborated with social micro-influencer, Our Little Playnest, to create an online tutorial titled 'Save-the-Ocean'. The tutorial grew public awareness of marine debris and ocean pollution, as well as their harmful impact on the environment.

With the support of the Tropical Marine Science Institute and DHI Singapore, MPA also published an online article with Rice Media on its coral relocation project and its conservation efforts carried out alongside the development of Tuas Port. Similarly, MPA collaborated with TheSmartLocal and MustShareNews to produce a series of social media content featuring the rich marine biodiversity in the Southern Islands. Reflecting MPA's coral conservation efforts, the social media outreach demonstrated MPA's commitment to building a sustainable global hub port.

In conjunction with International Coastal Clean-Up Day, MPA also teamed up with Our Little Playnest to create another online tutorial to share simple ways to protect the marine environment. Additionally, MPA produced two animation videos as part of International Coastal Clean-Up Day. The videos not only featured MPA's efforts in protecting Singapore's marine biodiversity,



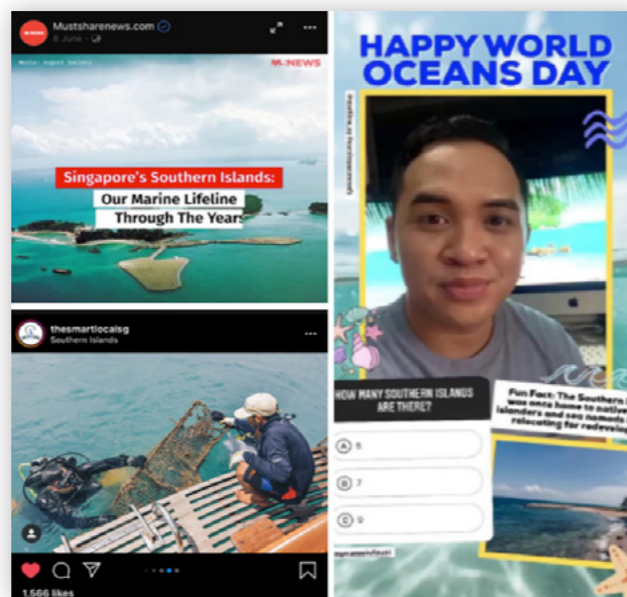
Online tutorial on simple ways to protect the marine environment



Animation video produced by MPA as part of International Coastal Clean-Up Day

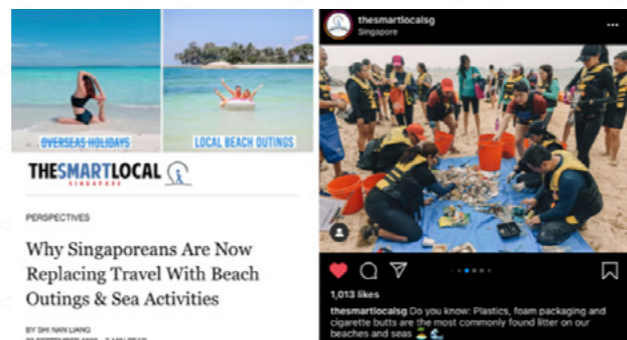


'Save-the-Ocean' online tutorial



Social media content produced by MustShareNews and TheSmartLocal on the rich marine biodiversity in the Southern Islands

but also discussed the impact of marine debris and the ways that the public can reduce marine litter. MPA then cooperated with TheSmartLocal on articles and social media content to boost public awareness of these online materials published as part of International Coastal Clean-Up Day.



Online article and social media content produced by TheSmartLocal

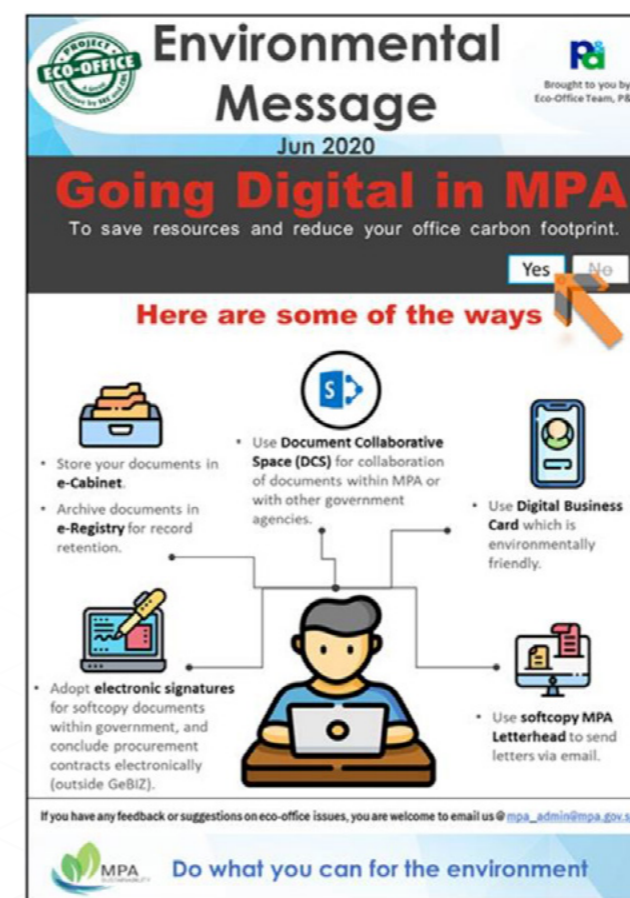
ECO-OFFICE

MPA strives to create an environmentally friendly workplace. In 2020, it received the Eco-Office Plus certification (Elite) awarded by the Singapore Environment Council. The certification recognised MPA's efforts in implementing environmentally friendly practices and cultivating eco-habits in the workplace.

In addition to disseminating bi-monthly e-newsletters on environmental issues, MPA carried out an exercise to collect used contact lens blisters for recycling. To reduce paper usage, MPA encouraged officers to digitise existing hardcopy documents and save them in MPA's e-filing system. It also adopted the use of digital signatures to reduce printing. The papers used for copiers in MPA's offices as well as many of its publications and collaterals are certified to have



Eco-Office Plus certification (Elite)



Bi-monthly e-newsletter on environmental issues (June 2020 edition)

In 2020, MPA enhanced the e-Facilities Management System to encourage feedback on office facilities. It received 22 feedback and promptly rectified the issues that were raised across MPA's worksites.

been produced from responsibly managed forests. These certifications include Programme for the Endorsement of Forest Certification and Forest Stewardship Council certification.

MPA identified no significant negative environmental and social impact in its supply chain. There was no occurrence of non-compliance with environmental laws and regulations in the reporting year.

To support the PSTLES 3.0 initiative², MPA adopted eco-solutions in its premises. For instance, the installation of ammonia and human traffic sensors in the washrooms of MPA's mTower office enabled cleaners to optimise their cleaning regime and water usage based on toilet cleanliness and usage data collected from the sensors. Additionally, MPA replaced its air-conditioning system with an energy-saving unit at Horsburgh Lighthouse. It also installed a seawater filtration and purification system to provide potable water for consumption at the lighthouse to reduce the reliance on fresh drinking water from mainland Singapore.

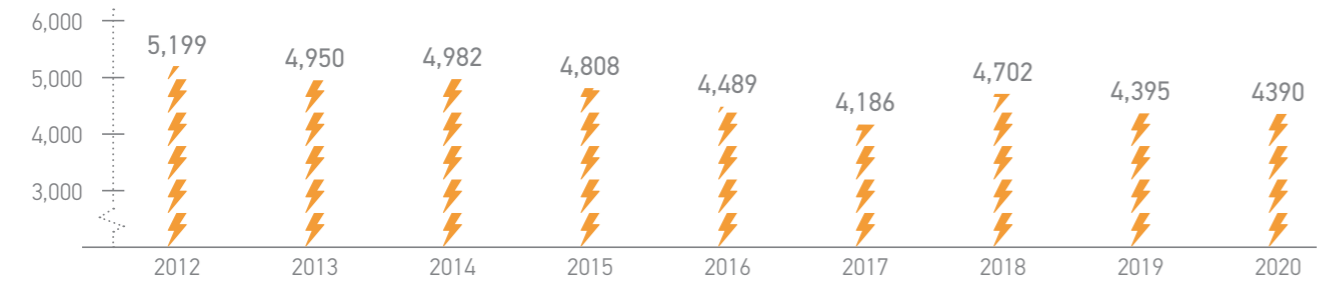


Ammonia and human traffic sensors installed in the washrooms of MPA's mTower office

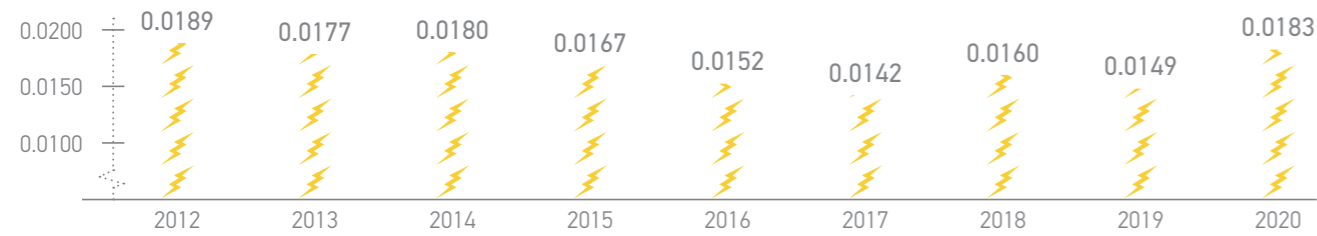
² PSTLES 3.0 is spearheaded by the Energy Efficiency Programme Office, a multi-agency committee led by the National Environment Agency and the Energy Market Authority.

ENERGY AND EMISSIONS

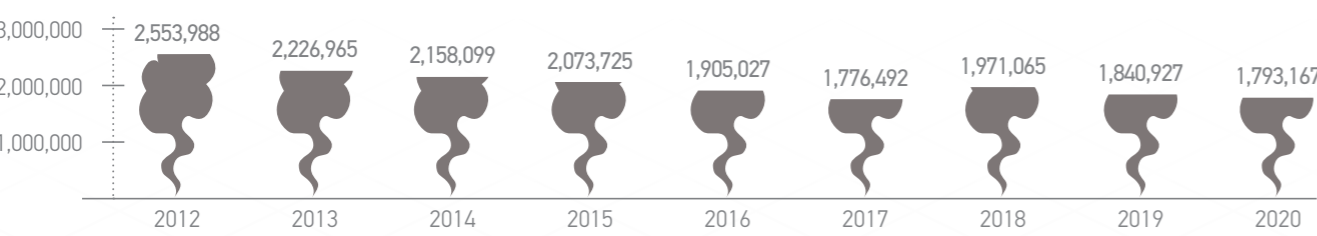
Electricity Consumption ('000 kWh)



Energy Intensity (kWh/\$)

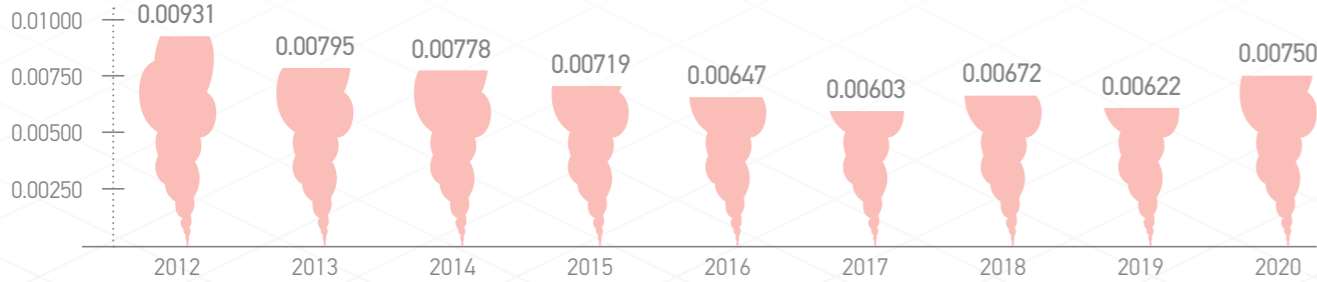


GHG Emissions* (kgCO₂)



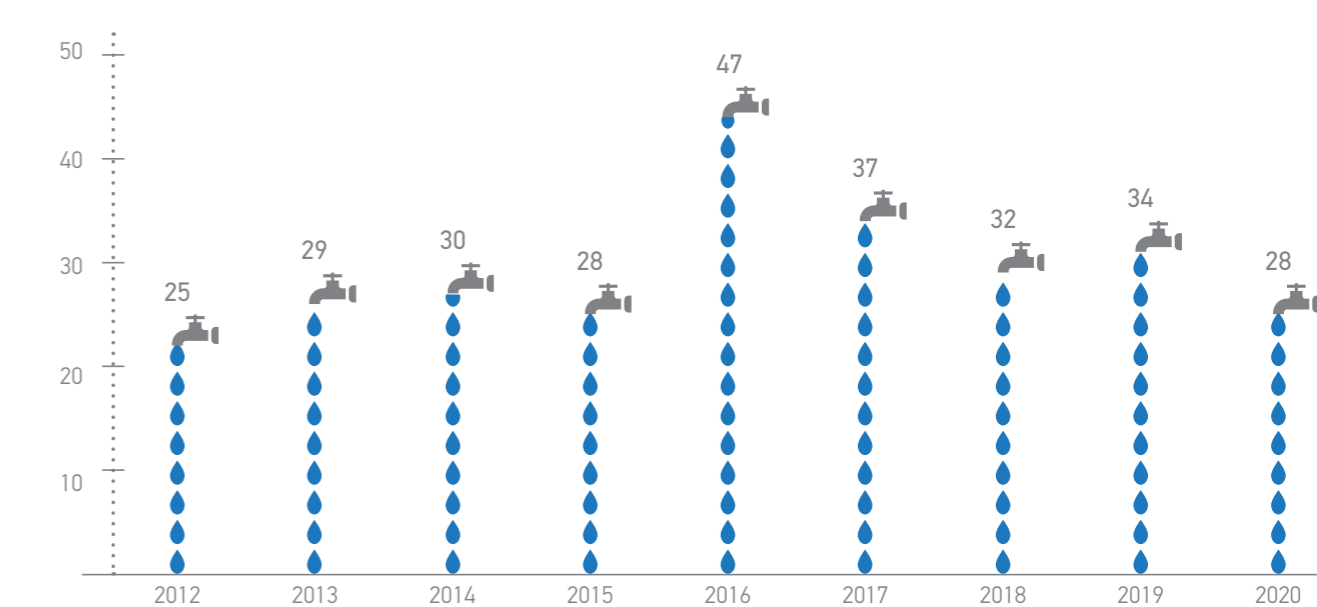
*Calculated based on Yearly Electricity Grid Emission Factor published by the Energy Market Authority

GHG Emissions Intensity (kgCO₂/\$)



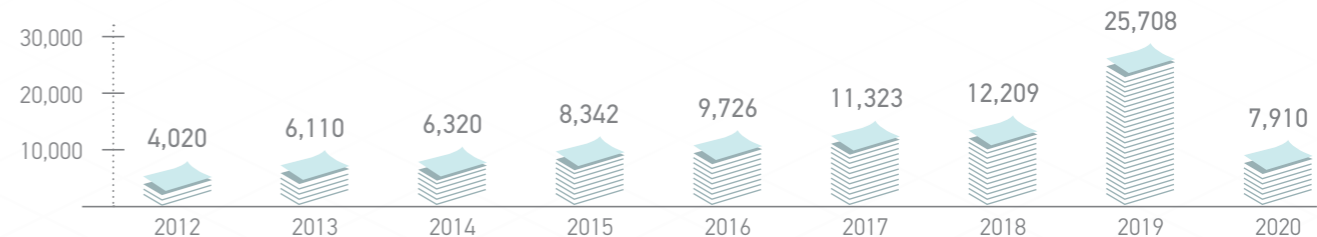
WATER CONSUMPTION

Water Consumption ('000 m³)

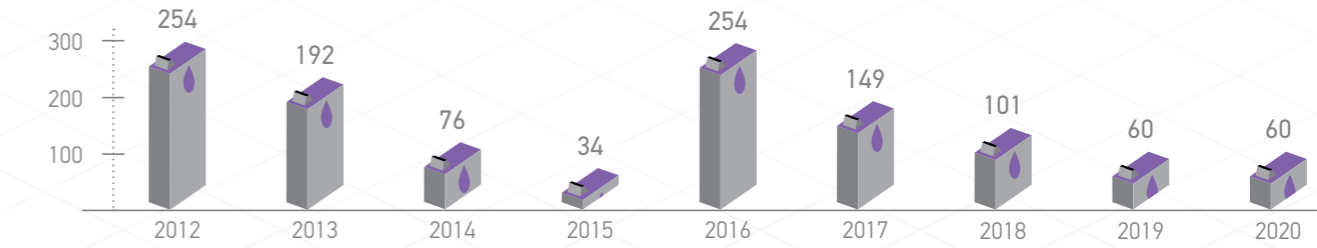



RECYCLING

Weight of Paper Collected (kg)



Ink Cartridges Recycled (units)





CHAPTER 03 OUR FIGHT AGAINST COVID-19

Amidst the COVID-19 pandemic, the global maritime industry plays a vital role in ensuring that essential goods such as food and medical supplies reach consumers worldwide. As a major transshipment hub and international centre for maritime businesses, Singapore continues to support global trade while protecting the health of all who live and work in the country. The Maritime and Port Authority of Singapore (MPA) implemented safe management measures such as a Rostered Routine Testing (RRT) regime and SmartEntry@Sea for shore-based personnel. In addition, it introduced precautionary measures for ships calling at the Port of Singapore.

To address the pressing crew change situation, MPA worked closely with industry partners and seafaring unions to set up a Crew Facilitation Centre (CFC). The CFC was established out of the floating accommodation that MPA initially introduced to temporarily relocate migrant workers as part of national efforts to curb the spread of COVID-19 infection in dormitories. MPA also cooperated with tripartite and global partners to establish the Singapore Shipping Tripartite Alliance Resilience (SG-STAR) Fund, which championed best crew change practices and the implementation of solutions for safe crew changes in crew-supplying countries.

Locally, in the wake of the COVID-19 outbreak, MPA introduced a series of relief measures under the S\$27 million MaritimeSG Together Package to support maritime companies, employees and local seafarers. Additionally, MPA worked closely with seafaring unions and education institutes to support the seafaring community through the COVID-19 pandemic. To rally the maritime industry behind seafarers and frontline maritime heroes, MPA also drove a social media campaign, #MaritimeSGSteadyLah, which reinforced the resilient and vital character of Maritime Singapore amidst the pandemic.

Internationally, MPA encouraged countries to sustain port operations despite the pandemic at various fora including the United Nations (UN), the International Maritime Organization (IMO) and the Association of Southeast Asian Nations (ASEAN). It successfully rallied over 50 port authorities to make a joint declaration to keeping their ports open to seaborne trade and facilitating the flow of essential supplies around the world amidst the COVID-19 pandemic. Through initiatives like the Singapore Crew Change Guidebook, Singapore urged countries to adopt safe crew change protocols that would enable seaborne trade to be carried out safely while minimising health risks to both crew and the public.

CREW CHANGE

As a major global hub port, Singapore is committed to facilitating safe crew changes in caring for the well-being of seafarers and ensuring that seaborne trade remains uninterrupted. From March 2020 to May 2021, MPA facilitated crew changes through Singapore for over 140,000 crew of diverse nationalities from more than 8,200 ships of various

flags. 99.6% of them are foreign crew. MPA continues to work with its industry partners to review crew change procedures in adapting to the evolving COVID-19 situation. It reminds ship owners, managers and agents to play their part in carrying out safe crew changes.



Crew change exercise carried out through a 'safe corridor'



CREW FACILITATION CENTRE

In September 2020, MPA converted an existing floating accommodation to establish a CFC with the support of PSA Singapore. The CFC was a self-contained facility with an onsite medical centre, as well as testing and holding facilities. It housed transit crew for up to 48 hours prior to ship boarding, if required, when ship and flight schedules did not match. The 'bubble' arrangement, which segregated sign-on crew from the community, facilitated crew changes

to take place in Singapore safely while minimising health risks to the local population.

Additionally, sign-off crew were also strictly segregated from the community. If flight schedules did not permit immediate departure from Singapore, sign-off crew stayed at designated holding facilities such as The Seacare Hotel and the POSH Bawean accommodation vessel for up to 48 hours.

SINGAPORE CREW CHANGE GUIDEBOOK

The Crew Change Taskforce comprising MPA, the Singapore Shipping Association (SSA), the Singapore Maritime Officers' Union (SMOU) and the Singapore Organisation for Seamen (SOS) developed the Singapore Crew Change Guidebook. The guidebook shares safe and pragmatic

procedures on crew change to minimise risks to local public health and the shipping community. Circulated to IMO Member States, the guidebook offers a model to address crew change in other ports.

SINGAPORE – SHIPPING TRIPARTITE ALLIANCE RESILIENCE FUND

To manage the global crew change crisis, MPA cooperated with tripartite partners including SSA, SMOU and SOS, as well as global partners such as the International Transport Workers' Federation, the International Maritime Employers' Council and the International Chamber of Shipping (ICS) to establish the SG-STAR Fund. The SG-STAR Fund was the first global ground-up tripartite initiative that reached out to stakeholders in seafaring nations on the implementation of safe crew change practices and the development of

solutions for crew change. These solutions included the trialling of digital innovations such as tamper-proof smart wearable technologies, and the accreditation of medical, holding and swabbing facilities in crew-supplying countries. As of December 2020, the processes at four facilities in Manila, Philippines were accredited under the CrewSafe audit programme. Subsequently, MPA streamlined application procedures for sign-on crew from these accredited facilities boarding ships in Singapore.



MPA, SMOU, SOS and SSA signed a Letter of Intent to establish the SG-STAR Fund (left to right): Ms Mary Liew, General Secretary of SMOU; Mr Chee Hong Tat, Senior Minister of State, Ministry of Transport and Ministry of Foreign Affairs; Ms Quah Ley Hoon, Chief Executive of MPA; Mr Ong Ye Kung, Minister for Transport; Ms Caroline Yang, President of SSA; and Mr Kam Soon Huat, President and Chief Operating Officer of SOS

Since its launch in August 2020, the S\$1.68 million SG-STAR Fund has received support from 19 port administrations and international agencies including the Global Maritime Forum Maritime Industry Crew Change Taskforce, INTERTANKO, the Norwegian Shipowners' Association and the World Shipping Council.

FLOATING ACCOMMODATION

HOUSING MIGRANT WORKERS

As part of national efforts to contain the spread of COVID-19 in dormitories, MPA worked with various partners to introduce and run seven floating accommodation to house healthy migrant workers temporarily. Some 2,600 workers were progressively relocated to the floating accommodation at Tanjong Pagar Terminal in batches.



Floatel Triumph



Bibby Progress



Eastern WB400



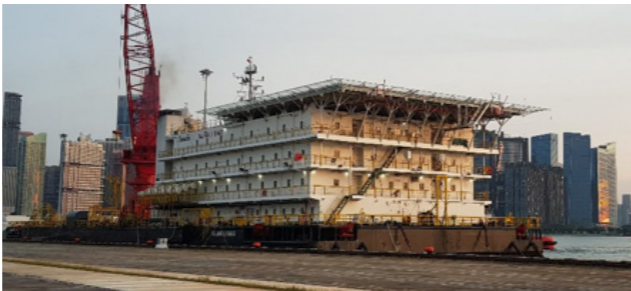
Bibby Renaissance



Setia Station 1



ENA Habitat



Rajawali Emas



Healthy migrant workers moving into Floatel Triumph

MPA cooperated with partners to install key infrastructure including Wi-Fi systems and closed-circuit televisions in the floating accommodation. A medical facility with isolation rooms was set up on land to ensure that round-the-clock medical support was available nearby. In addition, MPA adopted smart technologies to run the Temperature Screening System (TSS). The TSS used artificial intelligence to detect human facial features for real-time temperature

screening even when subjects wore glasses, masks and headgears. MPA customised the TSS settings for each floating accommodation since environmental factors such as space and shelter from outdoor elements influenced the accuracy and precision of temperature measurements. Equipped with alarms and remote temperature monitoring features, the TSS was deployed round-the-clock to reduce the exposure risk for frontline officers.



Temperature Screening System

All migrant workers moving into the floating accommodation underwent health checks including swab tests and temperature screening. Additionally, they conducted temperature checks twice a day and received meals directly delivered to their rooms. These workers were allowed to participate in scheduled activities at staggered timings on the open deck for at least an hour each day.

Upon arrival, migrant workers were issued care packs containing masks, thermometers, snacks and instant beverages. Besides access to Wi-Fi, they received a SIM card each for communication and internet surfing. Each room was also provided with a cleaning kit.



Migrant workers participating in scheduled activities on the open deck



A migrant worker undergoing swab test



Migrant workers receiving care packs

COVID-19 SAFE MANAGEMENT MEASURES

To protect crew and the local community from COVID-19 infection, MPA strengthened precautionary measures for ships calling at the Port of Singapore. Ships seeking to conduct activities such as repairs, servicing, surveys and inspections, which require shore-based personnel to go on board, must inform the Port Master at least three days prior to arrival and undertake additional measures such as disinfecting working areas in the ship. MPA also requires harbour pilots to adopt precautionary measures, such as donning Personal

Protective Equipment and avoiding food consumption on board, when conducting pilotage duties on vessels. It requires the operators and owners of harbour craft, pleasure craft and passenger vessels to strictly adhere to standard operating procedures when conducting crew changes.

MPA advises the public, as well as vessel owners and operators to be responsible and comply with COVID-19 safe management measures including wearing masks and

adhering to passenger limits on board pleasure craft. MPA takes a serious view of any breach in COVID-19 regulations.

In addition, MPA coordinates the extrication of COVID-19 positive seafarers and close contacts on board ocean-going vessels in the Port of Singapore so that they receive timely medical treatment and serve quarantine orders. It works closely with the Ministry of Health and Port Health of the National Environment Agency round-the-clock to evaluate the COVID-19 situation on board such vessels and advise the ship owners/agents on port entry requirements. In 2020, MPA managed over 650 medical cases and coordinated 10 occasions involving the landing of bodies in Singapore for repatriation.



Medical helicopter evacuation

ROSTERED ROUTINE TESTING

MPA worked with the Health Promotion Board to roll out an RRT regime for frontline workers. Shore-based personnel who board vessels must undergo RRT and produce proof of negative test results from COVID-19 Polymerase Chain Reaction (PCR) tests. A shore-based personnel who is not

enrolled in the RRT programme is required to show proof of negative test result from a COVID-19 PCR test or Antigen Rapid Test prior to vessel boarding, and must complete COVID-19 PCR tests after disembarkation.



Conducting RRT for shore-based personnel

SMARTENTRY@SEA

To enhance the safety of maritime operations in Singapore, MPA developed SmartEntry@Sea in 2020 to facilitate contact tracing of shore-based personnel who regularly board and work on ships in Singapore's anchorages. Using the platform, workers will scan a unique QR code at piers, terminals, wharves, marinas and shipyards to provide information on the ships they are boarding. Likewise, MPA also facilitated the implementation of SafeEntry for PSA Corporation Ltd (PSAC) and Jurong Port Pte Ltd (JPPL) to ensure that all port visitors and port workers comply with a strict contact tracing regime.

SmartEntry@Sea

SELF-CHECK TEMPERATURE KIOSKS

MPA deployed Self-check Temperature Kiosks at its facilities including Tanah Merah Ferry Terminal, Changi Point Ferry Terminal and Marina South Pier to enable the public and MPA officers to monitor their temperature regularly. These unmanned, contactless and calibration-free kiosks are convenient to use. They help to promote socially-responsible behaviour. Members of the public who frequent MPA's facilities are advised to take their temperature as part of health monitoring.



Self-check temperature kiosk

SUPPORTING MARITIME COMPANIES

MARITIMESG TOGETHER PACKAGE

In the wake of the COVID-19 outbreak, MPA provided timely support to the maritime industry through a series of relief measures put together under the MaritimeSG Together Package. On top of the support measures from the four national budgets, the MaritimeSG Together Package offered S\$27 million in targeted financial support to maritime companies, employees and seafarers.

Amongst the financial support provided to maritime companies under the MaritimeSG Together Package, MPA granted 30% port dues concession to cargo vessels and non-passenger-carrying harbour craft in the Port of Singapore. Furthermore, MPA issued 50% rebate to regional ferry operators to offset their counter rental fees at Tanah Merah Ferry Terminal and their rental fees for overnight vessel berthing. Recognising that maritime

companies might face challenges in managing cash flow and meeting their financial obligations, MPA exercised flexibility in implementing credit management measures.

In addition to financial support for the seafaring community, MPA also enhanced the Maritime Cluster Fund to encourage companies to train and reskill their employees, as well as transform their businesses. Selected qualifying short courses, productivity improvement projects and certifiable courses received up to 90% co-funding from MPA. Additionally, MPA also introduced the Internship Reimbursement Scheme, which co-funded internship allowances, to encourage maritime companies to continue offering internships to local students amidst the COVID-19 pandemic.

SUPPORTING COMPANIES DURING CIRCUIT BREAKER AND FACILITATING ESSENTIAL CROSS-BORDER TRAVEL

When Circuit Breaker began in April 2020 to contain the spread of COVID-19 in Singapore, MPA cooperated with the Ministry of Trade and Industry to identify maritime companies that had to be kept operational so that essential shipping and port operations could carry on. Additionally, MPA also supported the appeals of maritime companies that asked to be allowed to continue their onsite operations. These efforts enabled goods and supplies to continue reaching local consumers while minimising disruptions to the global supply chain. MPA worked closely with its port operators, PSAC and JPPL, as well as their suppliers and contractors during Circuit Breaker to enable contactless cargo operations and the efficient running of essential maritime services amidst the pandemic.

In addition, MPA facilitated the cross-border movements of foreign workers and Employment Pass holders through travel lanes such as the Periodic Commuting Arrangement. These workers carried out critical functions in port operations and the construction of Singapore's next-generation Tuas Port.

As the COVID-19 pandemic situation evolves, MPA continues to disseminate critical information to its stakeholders in a timely manner to ensure that they are updated on regulatory developments in Singapore.

COVID-19 HOTLINE AND 'ASK JAMIE'

To facilitate the continuation of essential maritime services during Circuit Breaker, MPA established a COVID-19 hotline to respond to customers' questions and address their concerns. MPA operated the hotline from 7am to 11pm daily even on weekends and public holidays to provide timely assistance to its customers. It also updated 'Ask Jamie' with Frequently Asked Questions associated with the COVID-19 pandemic to enable customers to access the self-help option.



Ask Jamie @ MPA

SUPPORTING THE SEAFARING COMMUNITY

Despite the enhanced border control measures and crew change restrictions, MPA facilitated the return of Singaporean seafarers who wished to sign off when their ships called at the Port of Singapore.

SEAFARERS RELIEF PACKAGE

As part of the MaritimeSG Together Package, MPA, SMOU and SOS extended financial support under the Seafarers Relief Package (SRP) to Singaporean seafarers who were unable to secure shipboard employment due to the COVID-19 outbreak. Eligible seafarers received up to S\$800 per month in financial assistance for up to six months. Cadet trainees under the Tripartite Nautical Training Award and Tripartite Engineering Training Award place-and-train programmes, together with qualifying seafarers, benefitted from the SRP. In addition, MPA also worked with SMOU, SOS and SSA to match Singaporean seafarers who could not secure shipboard employment with shipping companies.



Mr Chee Hong Tat, Senior Minister of State, Ministry of Transport and Ministry of Foreign Affairs, interacting with cadet trainees at the Wavelink Maritime Institute

ACHIEVEMENT AWARD SCHEME

MPA, the Employment and Employability Institute, SMOU and SOS jointly offered up to S\$10,000 to eligible Certificate of Competency Class 1 (COC 1) holders who accumulated at least six months of sea experience as Chief Officers or Second Engineers. The incentive encouraged Singaporean seafarers to acquire technical expertise for senior onboard roles and develop competencies for critical onshore positions such as marine and technical superintendents.

EXTENDING STCW CERTIFICATES

In view of the COVID-19 pandemic, MPA and the Infocomm Media Development Authority (IMDA) recognised the challenges seafarers faced in renewing their certificates issued under the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW). As such, MPA took a pragmatic approach to extend the COC, training certificates and associated endorsements

issued by MPA (or on behalf of MPA) between 1 April 2020 to 1 October 2020 by six months from the expiry date of the original certificates. Likewise, IMDA also extended the Global Maritime Distress and Safety System General/Restricted Operator's COC issued between 1 April 2020 to 1 October 2020 by six months from the expiry date of the original certificates.

MAKING ALTERNATIVE ARRANGEMENTS FOR SEAFARERS' QUALIFICATION

The conduct of COC oral examinations in person was suspended because of the COVID-19 pandemic. To avoid delaying eligible candidates from obtaining their COC, MPA carried out the examinations via video conferencing to minimise the risk of exposure to COVID-19 infection. In 2020, MPA conducted 350 oral examinations for COC deck and engine candidates via video conferencing in replacement of face-to-face interviews.

Additionally, MPA and the Singapore Maritime Academy exercised flexibility on curriculum requirements during the pandemic. They made alternative arrangements, such as carrying out classroom trainings online and deferring shipboard training, to enable cadets to complete their diploma and obtain their COC as scheduled despite disruptions to their shipboard training.

DAY OF THE SEAFARER

The Day of the Seafarer in 2020 bore special significance as it paid tribute to seafarers for their vital contributions in transporting essential goods and supplies to populations worldwide amidst the COVID-19 pandemic. The special occasion also recognised the unique challenges seafarers faced during the pandemic.



Dr Lam Pin Min (left), then Senior Minister of State, Ministry of Transport and Ministry of Health; and Ms Caroline Yang (right), President of SSA, distributing care packs to seafarers

Since June 2020, MPA has accepted medical consultation via tele-medicine to assess if a seafarer is fit to sign off in Singapore. Avoiding the need for doctors to go on board vessels, these consultations are carried out in real time using end-point devices.

In addition, MPA contributed S\$200,000 to seafarers' missions in 2020. This contribution was a one-off increase of S\$50,000

SOUNDING HORNS IN SOLIDARITY

MPA, together with SMOU, SOS and SSA, called upon ships in the Port of Singapore to sound their horns for 15 seconds at 12 noon on Labour Day. The tripartite initiative served as a special tribute to recognise the contributions of seafarers in keeping maritime trade going amidst the COVID-19 pandemic. It showed Maritime Singapore's appreciation to seafarers for maintaining global supply lines and supporting pandemic response around the world.

MPA, SMOU, SOS and SSA prepared 1,000 care packs for some 10,000 seafarers aboard ships in the Port of Singapore. The care packs included items such as 3D-printed face shields manufactured by local start-up Siege Advanced Manufacturing.



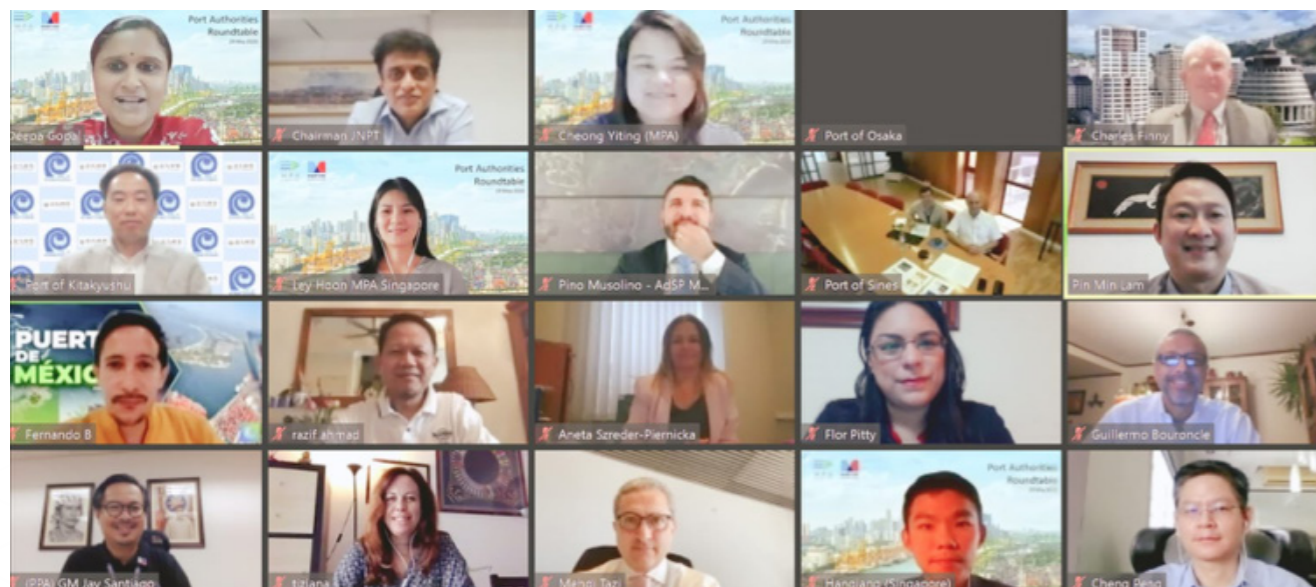
Ships in the Port of Singapore sounding their horns in unison on Labour Day

KEEPING MARITIME TRADE GOING GLOBALLY

International cooperation is essential to ensure that maritime transport continues to play its vital role in moving essential goods such as food and medical supplies to where they are needed. At various international and regional fora including the UN, the IMO, the Asia-Pacific Economic Cooperation (APEC) and ASEAN, Singapore encouraged countries worldwide to sustain port operations amidst the COVID-19 pandemic.

In April 2020, MPA initiated a joint declaration for members of the Port Authorities Roundtable (PAR) to commit to

keeping their ports open to seaborne trade and facilitating the transport of essential supplies around the world amidst the COVID-19 pandemic. The declaration – the first of its kind at the PAR – also fostered collaboration amongst members to share best practices in minimising disruptions to the global supply chain. More than 50 port authorities across Asia, Oceania, the Middle East, Africa, Europe and the Americas signed on to the declaration, which was supported by the IMO, the ICS, the International Association of Ports and Harbours and the APEC Port Services Network.



PAR video conference in April 2020

Recognising the vital role of seafarers in maintaining global supply chains, MPA also encouraged countries to adopt safe crew change protocols that would minimise health risks to the public while enabling seaborne trade to continue safely. It recommended Singapore's co-sponsorship of the 75th UN General Assembly Resolution on 'International cooperation to address challenges faced by seafarers as a result of the COVID-19 pandemic to support global supply chains', which was successfully adopted on 1 December 2020. Additionally, MPA supported the IMO's crew change efforts. It shared the Singapore Crew Change Guidebook with the IMO for circulation to the global maritime community. MPA also imparted its experience and best practices in managing the COVID-19 pandemic through its bilateral engagements as well as various international fora such as the International Maritime Virtual Summit on Crew Changes and the Consultative Shipping Group meeting.



Mr Khaw Boon Wan, then Coordinating Minister for Infrastructure and Minister for Transport, sharing Singapore's experience in facilitating crew changes at the International Ministerial Summit on Crew Changes (image by the Ministry of Transport)

#MARITIMESGSTeadyLah

MPA spearheaded a social media campaign, #MaritimeSGSteadyLah, to rally the maritime community in its fight against the COVID-19 pandemic. The campaign, which ran on the social media channels of MPA and industry partners, reinforced the Maritime Singapore spirit of resilience and the vital role of the maritime industry during the pandemic. Through the campaign, MPA and the maritime community expressed their appreciation to frontline heroes who worked tirelessly round-the-clock to keep the Port of Singapore open and ensure the uninterrupted supply of essential goods. Supported by local and international industry partners, the #MaritimeSGSteadyLah social media campaign reached out to 1.4 million netizens and garnered over 600,000 video views across social media channels.

The campaign began with a collaboration with SGAG to produce a light-hearted video titled 'Serial Hoarder Exposed'. Reflecting the prevalence of panic hoarding then, the video parody took the opportunity to emphasise the vital role of the maritime industry in ensuring that essential supplies continue to reach households in Singapore. In noting that over 80% of goods are transported by the sea, the video highlighted that the industry is working together round-the-clock to ensure that the Port of Singapore remains open as a key node in the global supply chain.

In addition, the campaign included a four-part video series featuring unsung heroes at the frontline who ensured that operations at the Port of Singapore remained uninterrupted during the pandemic. Through the social media campaign, MPA and industry partners thanked frontline workers for their contributions and sacrifices, which underpinned the resilience of the maritime industry in face of the COVID-19 pandemic.

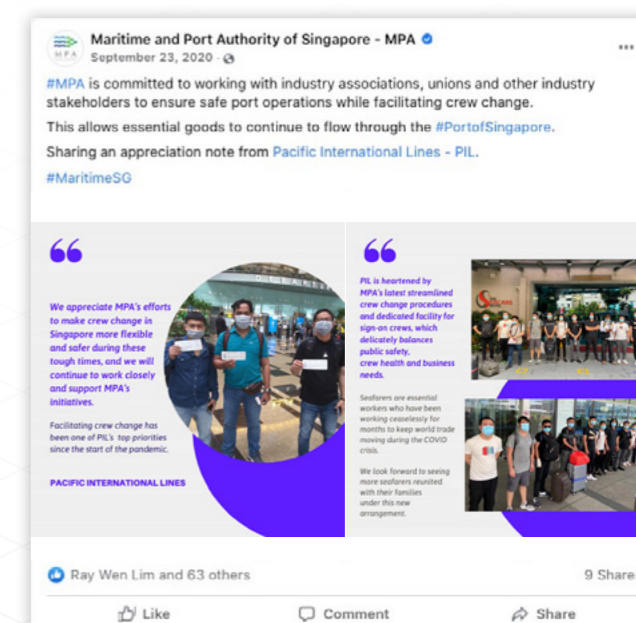
Similarly, industry leaders came together in the MaritimeSG United video to pay tribute to workers for the important role they play in keeping the Port of Singapore running and maintaining an uninterrupted supply of essential goods to Singapore.

As part of the campaign, MPA rallied industry partners to share photo stories and post appreciation notes for their maritime heroes on social media. These maritime heroes comprised frontline and back-of-house officers in the industry who contributed in various ways to ensure that operations in the Port of Singapore were uncompromised during the pandemic.

Adopting the #MaritimeSGSteadyLah hashtag, seafarers and the global shipping community expressed their appreciation through photo stories for Singapore's efforts in facilitating safe crew change.



#MaritimeSGSteadyLah social media campaign



CHAPTER 04

VITAL

The development of Singapore as a premier global hub port is vital to the nation's growth and prosperity. The Maritime and Port Authority of Singapore (MPA) builds digital infrastructure to strengthen port operations and enhance efficiency at the Port of Singapore. As a key transport node in the global supply chain and a vital gateway for essential supplies, Singapore maintains navigational safety and champions a safety@sea culture in its waters. MPA also upholds high operational standards and a robust licensing and enforcement regime in the Port of Singapore. As a port planner, MPA drives the development of Singapore's next-generation Tuas Port to secure the nation's maritime future as a leading global transshipment hub well-connected to international shipping.

At the same time, to advance Singapore's vital maritime interests, MPA actively supports and contributes to international and regional efforts at promoting safe, efficient and sustainable shipping. As a nation highly dependent on international seaborne trade, Singapore aspires to be an influential voice in global maritime affairs. MPA heads the nation's efforts on this front by participating and assuming leadership positions in key international maritime bodies such as the International Hydrographic Organization (IHO), the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and the International Maritime Organization (IMO).



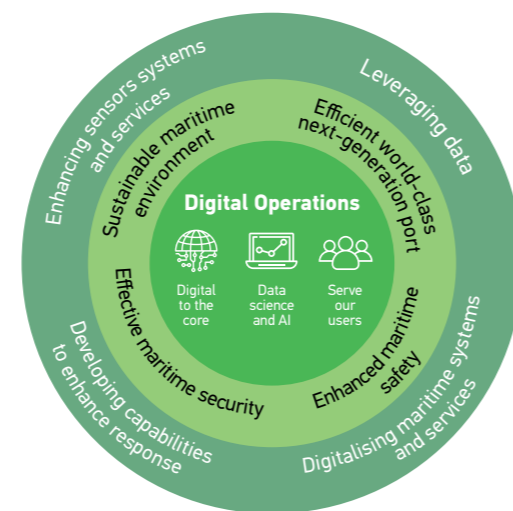
BUILDING DIGITAL INFRASTRUCTURE TO STRENGTHEN PORT OPERATIONS

OPERATIONS TECHNOLOGY ROADMAP

In 2020, MPA adopted the Operations Technology Roadmap that was developed in recognition of the impact that technology plays on MPA's operations. The roadmap reflects MPA's operational technology development plans up to 2030. It is aligned with the Digital Government Blueprint, the sectoral transformation plans within the Ministry of Transport, and MPA's digitalisation and decarbonisation thrusts.

In championing operations that are "digital to the core", the roadmap focuses on the adoption of data science and artificial intelligence to create solutions that cater to the needs of MPA's stakeholders. The roadmap supports the development of an efficient world-class next-generation port, an effective maritime safety and security regime, and a sustainable maritime environment. These goals are achieved through (i) enhancing sensors systems and services; (ii) leveraging data; (iii) digitalising maritime

systems and services; and (iv) developing capabilities to enhance MPA's responses.

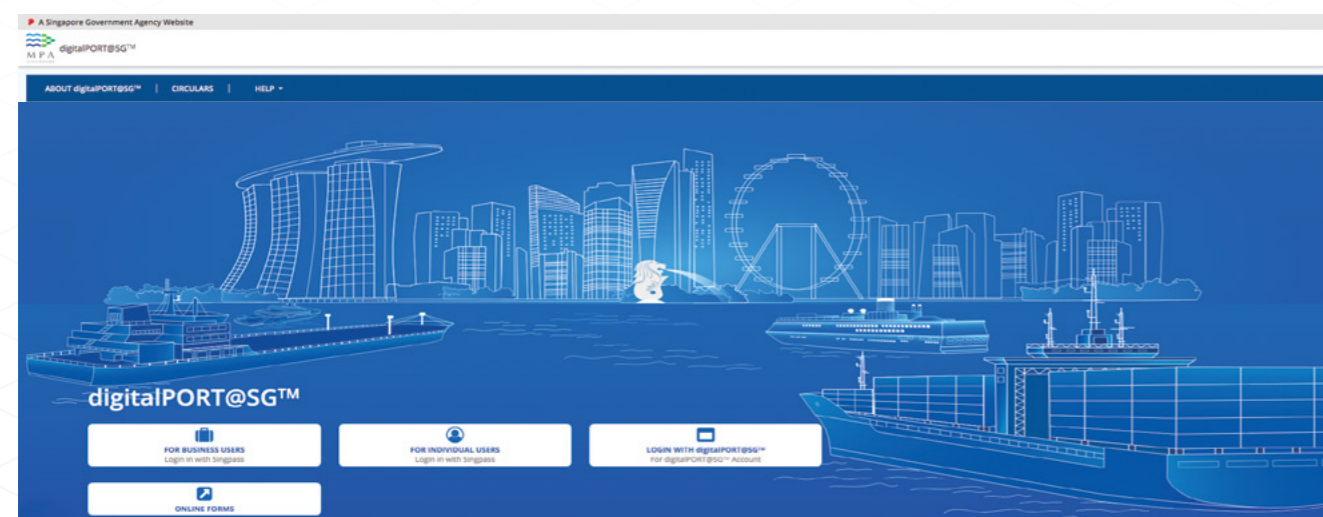


Operations Technology Roadmap

DIGITALPORT@SG™

Phase 1 of digitalPORT@SG™ was completed in September 2020. Over 2,000 companies onboarded Singapore's Maritime Single Window, which serves as a one-stop digital portal for maritime regulatory and port services transactions. In Phase 1, digitalPORT@SG™ streamlines immigration, port health and vessel clearances across the Immigration and Checkpoints Authority (ICA), the

National Environment Agency and MPA into a single autofill application by consolidating 16 separate forms. Shipmasters and ship agents can now submit, track and receive approval for arriving and departing ships through the portal. In enhancing the efficiency of the port clearance process, digitalPORT@SG™ is estimated to save the industry 100,000 man-hours per year.



digitalPORT@SG™ website

Phase 2 of digitalPORT@SG™ will enable cross-platform service integration and data exchange to offer customers a seamless digital experience. It will also provide just-in-time (JIT) services for stakeholders to carry out direct berthing on arrival and on-time departures. JIT services will optimise vessel turnaround time through coordinating the planning and scheduling of port resources. To support JIT services,

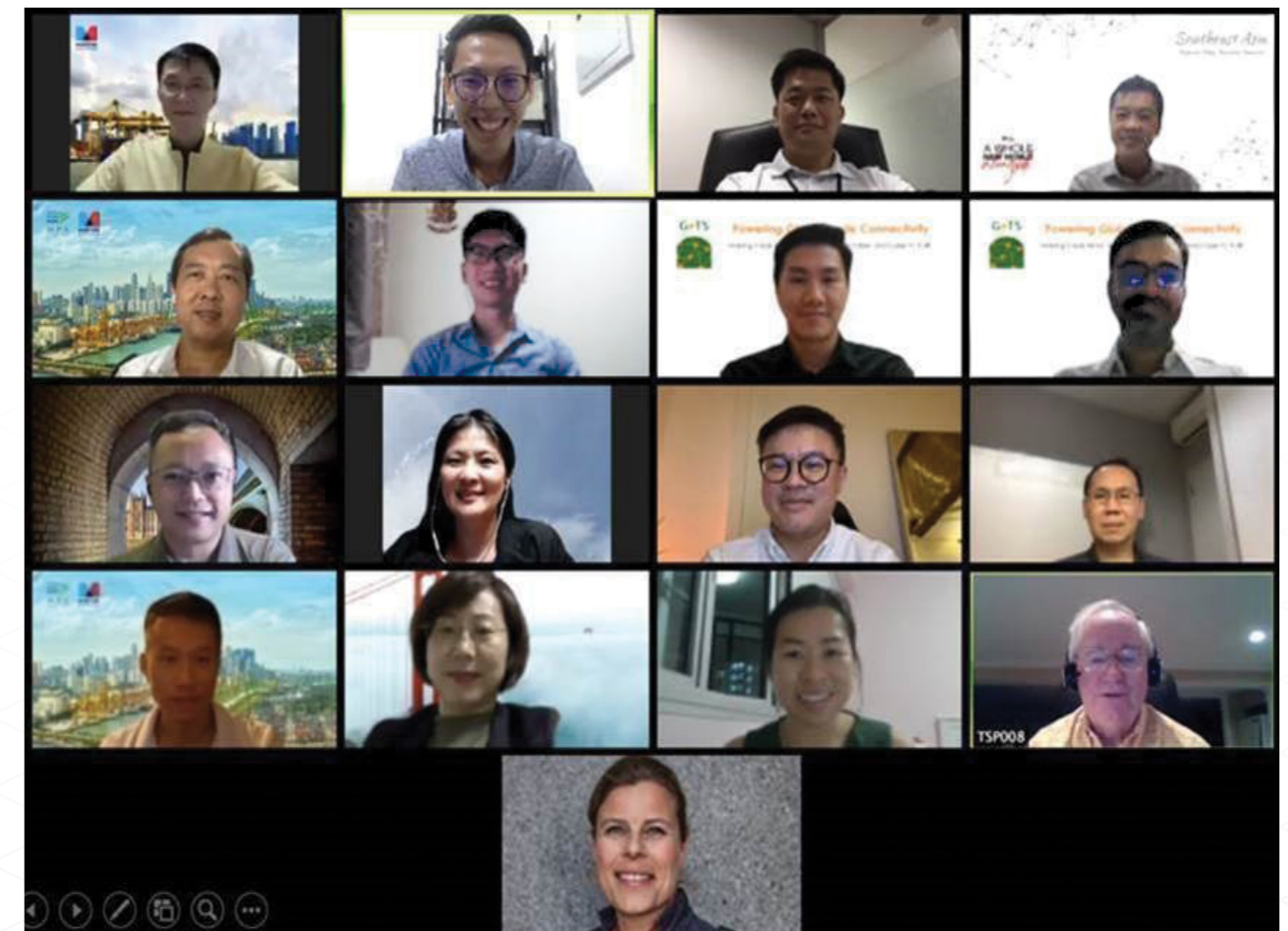
an active anchorage management system will be developed to optimise anchorage utilisation. The enhanced efficiency at the Port of Singapore will reduce the length of port stays for vessels and decrease the carbon footprint generated by the industry. The pilot trial of JIT services for container vessels will begin in 2021.

DIGITALOCEANS™

In July 2020, MPA signed a memorandum of understanding (MOU) with CargoSmart, GTD Solutions, GeTS, PSA International and the Port of Rotterdam Authority to develop and adopt common data standards and Application Programming Interface (API) specifications that will facilitate data exchange and service integration for port and maritime services transactions. The collaboration will support MPA's digitalOCEANS™ initiative, which drives Open or Common Exchange And Network Standardisation. digitalOCEANS™ is envisioned to serve as a conduit for global connectivity by facilitating information flows, data exchange and end-to-end services for port calls and marine services. MPA

and its partners will hold a series of technical workshops to design, test, publish and promote common data and API specifications.

Through fostering digital connectivity and data interoperability, digitalOCEANS™ will enable the Port of Singapore to serve as a digital 'bridge' amongst port authorities, shipping lines, port operators and logistics companies. The digitalisation of the maritime transport chain will support the efficient running of port operations and services for stakeholders and customers.



Inaugural digitalOCEANS™ steering committee meeting comprising representatives from MPA, CargoSmart, Global e-Trade Services, Maersk GTD, Port of Rotterdam Authority and PSA International

PORT AUTHORITIES CHIEF INFORMATION OFFICER CYBERSECURITY NETWORK

In October 2020, MPA launched the Port Authorities Chief Information Officer Cybersecurity Network (PACC-Net) at the ‘Future of Shipping: Digitalisation’ webinar jointly organised by MPA and the IMO. PACC-Net aims to strengthen collaboration on cybersecurity, improve cyber resilience and enhance incident response amongst port authorities. Following the conclusion of its inaugural

meeting, PACC-Net established a development plan to foster the sharing of cyber information amongst members to counter cybersecurity threats. Presently, PACC-Net has 10 members including MPA, Abu Dhabi Ports, Port of Antwerp, Port of Long Beach, Port of Rotterdam, Port Klang Authority, Port of Seattle, Port of Montreal, Port of Morocco, and Port and Urban Projects Bureau, Kobe.

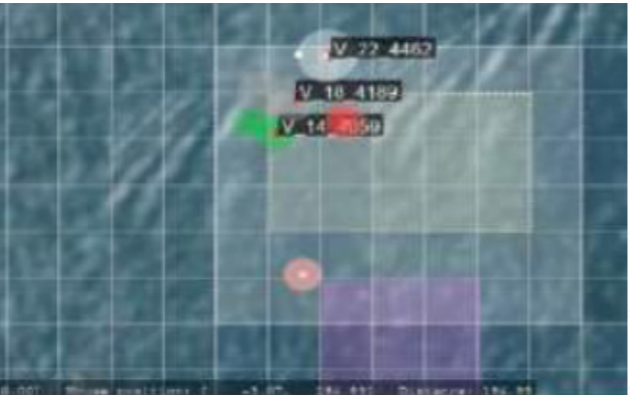


Launch of PACC-Net at the ‘Future of Shipping: Digitalisation’ webinar

SMART BUOY MANAGEMENT SYSTEM

In 2020, MPA developed a Smart Buoy Management System comprising low-powered, Bluetooth-based devices to track harbour craft accorded with season mooring rights at Marina South Pier. The non-intrusive system, which requires minimal intervention from craft operators, uses antennas that run on Long Range Wide Area Network.

Reducing the dependency on MPA enforcement patrols, the smart mooring system is a low-cost solution that provides live information on tagged vessels even under crowded conditions. It also detects vessels that are moored at the wrong buoys and alerts their operators promptly.



The smart mooring system enables the tagging of harbour craft at Marina South Pier

Previously, tracking capabilities were limited since the automatic identification system (AIS) is not required to be switched on while a vessel is moored. Harbour craft operators had to contact Port Inspectors to undertake enforcement actions when unauthorised craft were moored at their designated buoys.

Additionally, as a solar-powered innovation, the smart mooring system minimises carbon footprint while running on the Internet of Things.

ENHANCEMENTS TO VESSEL TRAFFIC INFORMATION SYSTEM

In 2020, MPA cooperated with the Civil Aviation Authority of Singapore (CAAS) to integrate CAAS’ new radar – located at Singapore Air Traffic Control Centre – with MPA’s Vessel Traffic Information System (VTIS)¹. The project, which was successfully commissioned in March 2020, improves MPA’s VTIS capabilities in the East Johor Straits. It exemplified MPA’s whole-of-government approach to improve the efficiency and cost effectiveness of its operational systems.

involved a system-wide replacement and upgrading of the notebook-based operator clients, as well as improvements to the back-end equipment of the standalone AIS.

Under the BCP of MPA’s Port Operations Control Centre, the standalone AIS forms part of the backup to the VTIS. Independent of the VTIS-AIS, the standalone AIS enables Vessel Traffic Service Officers to continue monitoring and providing traffic information to vessels in the unlikely event that the VTIS fails.

Furthermore, MPA redeveloped and expanded the standalone AIS as part of enhancements to the VTIS Business Continuity Plan (BCP). The redevelopment



MPA’s Vessel Traffic Information System

¹ The VTIS helps to ensure the navigational safety of vessels plying Singapore’s waters. It integrates data from the AIS and various sensors including radars.

ENHANCED ONLINE APPLICATION FOR PILOTAGE EXEMPTION

MPA improved the online application system for pilotage exemption to enable the automatic verification of submitted certificates. This improvement was carried out by integrating the online application system with MPA's internal platforms including the Port Traffic Management System. Previously, MPA had to conduct manual checks across its various departments for verification.

Through the enhanced online application system for pilotage exemption, MPA had received over 250 applications and had issued around 240 certificates of pilotage exemption since November 2020. The system eliminates the cost of courier services for manual application submission and reduces the application processing time from one/two weeks to less than three working days.

ROBOTIC PROCESS AUTOMATION

Similarly, MPA adopted Robotic Process Automation (RPA) to automate the verification of certificates and documents that the maritime community submits to MPA. These documents include vessel certificates for port clearance, as well as craft insurance and mooring letter for licensing. The adoption of RPA reduces human errors, enhances productivity and improves the efficiency of document verification.

DEVELOPING A SAFETY@SEA CULTURE

MPA'S NEXT-GENERATION PATROL CRAFT

MPA launched six next-generation patrol craft to enhance its frontline capabilities in 2020. They promote navigational safety and enhance the protection of the marine environment in the Port of Singapore.

These new 17-metre patrol craft are equipped with the Intelligent Port Marine System to enhance MPA's seaward capabilities in conducting enforcement patrols and responding to marine emergencies. The predictive

capabilities using both real-time and historical data enable MPA's next-generation patrol craft to carry out targeted enforcement and response mitigation. By integrating data analytics with onboard surveillance, the navigation and communication systems of the patrol craft also improve information relay between the craft and shore-based command centres, thereby increasing Port Inspectors' situational awareness of ground activities.



MPA's next-generation patrol craft

The next-generation patrol craft possess new surveillance capabilities such as multi-sensor marine thermal cameras, chemical gas detectors and drones. Each patrol craft also has a rescue boat fitted with a man overboard recovery system and towing capabilities for small craft to support search and rescue operations. Equipped with a dispersant spray system and containment booms, the patrol craft can also be deployed to respond to oil spills.

The six new patrol craft replaced the existing fleet that operated between 2012 and 2020.

In addition, MPA deployed two new patrol launches for flag and port state control inspections. They also conduct checks on bunkering and private wharf activities. These 15-metre patrol launches will support enforcement patrols and response efforts during emergencies.

MPA's next-generation patrol craft made a public appearance at the Maritime Sailpast segment of National Day Parade 2020. It joined MPA's hydrographic survey

vessel, Discovery, as well as 11 other vessels from the Republic of Singapore Navy, Police Coast Guard and Singapore Civil Defence Force in an expression of unity amongst maritime agencies to keep Singapore's waters safe and supply chains secure during the COVID-19 pandemic.



MPA's next-generation patrol craft participating in the Maritime Sailpast segment of National Day Parade 2020 (photograph by Kenneth Lai)

REMOTE FLAG STATE AND PORT STATE INSPECTIONS

MPA has carried out remote inspections since June 2020 to minimise the risk of COVID-19 infection amongst seafarers and marine surveyors. In 2020, MPA's Marine Surveyors conducted 185 remote Flag State and Port State inspections involving 85 companies.

MPA also collaborated with Recognised Organisations to conduct surveys and audits using remote technologies. These Recognised Organisations are classification societies authorised by MPA to perform statutory certification and survey services for Singapore-flagged ships. They carry out the inspection of ship equipment via video streaming platforms and verify documents submitted electronically.

SINGAPORE FLAG QUALIFIES FOR USCG QUALSHIP 21 PROGRAMME



The Red Ensign of Singapore flown by Singapore-registered vessels

The Singapore Flag has qualified for the United States Coast Guard (USCG) Quality Shipping for the 21st Century (QUALSHIP 21) programme from 1 July 2020 to 30 June 2021. It has attained a three-year rolling average detention ratio of 0.90% between 2017 and 2019 under the qualifying criteria for QUALSHIP 21.

The QUALSHIP 21 programme aims to eliminate substandard shipping by providing incentives to companies, operators and vessels that demonstrate commitment to quality and safety through the highest level of compliance with international standards and US laws and regulations. Amongst various incentives, QUALSHIP 21 vessels will be subjected to a reduced scope of annual Port State control examinations and oversight.

MERCHANT SHIPPING (PLEASURE CRAFT) REGULATIONS 2020

To enhance safety standards, MPA reviewed the registration and safety requirements of Singapore-registered pleasure craft. Following this review, Singapore-registered pleasure craft were required to meet the registration conditions and safety requirements under the new Merchant Shipping (Pleasure Craft) Regulations 2020 from 1 July 2020.

GUIDELINES FOR SAFE TRANSFER OF PERSONS BETWEEN VESSELS AT ANCHORAGES

In consultation with the National Maritime Safety at Sea Council, MPA and the Harbour Craft Safety Working Group – represented by industry stakeholders – developed a set of guidelines in 2020 to promote safe practices while transferring persons between vessels at anchorages.

Previously, MPA conducted a safety analysis and identified common causes of persons falling overboard during

With these revised regulations, MPA developed a guidebook that sets out the survey requirements and pre-requisites for registration. The guidebook aims to create awareness of the basic requirements for the safe operation of pleasure craft.

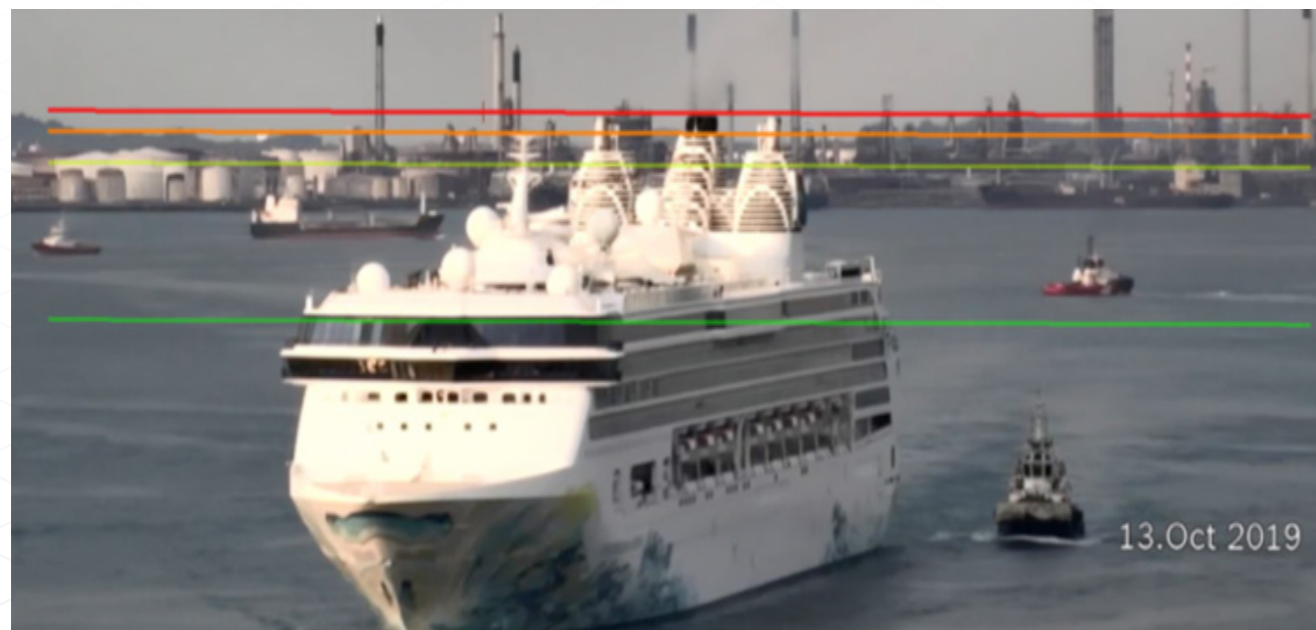
transfers between vessels at anchorages. They include slips and trips, unsuitable embarking/disembarking arrangements and unfavourable weather conditions. While the majority of personnel transfers were conducted under proper supervision with personal protective equipment such as life jackets, mishaps occurred when individuals failed to observe safe practices.

NEW HEIGHT LIMIT FOR SHIPS PASSING UNDER SENTOSA CABLEWAY

With effect from 1 July 2020, the vessel height restriction in the Cruise Bay (the body of water between Singapore Cruise Centre and Sentosa) was revised from 52 metres to 50 metres. Although the previous height limit was deemed adequate a safety margin, rising sea levels and possible extreme tides might compromise the margin. In addition, the owner, agent, master or person-in-charge of a vessel exceeding 48 metres in height must obtain prior written approval from the Port Master before entering, manoeuvring

within or leaving the Cruise Bay. MPA and the Singapore Cruise Centre revised the regulations in consultation with experts in structural analysis, design and climate change.

MPA has deployed video analytics and laser detectors to enforce the new height limit. These measures are necessary to strengthen navigational safety in Singapore's waters. Vessels exceeding 50 metres in height can continue to call at Marina Bay Cruise Centre.



Validation trials conducted using video analytics and laser detectors

INTERNATIONAL SAFETY@SEA 2020 WEBINAR SERIES

The International Safety@Sea 2020 webinar series discussed topics on maritime safety, seafarers' mental health and wellness, ship safety and incidents, as well as ship management in the new normal. The MPA-organised event was attended by over 900 attendees from more than 40 countries with the aim of sharing updates and championing best practices on maritime safety.

Themed 'Maritime Safety: New Normal, New Paradigms', the seventh edition of MPA's flagship event on maritime safety featured 21 speakers from across the maritime community. They included distinguished representatives

of international bodies such as the IMO, the International Chamber of Shipping, The Nautical Institute, Baltic and International Maritime Council, and the International Association of Classification Societies.

In addition, MPA announced a record number of 15 winners at the International Safety@Sea Awards in 2020. These 15 winners were recognised for their outstanding contributions to safe seas. For the first time, the National Maritime Safety at Sea Council also introduced Letters of Commendations to acknowledge the nominations deserving of merit.



Opening session on 'Maritime Safety: New Normal, New Paradigms': Mr Ishak Ismail (top left), Chairman of the National Maritime Safety at Sea Council, Singapore (moderator); Dr Heike Deggim (top right), Director of Maritime Safety Division, IMO; Mr Yang Xinzhai (bottom left), Deputy Director General of China Maritime Safety Administration; and Mr Esben Poulsson (bottom right), Chairman of the International Chamber of Shipping

RADAR REPLACEMENT AT HORSBURGH LIGHTHOUSE

In 2020, MPA upgraded its radar system at Horsburgh Lighthouse. Located strategically at the eastern approach of the Singapore Strait, the radar system at Pedra Branca provides reliable sea surface surveillance and detection of targets in the vicinity. The new radar, which incorporates the latest solid-state technology, has higher reliability, greater range and resolution, and more effective target-detection capability than the previously installed radar system. Sensor data from the new radar system will feed into MPA's VTIS to enhance the situational awareness of vessel traffic officers who ensure the safe and efficient management of sea traffic operations.



A new radar antenna installed at Pedra Branca

TESTING OF DUAL INTENSITY LED LANTERNS

MPA is the first in the world to run trials on the dual intensity LED lanterns, which have enhanced conspicuity against strong background lighting.

In 2020, MPA completed the second trial project and will represent Singapore at IALA's Aids to Navigation Engineering and Sustainability Committee to present its findings.

Subsequently, MPA will begin the development of international technical specifications on the equipment and guidelines for the deployment of the lanterns. It will also collaborate with IALA and the IHO to produce charting standards on the dual intensity LED lantern.



A dual intensity LED lantern installed on Cyrene Beacon

BASELINE SECURITY MEASURES FOR MPA-OPERATED PIERS AND TERMINALS

In line with the Baseline Security Measures recommended by ICA for compliance by land-based sea checkpoints, MPA works closely with ICA to improve the security measures at West Coast Pier, Marina South Pier and Changi Point Ferry Terminal to enhance security against terrorism. In 2020, MPA completed the installation of bollards, perimeter fencing and barriers at the three piers. It also commenced the adoption of an outcome-based security services contract model for its piers. Under this model, the service provider will deploy smart security technologies such as video analytics, autonomous patrolling robots and a smart parking management system to enhance security outcomes and improve the productivity of its auxiliary police officers and security officers. Additionally, MPA will be renovating the Custom, Immigration and Quarantine area at the piers and installing video cameras within these premises for remote monitoring.



Perimeter fencing, bollards and barriers installed at West Coast Pier, Marina South Pier and Changi Point Ferry Terminal

STANDARDS AND LICENSING

STANDARDS TO ASSURE QUALITY AND CONFIDENCE IN SINGAPORE'S BUNKER SUPPLY CHAIN

MPA served as an expert member to the Working Group, appointed by the national Technical Committee, to develop the following two new standards under the Singapore Standardisation Programme administered by Enterprise Singapore:

- Singapore Standard 660 : 2020 (SS 660) covers the quantity measurement requirements during bunker cargo delivery from an oil terminal to a bunker tanker using the Coriolis mass flow meter (MFM) system. It harmonises the quantity measurement methods at oil terminals and bunker tankers to enhance volume accuracy and inventory management. SS 660 also includes quality requirements that involve the collection of representative fuel samples at custody transfer points to verify compliance with the agreed fuel specifications and bunker quality delivered to bunker suppliers.
- Technical Reference 80 : 2020 (TR 80) reflects the requirements and procedures for meter verification using a master MFM to check the stability and performance of a duty meter installed on a bunker tanker or at an oil terminal. The meter verification process is performed by an independent authorised party for integrity purposes.



Mass flow meter

In addition, Technical Reference 56 : 2020 (TR 56), which covers the delivery of liquefied natural gas (LNG) from LNG bunkering facilities to receiving ships, was revised in 2020 based on the local experience of over 200 truck-to-ship LNG bunker deliveries. The revision included guidance on simultaneous operations and controlled zones requirements to enhance operational safety and port efficiency.

ALIGNING VESSEL TRAFFIC MANAGEMENT SOPS TO ISO STANDARDS

MPA carried out a comprehensive review of the vessel traffic management (VTM) standard operating procedures (SOPs) in phases. The review addressed repetition and ambiguity in VTM SOPs, documented the SOPs in the ISO

Manual, and aligned the SOPs to international guidelines and IALA recommendations. In 2020, MPA aligned 13 of the 21 SOPs to ISO 9001:2015², and will continue its review of the remaining SOPs in 2021.

² ISO 9001:2015 specifies requirements for a quality management system when an organisation: a) needs to demonstrate its ability to consistently provide products and services that meet customer and applicable statutory and regulatory requirements; and b) aims to enhance customer satisfaction through the effective application of the system, including processes for improvement of the system and the assurance of conformity to customer and applicable statutory and regulatory requirements.

IMAREST ACCREDITATION OF MPA'S MARINE SURVEYOR TRAINING FRAMEWORK

In 2020, MPA's Marine Surveyor training programme underwent an international accreditation process as part of an MOU on training and professional development inked between MPA and the Institute of Marine Engineering, Science and Technology (IMarEST) in 2019.

The programme successfully received international accreditation by IMarEST. The accreditation not only entails that the programme imparts knowledge and skills required for professional registration, but also supports the professional development of MPA's Marine Surveyors should they pursue professional registration or apply for chartered status.

The accreditation process involved an independent assessment of the programme against standard learning outcomes, and a rigorous peer-review process to examine the technical course content and the processes to ensure effective programme delivery. Four IMarEST accreditation panellists and assessors conducted interviews covering topics on programme design, objectives and outcomes, selection assessment and development processes, as well as evaluation and quality control.

TEMPORARY HARBOUR CRAFT PERMIT FOR INTER-GATEWAY FEEDER

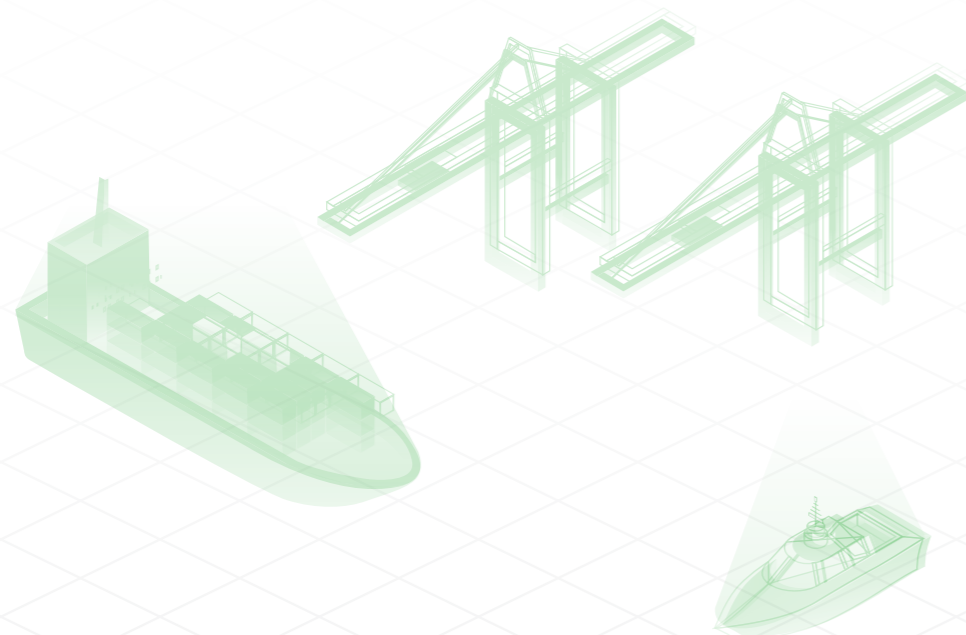
MPA extended the Temporary Harbour Craft Permit (THCP) Inter-Gateway Feeder (IGF) scheme for five years (1 July 2020 to 30 June 2025). It first approved the introduction of the THCP-IGF scheme in 2013.

With container-shifting demand across terminals set to increase when operations at Tuas Port commence, the

THCP-IGF scheme enhances PSA's ability to facilitate quick and integrated transshipment operations in the Port of Singapore. Chartering harbour craft for IGF provides flexibility in managing demand spikes at short notice, without adding to public road traffic congestion and putting a strain on the existing fleet of prime movers.

PILOTAGE LICENSING AND UPGRADING SYSTEM

MPA reviewed the Pilotage Licensing and Upgrading System (PLUS) to account for the shift in pilotage volumes attributable to the closure of the city terminals, the commissioning of Pasir Panjang Terminals 3 and 4, and the partial opening of Tuas Port. It revised the training requirements and assessment criteria to take into consideration the changing port conditions and the future pilotage demands of Tuas Port and Marina Bay Cruise Centre Singapore. The revised PLUS took effect from 1 October 2020.



NEXT-GENERATION PORT AT TUAS

The reclamation of Tuas Port Phase 1 is scheduled to be completed at the end of 2021. The occasion will mark a key milestone in the development of Tuas Port. Meanwhile, the construction works for Phase 2 and preparatory works for Phase 3 remain on track.



Reclamation of Tuas Port Phase 1 (left)

Tuas Port will be a digital and automated port. Digital innovations such as digitalPORT@SG™ will streamline port clearance processes, enable JIT operations and reduce the turnaround time for ships in the Port of Singapore.



MPA's Tuas Port engineers inspecting the dredging and reclamation works with contractors and consultants

When fully operational, Tuas Port will be capable of handling up to 65 million twenty-foot equivalent units (TEUs) annually. In addition to catering for future growth in container-handling demand, Tuas Port will consolidate the activities of the city terminals (Tanjong Pagar, Keppel and Brani) and Pasir Panjang Terminals when their leases expire from 2027. This consolidation will not only make available more than 800 hectares of valuable waterfront land in the town area for other uses, but also significantly reduce inter-terminal haulage operations and, hence, greenhouse gas emissions. With a large basin and long linear berths, Tuas Port can accommodate container ships that are longer than 400 metres.

Additionally, Tuas Port will be complemented by an ecosystem of synergistic industries and businesses. MPA is working with various government agencies including JTC



Er Tham Wai Wah (second from left), Senior Director (Engineering & Project Management)/ Chief Engineer of MPA, conducting monthly site inspection with his project team and consultants before the COVID-19 pandemic

Corporation (JTC) and the Economic Development Board to preserve 25 hectares of land adjacent to Tuas Port for complementary businesses and services that will benefit from close proximity to Tuas Port.

MPA, together with other public agencies, has developed an Integrated Utility Plan to run services for Tuas Port and its

surrounding development. Utility services will be laid along Tuas South Boulevard Extension – the only roadway leading to Tuas Port – to optimise both sides of the road reserve and minimise future conflict in the laying of utility services. At the same time, MPA is examining the viability of pre-laying the conduits for power cables to minimise traffic disruption when power cables are laid in the future.

SPACE OPTIMISATION

From planning to implementation, Tuas Port will optimise land use. In addition to the reclamation of more than 1,300 hectares of port land, MPA continues to consider operational concepts, such as above ground space (AGS), to intensify land use. Under the proposed concept of AGS, up to 240 hectares of space can potentially be created above the land of Tuas Port Phase 2 for industrial uses that synergise with port operations. Phase 2 is future-proofed for the possible development of AGS, and provisions are made to ensure that AGS development can be carried out seamlessly during terminal overhaul should the need arise.

Compared to conventional pile-deck berths, reclamation using caissons creates an additional 115 hectares of perpetual land in Phase 1 and 2. As the retaining wall for fill materials, the caisson structure will serve as container wharves for the berthing of vessels when they become operational.

Given Singapore's limited sea space, MPA is examining ways to optimise the use of anchorage space in the Port of Singapore. With funding support from the National Research Foundation through the Ministry of National

Development, MPA and JTC are developing an innovative mooring solution that can significantly reduce the anchorage space required for vessels to anchor. This solution comprises a floating structure moored to the seabed, which allows up to two vessels to be berthed on each side of the structure. Preliminary research showed that the deployment of these floating structures could potentially reduce the anchorage space required by more than 50%. If the solution proves successful following pilot trials, this innovation can be deployed for harbour craft use. It can save up to five square kilometres of sea space, which is slightly larger than the size of Sentosa island.



Artist's impression of the next-generation Tuas Port

PORT SUSTAINABILITY

The construction of Tuas Port has been carried out in a sustainable manner. Around 70% and 50% of the fill materials for Phase 1 and 2 respectively come from dredged materials from the deepening of basins and fairway, as well as excavated earth from land construction projects. Reusing these materials, which would otherwise be disposed, reduces the reliance on sand for reclamation, and generates savings of more than S\$2 billion in fill material costs. Additionally, to mitigate the impact of climate change, Tuas Port is built with an operational platform of five meters above mean sea level to buffer against rising sea levels.

To future-proof the bunkering of green fuels at Tuas Port, MPA is working with PSA and other stakeholders to explore measures that offer flexibility in port infrastructural planning. These measures include the provision of cold ironing at Tuas Port to decrease the fuel reliance of vessels along the berths and, hence, reduce emissions. MPA is also working with PSA and other parties on the development of infrastructure for the provision of LNG and green fuels to ships from land.

MPA is working with Nanyang Technological University (NTU) and DHI Singapore to deploy video analytics for silt plume detection. This innovation complements

the Environmental Monitoring and Management Plan that uses real-time sensors to monitor the impact of construction on the marine environment. Deploying video analytics for silt plume detection adopts remote sensing using unmanned aerial vehicles with hyperspectral and multispectral cameras. It also adopts Convolutional Neural Networks imaging analysis for the real-time monitoring of turbidity concentrations during land reclamation works in Singapore's coastal waters. The software will put together and analyse the contour map of turbidity distributions. If successful, this project will help to digitalise environmental monitoring operations in Singapore. It can also be applied to other land reclamation projects in the country.

In addition, MPA is cooperating with the Institute of High Performance Computing and the Agency for Science, Technology and Research to build an integrated simulation planning tool for air flow as well as thermal and chemical gas dispersion. The aim is to create a safe and green Tuas Maritime Hub with good wind ventilation, air quality and improved thermal comfort for energy and environmental sustainability. Compared to independent simulation models, the integrated model offers simulation results of higher accuracy.

PORT INNOVATION

In partnership with NTU, MPA is studying the use of rigid inclusions for the construction of container yard foundations. Compared to steel reinforced concrete piles, rigid inclusions may reduce the cost of foundation works for container yards by up to 40%. They are also easier to remove than conventional steel reinforced concrete piles. If implemented, rigid inclusions will be preferable alternatives to steel reinforced concrete piles for future-proofing the layout and land use of Tuas Port.



MPA's project managers supervising the installation of a caisson onto a foundation

Furthermore, MPA is working with the National University of Singapore (NUS) on a digital twin model for Tuas Port. The model will provide a holistic evaluation of not only the in-situ consolidation of dredged and excavated materials at the reclaimed land, but also the subsequent surface ground settlement during terminal operations. At present, there is no existing knowledge and analysis of the performance of reclaimed land that uses a large volume of dredged and excavated materials. If successfully developed, the digital twin will help MPA to predict the long-term behaviour of reclaimed land and provide useful information on future land reclamation projects.

MPA is also cooperating with NUS to model and simulate the land and sea traffic of construction activities involving the movement of construction and reclamation fill materials. The model identifies potential traffic hotspots on land and at sea, thereby managing congestion bottlenecks and the risk of accidents. As a scenario planning tool, the model can optimise the volume of works for critical activities in the construction schedule.

ADVANCING SINGAPORE'S MARITIME INTERESTS ON A GLOBAL STAGE

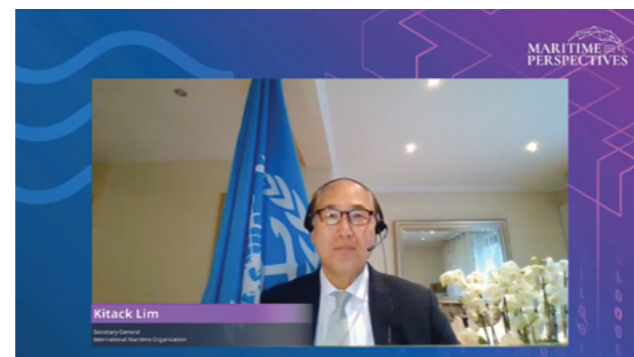
MAKING ACTIVE CONTRIBUTIONS TO THE INTERNATIONAL MARITIME ORGANIZATION

Singapore actively supports the IMO in enabling the critical role of shipping in global trade. It has undertaken leadership positions in various IMO bodies and working groups. In addition to serving as an IMO Council Member since 1993, Singapore is presently the Vice-Chair of the Sub-Committee on Human Element, Training and Watchkeeping, chairing its working group for the comprehensive review of the International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessels. The working group seeks to introduce sustainability and environmental awareness to fishing practices.

In 2020, Singapore was also a member of the Steering Committee and the external review panel of the Fourth IMO Greenhouse Gas (GHG) Study. The study, published in July 2020, will inform the implementation of the Initial IMO Strategy on reduction of GHG emission from ships.

In championing global sustainability and innovation in the maritime industry, MPA and the IMO co-organised the

Future of Shipping webinar series on maritime decarbonisation and digitalisation. The two webinars gathered representatives of IMO Member States, global industry partners and academics to not only promote stakeholder collaboration across the energy and maritime transport value chains, but also pursue digitalisation to drive efficient, resilient and green shipping.



Mr Kitack Lim, IMO Secretary-General, delivering his opening remarks at the 'Future of Shipping: Digitalisation' webinar



Speakers and panellists at the 'Future of Shipping: Decarbonisation' webinar

Singapore values multi-stakeholder collaboration to address challenges and achieve shared outcomes. At the 'Future of Shipping: Decarbonisation' webinar, MPA and IMO introduced "NextGEN" ("Green and Efficient Navigation"), a concept for a collaborative global ecosystem of maritime decarbonisation initiatives. "NextGEN" will facilitate information sharing on decarbonisation initiatives across IMO Member States, industry and academia; identify opportunities and gaps for maritime decarbonisation; and develop networks and platforms for collaborations.

Additionally, Singapore strongly supports other countries in capacity building and advocates the sharing of best practices. Under the Singapore-IMO Third Country Training Programme, Singapore has trained over 2,100 programme participants from over 90 IMO Member States. It has

also strengthened cooperation with the World Maritime University (WMU) and the International Maritime Law Institute (IMLI) on the development of global maritime leadership and maritime legal knowledge. In 2020, MPA sponsored the WMU-Koji Sekimizu PhD Fellowship on Maritime Governance for two deserving students and funded the scholarship of another promising student pursuing the Master of Science in Maritime Affairs at WMU.

As part of its collaboration with the IMLI, MPA sponsored two professionals of maritime administrations from developing countries to study at IMLI for the 2020-2021 academic year. Besides providing scholarships, MPA also hosts IMLI students on study visits to Singapore in support of capacity building for IMO Member States.



Launch of the WMU-Koji Sekimizu PhD Fellowship on Maritime Governance: Mr Tan Suan Jow (left), Dean of MPA Academy; Mr Koji Sekimizu (centre), Former Chancellor of WMU and Emeritus Secretary-General of the IMO; and Dr Cleopatra Doumbia-Henry (right), President of WMU

SUPPORTING THE INTERNATIONAL ASSOCIATION OF MARINE AIDS TO NAVIGATION AND LIGHTHOUSE AUTHORITIES

Since joining IALA as a National Member in 1973, Singapore has played an active role across various IALA technical Committees including the Vessel Traffic Services (VTS) Committee and the e-Navigation Information Services and Communications Committee, as well as their working groups. Collectively, the committees advance the safe, economic and efficient movement of vessels around the world through harmonising the use of marine aids to navigation worldwide.

Singapore is presently serving a four-year term (2018-2022) as an elected Council Member of IALA. Under the MPA-IALA MOU, Singapore has committed S\$1 million over five years (2019-2023) to work with IALA's World-Wide Academy to support the capacity building and human resource development of IALA's National Members.

In addition, Singapore has strongly supported IALA's journey to become an intergovernmental organisation (IGO). MPA contributed to finalising the text of the Convention on the International Organization for Marine Aids to Navigation, which IALA's National Members supported in February 2020. The elevation of IALA's status from a non-governmental organisation to an IGO will boost global participation in IALA's activities and strengthen international cooperation and coordination in harmonising marine aids to navigation and related services for the shipping community worldwide.

With the rise of Maritime Autonomous Surface Ships (MASS), Singapore has actively supported IALA on MASS policies to prepare the international maritime community for the emergence of MASS technologies. To this end,

MPA is working with the Netherlands on a proposal for IALA regarding the development of guidelines to prepare vessel traffic services for MASS. In response to the joint paper submitted by Singapore and the Netherlands on the “Impact of Maritime Autonomous Surface Ships (MASS) on Marine Aids to Navigation”, the IALA Policy Advisory Panel agreed to set up an inter-committee taskforce to coordinate MASS work across IALA’s technical committees.

ASSUMING LEADERSHIP ROLES AT THE INTERNATIONAL HYDROGRAPHIC ORGANIZATION

Singapore was re-appointed as Member of the IHO Council from 2020 to 2023. The IHO Council coordinates the activities of the organisation, which include preparing strategy proposals and work programmes, considering budgets and financial statements, and reviewing proposals submitted by subsidiary organs.

MPA’s Chief Hydrographer, Mr Thai Low Ying-Huang, was appointed Vice-Chair of the IHO Council at the fourth Council Meeting in November 2020. MPA’s Adviser (Hydrography), Dr Parry Oei, remained as Chair of the East Asia Hydrographic Commission Charting and Hydrography Committee.

In 2020, MPA proposed the establishment of a joint IHO-Singapore Innovation and Technology Laboratory.

In 2020, Singapore was selected to host the 15th IALA VTS Symposium in 2024. It will work with like-minded parties to co-develop a global maritime ecosystem based on digital interoperability and cybersecurity. At the symposium, Singapore will demonstrate new capabilities of interest such as the next-generation vessel traffic management system, as well as the latest developments in remote pilotage, maritime drones and JIT operations.

The proposal was endorsed and approved by the IHO Council and IHO Assembly. The laboratory aims to (i) facilitate research and investigative projects proposed by IHO Member States, IHO organs and other stakeholders; (ii) grow knowledge and foster collaboration on standard-setting and the development and application of technologies enhancing safety at sea; (iii) promote a multi-disciplinary and collaborative environment under the guidance of the Governing Board; and (iv) grow IHO’s international standing and recognition for its contributions to navigational safety and marine environmental protection. The laboratory will support long-term planning and accelerate innovation in the hydrographic domain, as well as cooperate with stakeholders in the private sector to advance the strategic goals of the IHO.

PARTICIPATING ACTIVELY IN THE ASEAN MARITIME TRANSPORT WORKING GROUP

MPA actively engages the Member States and Dialogue Partners of the Association of Southeast Asian Nations (ASEAN) at meetings including those of the Maritime Transport Working Group (MTWG). The MTWG is the principal coordinating and implementing arm of the ASEAN Senior Transport Officials Meeting that advances maritime transport programmes, projects and activities.

In supporting the digitalisation of ASEAN ports to improve the efficiency of regional supply chains, MPA established a correspondence group to champion the issuance, acceptance and exchange of electronic certificates. The correspondence group aims to facilitate the exchange of views, the sharing of best practices and cooperation amongst ASEAN Member States on electronic certificates.



Mr Tan Hoe Soon, Senior Director (Communications, International & Legal), representing Singapore at the ASEAN MTWG meeting

ENHANCING THE SECURITY OF SHIPS AT SEA

As a founding member and Contracting Party to the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP), Singapore is strongly committed to promoting regional cooperation in addressing piracy and armed robbery against ships. Since 2006, Singapore has hosted the ReCAAP Information Sharing Centre (ISC), which disseminates timely and accurate information on incidents of piracy and armed robbery against ships in the region. Singapore works with ReCAAP and its Contracting Parties to enhance the standing of the ReCAAP ISC as a Centre of Excellence for Information Sharing.

In 2020, MPA actively supported and participated in the capacity building workshops of the ReCAAP ISC, which included the ReCAAP ISC Virtual Capacity Building Workshop and the ReCAAP ISC Virtual Capacity Building Senior Officials Meeting. At these events, Singapore shared various measures to address piracy and armed robbery against ships as well as anti-piracy technology projects to enhance vessel security. In addition, MPA also participated in the ReCAAP ISC’s annual Nautical Forum and other dialogue sessions.



Mr David Foo, Senior Director (Operations Technology) of MPA, delivering an address at the Nautical Forum (photograph by RECAAP)

COLLABORATION WITH CENTRES OF EXCELLENCE

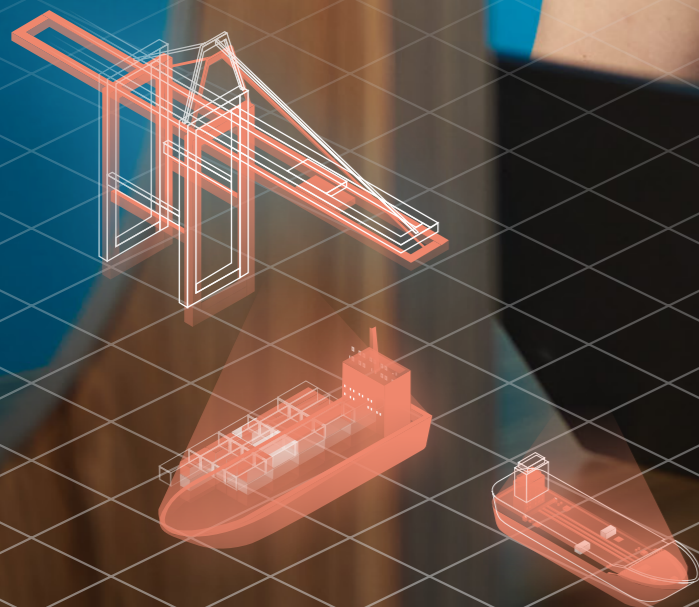
MPA signed an MOU with Shanghai Maritime University (SMU) at the sidelines of the second Singapore-Shanghai Comprehensive Cooperation Council to support talent and academic exchange between Singapore and China in the maritime sector. Under the MOU, MPA and SMU will cooperate on the exchange of

speakers and lecturers, the hosting of student visits in Singapore and Shanghai, and the joint organisation of training programmes and field studies. The MOU aims to strengthen connectivity, share expertise and facilitate knowledge exchange between the two leading maritime capitals.

CHAPTER 05

VERSATILE

Despite the COVID-19 pandemic, the Maritime and Port Authority of Singapore (MPA) remains versatile in growing Singapore's attractiveness as an International Maritime Centre. It adapted to the changing and diverse needs of maritime companies to help them anchor their businesses in Singapore and expand their operations in the country. In addition to growing a comprehensive range of maritime services in Singapore, MPA also adopted new ways of conducting maritime business events to reach out to its stakeholders globally.



BUILDING AN ATTRACTIVE INTERNATIONAL MARITIME CENTRE

Singapore is home to a diverse range of maritime businesses. Over 5,000 maritime establishments are based in the city-state.

Complementing its position as a major global hub port, Singapore is recognised worldwide as a leading international maritime centre in global benchmarking

studies. In 2020, for instance, the Xinhua-Baltic International Shipping Centre Development Index ranked Singapore as the top international shipping hub for the seventh consecutive year.

The Singapore Registry of Ships is presently the fifth largest in the world, recording 95 million gross tonnage in 2020.

XINHUA-BALTIC INTERNATIONAL SHIPPING CENTRE DEVELOPMENT INDEX

TOP INTERNATIONAL SHIPPING HUB FOR 7TH CONSECUTIVE YEAR

5TH LARGEST REGISTRY OF SHIPS 95 MILLION GROSS TONNAGE

OVER 160

SHIPPING GROUPS IN SINGAPORE

STRENGTHENING SINGAPORE'S SHIPPING CORE

As an international maritime centre, Singapore is home to one of the world's highest concentrations of international shipping groups. Over 160 shipping groups worldwide across diverse sectors such as container, dry bulk, tanker and offshore have established their presence in Singapore. Collectively, they generated local business spending of close to S\$5 billion in 2020.

Singapore remains attractive as an Asian base for shipowners and operators. For instance, China Navigation

Group headquartered Swire Bulk in Singapore to run its dry bulk business and operations.

In addition, MPA works with shipping companies in Singapore to deepen their operations in the country. In 2020, RightShip – a global maritime risk and environmental assessment organisation – set up its Asia-Pacific office for business development and its Innovation Hub in Singapore.

GROWING SINGAPORE'S MARITIME SERVICE CLUSTER

Maritime Singapore has evolved into a vibrant marketplace centred on a strong core of shipping companies and a comprehensive pool of maritime services such as shipbroking as well as maritime law and arbitration.

Today, Singapore is an established centre for shipbroking activities encompassing the dry bulk, tankers and non-conventional shipping sectors. In 2020, Braemar ACM Shipbroking set up a new local subsea and renewables desk in Singapore, while Howe Robinson Partners established a mini bulkers desk in the country.

In addition, Singapore continued to make steady headway in becoming the go-to destination for maritime arbitration in Asia. The Singapore Chamber of Maritime Arbitration

(SCMA) saw a 5% increase in caseloads amidst the pandemic. These case references involved a total claim sum of almost USD\$50 million, with more than half the disputants coming from Asia.

In 2020, SCMA conducted a public consultation exercise to review its rules and procedures to ensure that they not only stay relevant to the industry, but also offer maritime and trade communities a neutral, cost-effective and flexible framework to resolve their disputes fairly and expeditiously. Going digital amidst the pandemic, SCMA launched the Specimen Directions for Virtual Hearings that provides arbitrators, tribunals and users guidance on the procedures of virtual hearings.



Mr Punit Oza, SCMA's Executive Director & Registrar, speaking about public consultation on SCMA's rules revision

SUPPORTING NEW COMPANIES AND GROWING MARITIME BUSINESSES

MPA renders assistance to maritime companies setting up their businesses in Singapore and expanding their operations from the country. It administers the Maritime Sector Incentive that grants tax concessions to qualifying companies that build and expand their maritime operations in Singapore. Qualifying shipping enterprises also enjoy withholding tax exemption on qualifying payments for ship and container financing.

In addition, MPA supports companies in the areas of business and manpower development, as well as productivity improvements under the Maritime Cluster Fund.

The Maritime Cluster Fund (Business Development) helps companies seeking to establish new maritime operations in Singapore, expand into new lines of maritime businesses in the country or internationalise their businesses. MPA also supports the training of local employees and developing local talents under the Maritime Cluster Fund (Manpower Development). The scheme co-funds courses as well as structured training and experiential learning programmes. Maritime businesses can also tap into the Maritime Cluster Fund (Productivity) to adopt technology solutions and streamline business processes for productivity improvements.

RUNNING MARITIME BUSINESS EVENTS

MARITIME PERSPECTIVES WEBINAR SERIES

The four-part Maritime Perspectives webinar series invited experts and industry leaders to share their insights on digitalisation, decarbonisation and trade in a disrupted world.

With the rise in the adoption of disparate electronic platforms in the maritime sector, the first of the four webinars championed interoperability across various digital platforms to promote efficiency gains in the industry. Titled 'Digital Connectivity & Data Standards', the webinar rallied platform providers, port authorities and industry stakeholders to cooperate on common data standards and promote data exchanges via Application Programming Interfaces. Mr Kitack Lim, Secretary-General of the International Maritime Organization (IMO), delivered the keynote speech at the webinar, which attracted an audience of over 250 professionals from the port, shipping and technology sectors.



Mr Kitack Lim, IMO Secretary-General, delivering the keynote address at the 'Digital Connectivity & Data Standards' webinar

In the 14th Singapore Maritime Lecture, Mr Ravi Menon, Managing Director, Monetary Authority Singapore, gave a keynote address titled "Building a resilient economy post COVID-19". He shared insights on changes to trade patterns and supply chains accelerated by the COVID-19 pandemic, the rise of Asia's middle class and e-commerce. Mr Menon stressed the importance of developing 'resilient supply chains' that are diverse, flexible and integrated; growing a 'resilient industry' through digitalisation; building a 'resilient workforce' in the face of technological changes; and driving sustainability in the industry to foster a 'resilient planet'. Over 420 industry leaders and participants from 22 countries tuned in to the webinar.



14th Singapore Maritime Lecture 2 September 2020



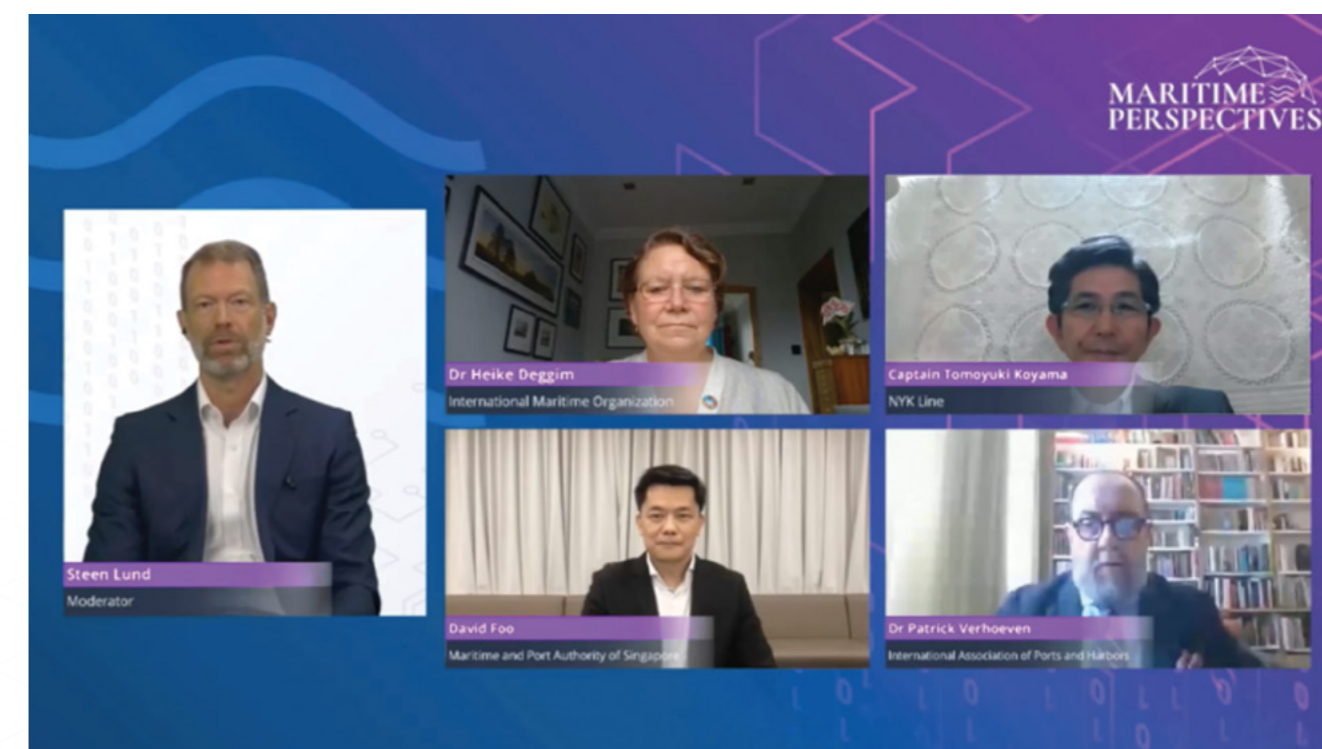
Panel discussion at the 14th Singapore Maritime Lecture: Mr Ravi Menon (top left), Managing Director, Monetary Authority Singapore; Mr Wan Chee Foong (top right), Regional CEO of Middle East South Asia & Head of Group Business Development, PSA International; Mr Steve Saxon (bottom left), Expert Partner, McKinsey; and Ms Yvonne Chan (bottom right), moderator

Jointly organised by the IMO and MPA, the 'Future of Shipping: Decarbonisation' webinar gathered maritime leaders across the world to share insights on decarbonisation. The strong turnout of over 500 participants from 63 countries underscored the high priority that the international shipping community placed on sustainability despite the COVID-19 pandemic. The webinar also highlighted the importance of collaboration and coordination amongst stakeholders across the energy and maritime transport value chains to achieve the IMO's ambition of a 50% reduction in total annual greenhouse gas emissions by 2050 from 2008 levels. To coordinate and drive global efforts, the IMO and MPA introduced "NextGEN" ("Green and Efficient Navigation"), a concept for a collaborative global ecosystem of maritime decarbonisation initiatives. "NextGEN" will facilitate information sharing on decarbonisation initiatives across IMO Member States, industry and academia; identify

opportunities and gaps for decarbonisation; and create important networks and platforms for collaborations. "NextGEN" aspires to become the 'one-stop shop' for initiatives on maritime decarbonisation, where participants share ideas, seek resources and connect with partners.



Mr Ong Ye Kung, Minister for Transport, delivering the opening remarks at the 'Future of Shipping: Decarbonisation' webinar



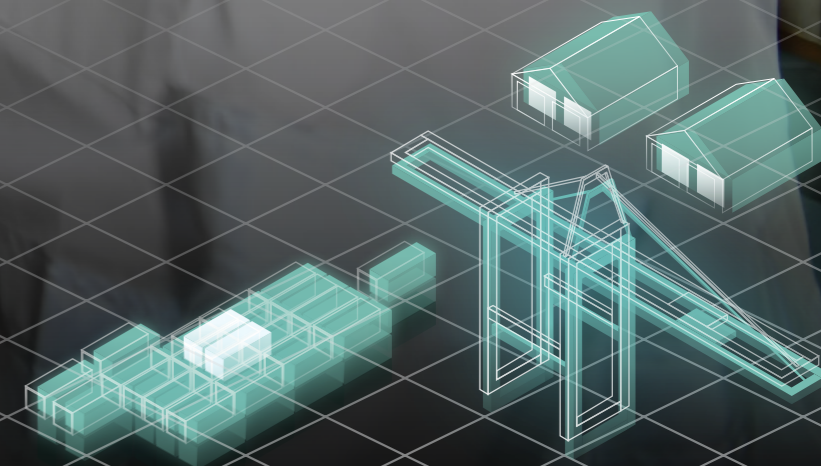
Panel discussion at the 'Future of Shipping: Digitalisation' webinar: Mr Steen Lund (left), Group CDO of Executive Ship Management and Chairman of the Singapore Shipping Association's Digital Transformation Committee (moderator); Dr Heike Deggim (top centre), Director of Maritime Safety Division, IMO; Capt Tomoyuki Koyama (top right), Senior Managing Executive Officer, NYK Line; Mr David Foo (bottom centre), Senior Director (Operations Technology), MPA; and Dr Patrick Verhoeven (bottom right), Managing Director, International Association of Ports and Harbors

The Maritime Perspectives series concluded with the second joint IMO-Singapore webinar on the 'Future of Shipping: Digitalisation', which drew some 400 participants from around the world. The webinar stressed the need for international standards and collaboration to unlock the full potential of digitalisation so as to drive efficient, resilient and green shipping. At the webinar, the IMO, MPA and the World Bank recognised the importance of digitalising workflows

and increasing data exchange among ships, ports and value chain stakeholders to facilitate global trade, increase supply chain resilience and improve ship operations. The IMO, MPA, and the World Bank will work together alongside other interested partners to support IMO Member States in the digitalisation of their ports, particularly in the implementation of maritime single windows.

CHAPTER 06 RESILIENT

The Maritime and Port Authority of Singapore (MPA) is committed to growing the capabilities of the maritime workforce to strengthen industry resilience and maintain Singapore's competitiveness as a premier global hub port and an international maritime centre. It supports employers in upskilling their workers and encourages locals to join the industry through traineeships, attachments, awards and scholarships. To attract talents to the maritime sector, MPA engages the public through a series of outreach programmes to generate interest in maritime careers and support the discovery of the maritime industry in a fun, meaningful and interactive way. These programmes reinforce the importance of Maritime Singapore to the nation's development and inspire young talents to join Singapore's vibrant maritime sector.



WORKFORCE DEVELOPMENT

1000 TRAINEESHIPS, ATTACHMENTS AND TRAINING OPPORTUNITIES

MPA, together with the Singapore Shipping Association (SSA), maritime companies and Institutes of Higher Learning (IHLs), has provided traineeships, company attachments and training opportunities for Singapore citizens and permanent residents under the SGUnited Jobs and Skills initiative. The initiative is driven by MPA in partnership with SkillsFuture Singapore and Workforce Singapore.

Individuals who took on these traineeships and attachment opportunities gained industry knowledge and acquired

valuable working experience in the maritime sector. Others who pursued subsidised training courses – designed in collaboration with SSA and companies in the port, shipping and maritime services sub-sectors – acquired desirable skillsets in areas such as modelling and simulation, shipping operations and management, data analytics and maritime superintendency. These skills will not only improve their employability and help them gain a foothold in the maritime job market during economic recovery, but also support growth areas in the maritime sector and the industry's long-term manpower needs.



MARITIME CLUSTER FUND

As part of industry transformation efforts, MPA is dedicated to building a future-ready maritime workforce with multi-disciplinary skills and a global mindset. Through the Maritime Cluster Fund, MPA equips Singapore's maritime workforce with essential skills to stay relevant and employable as the industry evolves.

The Maritime Cluster Fund (Manpower Development), or MCF-MD, co-funds course fees as well as structured training and experiential learning programmes. In 2020, over 4,000 locals developed their competencies through training and reskilling with the support of MCF-MD co-funding.

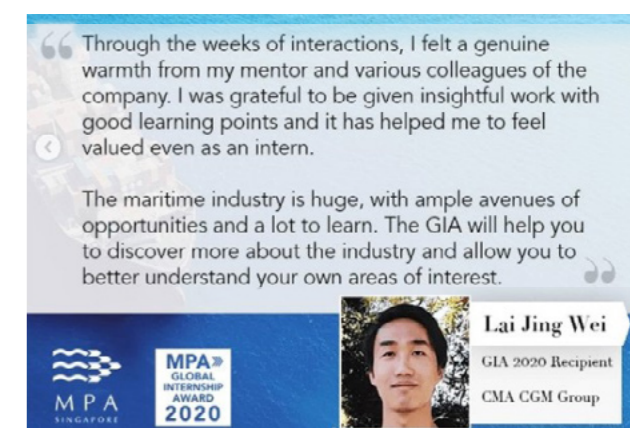
During the pandemic, companies were encouraged to train and invest in their employees to build their skills and capabilities, which will help companies transform their

businesses and ride on the opportunities of economic recovery. To defray the cost of reskilling and upskilling, MPA increased its co-funding support under the Maritime Cluster Fund. Selected qualifying short courses, productivity improvement projects and certifiable courses received up to 90% co-funding from MPA.

Under the Maritime Cluster Fund, MPA also introduced the Internship Reimbursement Scheme in 2020 to encourage maritime companies to continue offering internship opportunities to local students despite the challenges brought about by the COVID-19 pandemic. MPA co-funded the internship allowances paid to Singaporean students from local public-funded IHLs who underwent structured internships in their host companies.

MPA GLOBAL INTERNSHIP AWARD

The MPA Global Internship Award (GIA) supports the industry's demand for multi-skilled talents with a global mindset. The award offers high-achieving students internships at global maritime companies based in Singapore. In 2020, 21 students were awarded the MPA GIA with internships placements at 16 host companies. Given the COVID-19 situation, awardees undertook assignments on remote work arrangements with their host companies' overseas offices. Award recipients also underwent online programmes that provided insights into the maritime industry and prepared these students for the maritime workplace.



GIA 2020 recipient Lai Jing Wei sharing his thoughts on his internship experience with CMA CGM Group

TRIPARTITE MARITIME SCHOLARSHIP

MPA jointly sponsors the Tripartite Maritime Scholarship (TMSS) with shipping companies and local seafaring unions to develop a pipeline of talent for the seafaring sector. The scholarship grooms promising local students into Captains and Chief Engineers on board ocean-going merchant vessels.

In 2020, MPA launched the Mid-Term TMSS to widen the pool of applicants to include graduates of the Singapore Maritime Academy and Wavelink Maritime Institute who are Certificate of Competency 3 and 5 holders. 193 individuals, including 15 awardees in 2020, have benefitted from the scholarship scheme to date.



TMSS 2020 recipient Fadhli bin Bohari

BUILDING THE FUTURE MARITIME WORKFORCE

SINGAPORE MARITIME CLUSTER BENEFITS & COMPENSATION STUDY

MPA concluded the fourth study on benefits and compensation in 2020. The study reviewed the trends in compensation and benefits in Singapore's maritime sector, assessed the impact of evolving trends on the future of the maritime workforce, and examined the skills needs of the industry. Companies that participated in the compensation and benefits survey received benchmarking reports that informed them of their competitiveness vis-à-vis their industry peers and the Singaporean workforce in areas such as wages and benefits, as well as staff development.

SKILLS FRAMEWORK FOR SEA TRANSPORT

In 2020, MPA refreshed the Skills Framework for Sea Transport to reflect the evolving job requirements and careers in the maritime industry. The updated framework also examines the emerging skills and competencies critical to the maritime sector. It offers maritime businesses a reference for redesigning job roles, developing talent acquisition strategies and formulating learning and development initiatives.



Singapore Maritime Cluster Benefits & Compensation Study 2019/20



Skills Framework for Sea Transport website

PROMOTING MARITIME SINGAPORE AND INDUSTRY PROFESSIONS

SINGAPORE MARITIME GALLERY

The Singapore Maritime Gallery tells the story of Singapore's transformation from a trading post into a premier global hub port and the world's leading international maritime centre. Located at Marina South Pier, the gallery is a key platform for MPA to reach out to the public to promote Singapore's maritime industry and cultivate interest in maritime professions.

In 2020, as group tours were suspended due to the COVID-19 outbreak, MPA introduced new resources to support visitors on self-guided tours at the Singapore Maritime Gallery. The Gallery Guide, which examines the top 10 highlights of the gallery, draws the attention of visitors to key exhibits and offers parents and educators a reference material to introduce Singapore's maritime industry to the young. Similarly, the Activity Booklet for children ages seven and above provides families with a fun learning resource to complete as they tour the gallery.



Gallery Guide



Activity Booklet

In addition, MPA developed My Maritime Singapore Story, a gallery-based school learning programme that enables students to discover the progress of Singapore as a maritime nation. Secondary 1 students of Holy Innocents' High School participated in the pilot programme digitally due to safe management restrictions at the gallery. They joined a guided video tour and participated in facilitated discussions on culture, society and the economy, which shaped the Singaporean identity. MPA also produced a resource pack completed with visual aids and materials on Singapore's maritime industry to help teachers plan discussions and activities for the gallery-based programme.



Singapore Maritime Gallery

The Singapore Maritime Gallery is developing a virtual 360 tour. Visitors will soon be able to view exhibits, participate in quizzes and watch videos as they explore the Singapore Maritime Gallery on virtual tours.

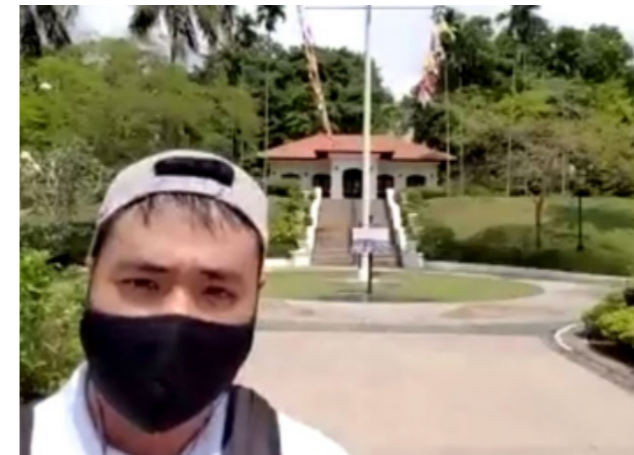
MARITIME SINGAPORE EDUCATION SERIES

The Maritime Singapore Education Series comprises online learning guides aimed at helping readers ages 10 and above discover Maritime Singapore. The series consists of 12 issues that have been categorised into four themes: (i) Maritime Past, Present and Future; (ii) Maritime and Globalisation; (iii) Sustainable and Green Port; and (iv) Maritime and Our Everyday Life. Available for download on MPA's website, each issue explores a selected topic and suggests accompanying activities and videos.



Maritime Singapore Education Series

SINGAPORE MARITIME TRAILS



'Live' virtual tour of Fort Canning

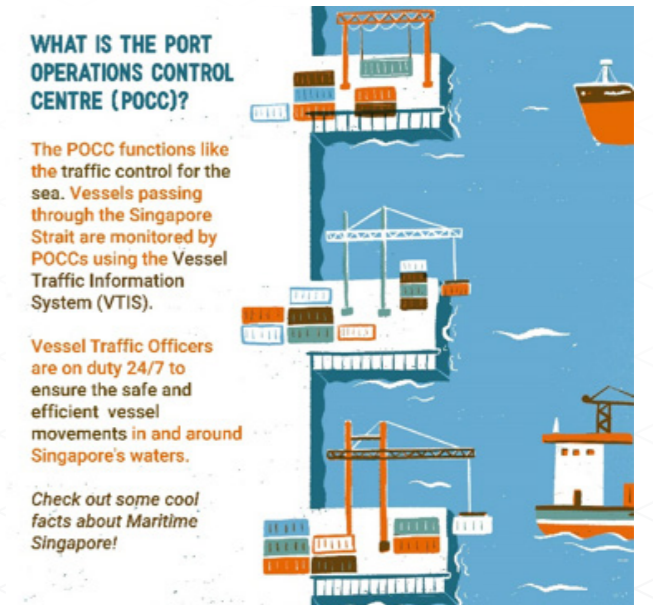


Despite the COVID-19 pandemic, MPA continued to run the Singapore Maritime Trails. Facilitated by a virtual host, they were conducted 'live' over Zoom by an onsite tour guide. Participants toured Fort Canning digitally to learn about Singapore's maritime heritage while engaging in online interactions and games. MPA also produced in-house animation videos of the tour to complement the online experience.

Additionally, MPA supported Hiverlab under the Maritime Outreach Fund to develop a 360-degree video featuring highlights of the Singapore Maritime Trails. Schools have used the video to teach students how to create their own maritime stories using immersive technology in virtual reality workshops.

LEARNING JOURNEYS

Due to the temporary suspension of physical tours, MPA conducted virtual Learning Journeys that enabled participants to learn about vessels and the activities in the busy Port of Singapore. To complement the online experience, MPA also commissioned local artists 8EyedSpud to produce a series of static and animated infographics on each Learning Journey.



Learning Journey infographics

MPA MARITIME BUS

The MPA Maritime Bus introduced Singapore’s maritime past, present and future to members of the public as well as students ages seven to 16. It promoted Singapore’s rich maritime heritage, revealed exciting developments in the maritime sector and inspired young Singaporeans to join the industry.

Through an immersive experience in the roving bus, visitors discovered Singapore’s past as a trading post where goods such as silk, tea, porcelain and spices were exchanged. They also learnt about the contributions of early settlers such as Hajjah Fatimah Sulaiman and Seah Eu Chin. In addition, the bus featured the first container port in Southeast Asia and its significance to Singapore as a transshipment hub. At the bus exhibition, visitors also caught a glimpse of the next-generation Tuas Port and its advanced technologies such as drones and automated guided vehicles.



Children touring the MPA Maritime Bus before COVID-19 safe management restrictions kicked in

Due to the COVID-19 pandemic, the MPA Maritime Bus did not travel from April 2020. Nonetheless, students still enjoyed the MPA Maritime Bus skit, which told the story of a lighthouse keeper's love for the sea, in classrooms and at school assemblies.



MPA Maritime Bus skit performed at a school assembly

SINGAPORE NAUTILUS

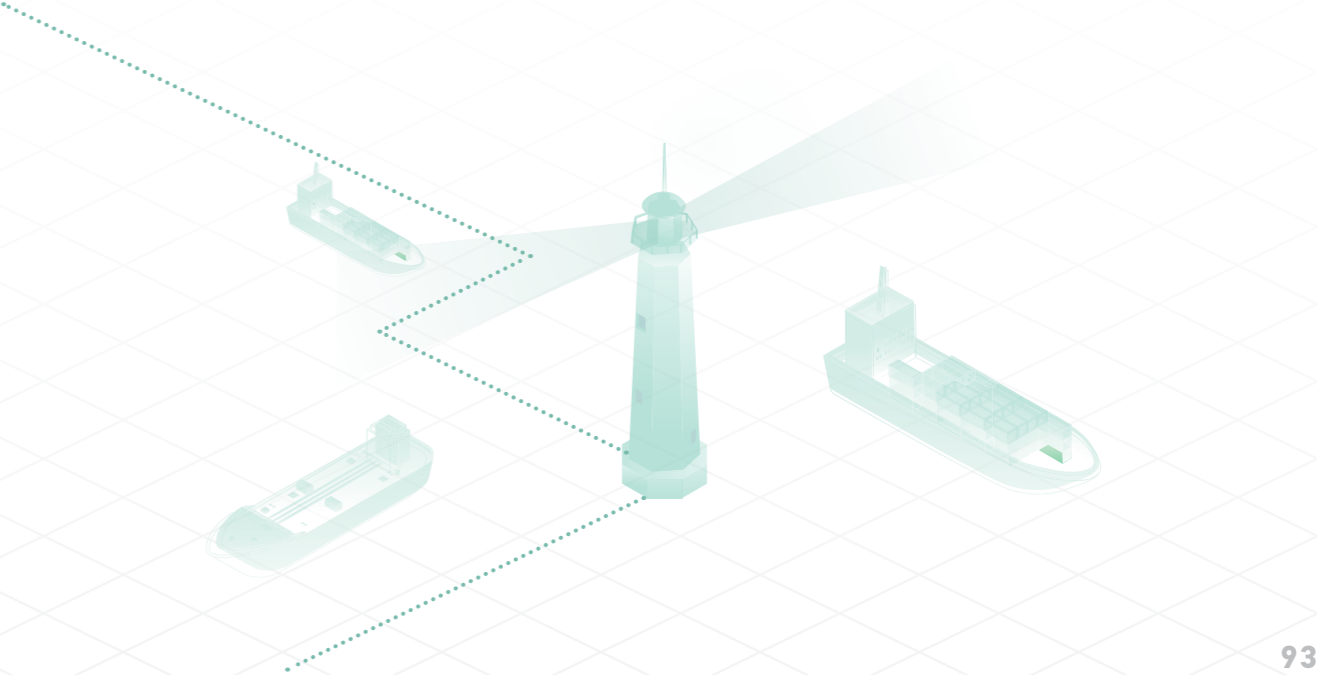
MPA’s corporate publication, Singapore Nautilus, offers up-to-date and engaging content on the maritime sector. Available online, in print, and via smartphone app SG Nautilus, Singapore Nautilus reaches out to over 3,000 stakeholders including members of the local and international maritime

community, port and marine officers, government agencies and academic institutions.

MPA produced two issues of the magazine in 2020. Issue 46 shone a spotlight on maritime safety, while Issue 47 drew attention to sustainability in the maritime sector.



Issues 46 and 47 of Singapore Nautilus





CHAPTER 07

CULTURE OF EXCELLENCE

The Maritime and Port Authority of Singapore (MPA) champions the values of Forward Thinking, Integrity, Respect, Service Excellence and Teamwork, or FIRST values. It works in close partnerships with a broad range of stakeholders and pursues sound and robust financial and governance policies.



MPA VALUES

FIRST values guide the behaviours and practices in MPA. They shape decision-making and foster a desired workplace culture.

MPA VALUES WEEK

Values Week 2020 celebrated and reinforced FIRST values in MPA. It comprised a series of activities including a learning journey to the Tuas Port worksite, an e-briefing on corporate governance and an e-bidding exercise for charity.

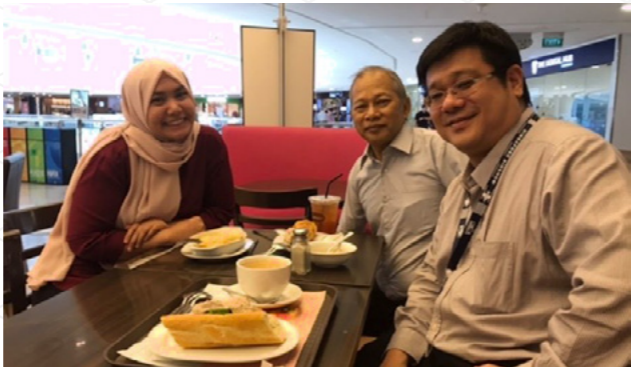


MPA Values Week 2020



MPA officers participating in a learning journey to the Tuas Port worksite in February 2020

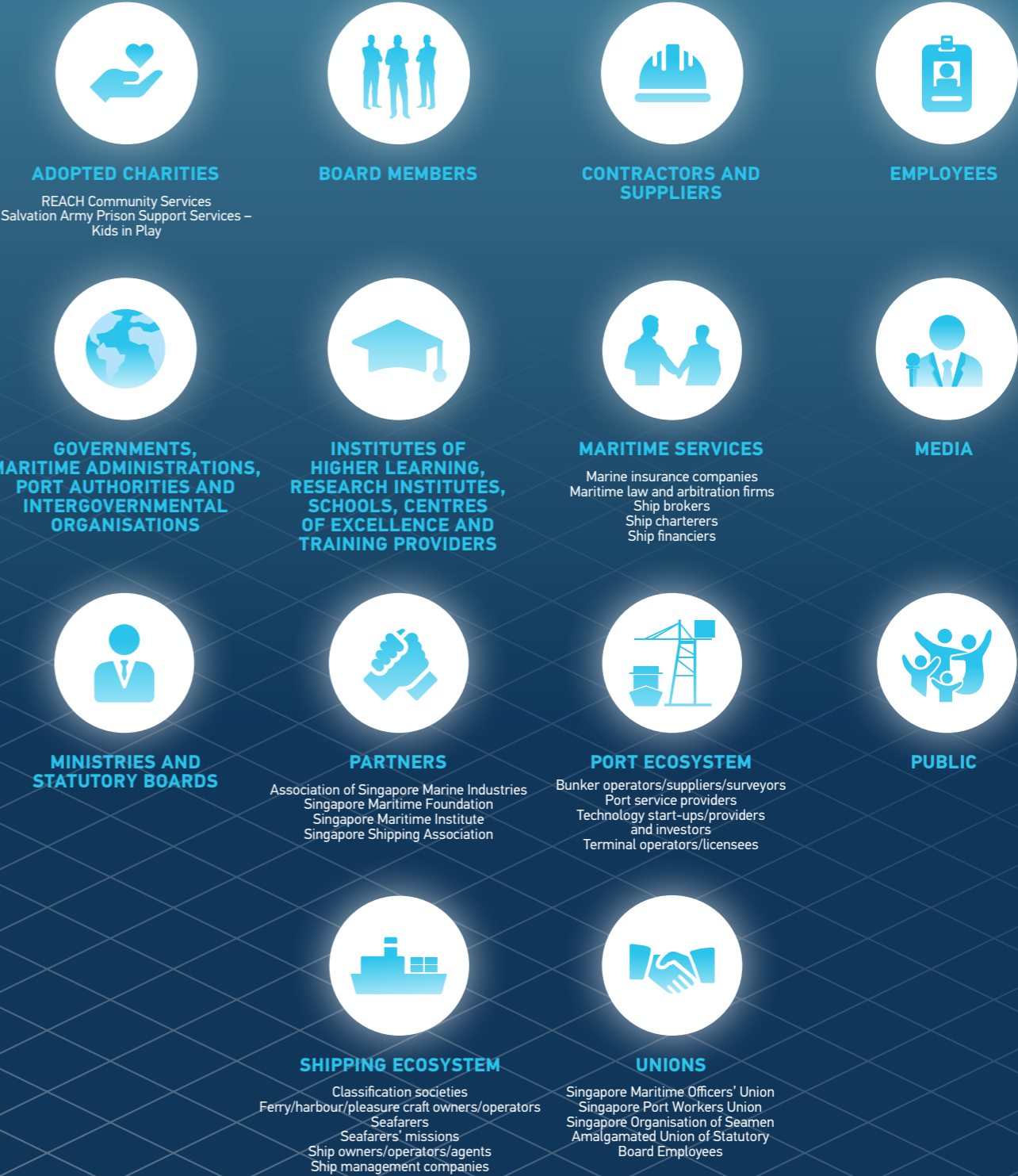
“Break The Ice” was a new key initiative of Values Week 2020. It promoted teamwork amongst employees across divisions in MPA. Officers came together for lunch to understand the functions of various teams and develop working relationships across the organisation.



MPA officers enjoying meals together as part of the cross-divisional “Break The Ice” initiative in February 2020

STAKEHOLDER ENGAGEMENT

OUR STAKEHOLDERS



APPOINTMENT OF ADJUNCT FELLOWS

To harness the rich experience and expertise of leaders in the maritime sector, the MPA Academy appoints maritime professionals as adjunct fellows and trainers. They possess years of valuable industry experience in a wide spectrum of domains such as ship management, terminal operations and port technology.

In 2020, MPA Academy appointed Mr Punit Oza, Executive Director of the Singapore Chamber of Maritime Arbitration,

and Mr Ong Kim Pong, Regional Chief Executive Officer (Southeast Asia) of PSA International, as Senior Adjunct Fellows. Mr Martin Marini, former General Counsel of MPA, was also appointed as an Adjunct Fellow. The Academy now has 10 Adjunct Fellows and trainers within its faculty. They lecture at the Academy's flagship programmes and conduct training courses.



Newly appointed Adjunct Fellows/ Senior Adjunct Fellows at the MPA Academy (left to right): Mr Punit Oza, Executive Director of the Singapore Chamber of Maritime Arbitration; Mr Ong Kim Pong, Regional Chief Executive Officer (Southeast Asia) of PSA International; and Mr Martin Marini, former General Counsel of MPA

SUPPLIER MANAGEMENT

MPA works with diverse suppliers to implement projects and support key initiatives. It collaborates with consultants, contractors and other suppliers to develop solutions for MPA and the maritime industry.

In all of its procurement activities, MPA adheres to the following key principles laid down for government procurement:

- **Transparency** – MPA subscribes to an open and transparent procurement regime across all stages of its procurement lifecycle. Whenever possible, MPA's procurement objectives, criteria and procedures are made known to suppliers.
- **Open and fair competition** – MPA provides suppliers with equitable access opportunities to compete on a level playing field. Such an open and competitive environment will encourage suppliers to give their best offers.
- **Value for money** – MPA derives value for money from the optimal balance of benefits and costs by taking into consideration several factors. These factors include suitability for the intended purpose, quality and reliability

of the goods or services, innovation and adaptability, sustainability and the total cost of ownership. Where appropriate, considerations of value for money may include the achievement of economic, social and environmental objectives. MPA also considers the adoption of procurement approaches and processes that are effective, efficient and proportional to the value and risks involved when implementation capacity, time constraints and cost effectiveness are taken into account. As such, value for money does not necessarily mean that a tender must be awarded to the lowest bidder.

All business partners, consultants, suppliers and contractors of MPA must adhere to safety control measures and adopt fair employment practices.

AWARDS RECEIVED IN 2020

09 January 2020

Public Sector Transformation Awards: Exemplary SkillsFuture @ Public Service Award

Mr Chua Chun Kang received the award for his dedication to deepening his competencies in data analytics. Passionate about using data to inform policymaking, Mr Chua attended programming and machine learning courses, as well as pursued a postgraduate degree in business analytics. He also participated in the inaugural run of the "Artificial Intelligence (AI) for Industry" programme to study and develop basic AI and data application skills.

Mr Chua put his newly acquired skills to good use by leading a team to develop a machine-learning algorithm to assist the MPA crew change team. Using a combination of automated web scraping, natural language processing and machine learning to predict and tag parent entities with crew change applications, the solution saved three and a half hours of manual tagging daily, achieving close to 90% in time savings.

09 August 2020

National Day Awards 2020

The Singapore National Day Awards recognise various forms of merit and service to Singapore. MPA is proud of the following award recipients:

The Public Administration Medal (Gold)

- Ms Tan Beng Tee

The Public Administration Medal (Bronze)

- Ms Chong Lee Fee
- Mr Gavin Yeo Joon Kwang

The Commendation Medal

- Mr Koh Thong Yong Francis

The Efficiency Medal

- Mr Nasharudin Bin Jantan
- Mr Ng Kah Siong
- Mr Tan Eng Wah

The Long Service Medal

- Mr Aszali Bin Arsarapi
- Mr Leong Choon Ernie
- Mr Lim Kar Wooi
- Mr V. Uthrapathi Utra
- Mr Leong Ming Vai Ace
- Mr Genghis Khan Bin Setarhan
- Mr Mohd Noor Bin Noordin
- Mr Ibrahim Bin Sharif
- Mr Omar Bin Hashid
- Mr Sawal Bin Waren

24 June 2020

International Association of Ports and Harbors (IAPH) World Ports Sustainability Awards – Community Outreach and Port City Dialogue: Port Development and License to Operate

The accolade recognises MPA's efforts in 'aligning and integrating port and community objectives for the betterment of both' in the development of Tuas Port. These efforts include developing community engagement programmes and managing the externalities of port expansion in urban environments.

As part of reclamation works, MPA conducted environmental impact assessments and adhered to strict environmental quality objectives to protect Singapore's marine biodiversity. Cooperating with volunteers and non-governmental organisations, MPA also implemented a S\$6 million programme in to relocate corals affected by the development of Tuas Port.

In addition, more than 50% of the total fill materials for reclamation in Phase 1 and 2 are recycled. For example, they are retrieved from the dredging of fairways and basins within the project site.



09 October 2020

HR Excellence Awards 2020 Singapore: Excellence in Digital Transformation (Gold) and Employer of the Year (Bronze)

HR Excellence Awards 2020 Singapore honours the best-in-class HR teams and individuals for outstanding work executed across HR functions. It has evolved to become the region's go-to benchmarking platform across industries. Award submissions are peer-reviewed by a jury of established HR practitioners.

MPA received the Gold Award for Excellence in Digital Transformation. The award recognised MPA's efforts at developing a customised employee experience that met the needs of its workforce through digital platforms.

MPA also obtained the Bronze Award for Employer of the Year. In this category, MPA was recognised for valuing employee welfare and supporting its workforce through holistic compensation and benefits, inclusive environments and talent development.



Mr David Foo, Senior Director (Operations Technology) of MPA, receiving the HR Excellence Awards 2020 Singapore: Excellence in Digital Transformation (Gold)

09 November 2020

Asian Freight, Logistics and Supply Chain (AFLAS) Awards: Best Seaport in Asia

Organised by freight and logistics publication Asia Cargo News, the AFLAS Awards honour organisations that display leadership as well as consistency in service quality, innovation, customer relationship management and reliability. Award winners are determined by votes cast by readers of the publication.

Singapore was crowned the 'Best Seaport in Asia' for the 32nd time at the 2020 AFLAS Awards ceremony held in Hong Kong.



Mr Mok Chak Yong,
Consul (Political)
of the Singapore
Consulate-General,
accepting the
AFLAS Awards: Best
Seaport in Asia on
behalf of MPA

19 November 2020

Champions of Good 2020

Champions of Good is a national recognition initiative of the Company of Good programme developed by the National Volunteer & Philanthropy Centre. It recognises organisations that not only are exemplary in corporate giving, but have also been a multiplier of good by engaging partners and stakeholders in a collaborative journey of giving.

This is the second time that MPA has been conferred the award for its sustained charity efforts in building a compassionate and collaborative society.



MPA was honoured as one of the 2020 Champions of Good

11 December 2020

Charity Silver Award

The Charity Awards recognise organisations and individuals for their donations to Community Chest. These donations come from sources including funds raised through charity events and contributions from Community Chest's monthly giving programme SHARE.

In 2020, MPA received the Charity Silver Award for its donation of S\$100,233 to Community Chest (the qualifying donation for the Charity Silver Award is between S\$100,000 and S\$199,999).

26 March 2021

Minister's Innovation Award

The Minister's Innovation Award promotes and rewards innovation within the Ministry of Transport (MOT) and its statutory boards. In 2020, MPA received the following awards:

- Distinguished Award
 - The Singapore Crew Change Framework and Guidebook During COVID-19 Pandemic (A joint submission by the Civil Aviation Authority of Singapore (CAAS), MOT and MPA; together with Singapore Shipping Association, Singapore Maritime Officers' Union and Singapore Organisation of Seamen)
 - Floating Accommodations to Support Whole-of-Government Fight Against COVID-19 (A joint submission by CAAS, Land Transport Authority, MOT and MPA; together with PSA Singapore)
 - #WeCouldntSayNothingAtAll – Responding to Online Falsehood
- Merit Award
 - digitalPORT@SG™ Phase 1
 - New Ship Mast Height Detection System

Minister's Value-For-Money Achievement Award

The Minister's Value-For-Money Achievement Award encourages agencies in the MOT family to develop projects that achieve value for money in their organisations.

In 2020, MPA received the following awards:

- Distinguished Award
 - Automated Saline Application for Caissons
- Merit Award
 - Digital Transformation of One-Stop Document Centre
- Special Mention
 - Streamline Management of MPA Corporate and Staff Needs



Recipients of the Minister's Innovation Award and Minister's Value-For-Money Achievement Award

MPA'S AWARDS MILESTONE

1996

-1998

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award

1999

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award
- Culture of Excellence
 - Singapore Quality Class
- Choice Employer
 - SAF Award for Employers

2000

Safe, Efficient & Sustainable Global Hub Port

- Best Bunkering Policy Award
- Best Seaport in Asia Award
- Choice Employer
 - SAF Award for Employers
 - Singapore Health Award

2001

Safe, Efficient & Sustainable Global Hub Port

- Best Bunkering Policy Award
- Best Seaport in Asia Award
- Culture of Excellence
 - Singapore Quality Class
- Choice Employer
 - SAF Award for Employers
 - Singapore Health Award

2002

Safe, Efficient & Sustainable Global Hub Port

- Best Bunkering Policy Award
- Best Seaport in Asia Award
- Maritime Knowledge & Innovation Hub
 - Intelligent20 Award
 - MOT Minister's Innovation Award
- Choice Employer
 - People Developer

2003

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award
- Maritime Knowledge & Innovation Hub
 - CIO 100 Honourees 2003
 - Enterprising Agency Award
 - Intelligent20 Award
 - MOT Minister's Innovation Award
- Culture of Excellence
 - Public Service Milestone Award
 - Singapore Quality Class

2004

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award
- Seatrade Award for Safety at Sea

Maritime Knowledge & Innovation Hub

- Enterprising Agency Award
- MOT Minister's Innovation Award

Culture of Excellence

- Singapore Chest Award

Choice Employer

- MHA Award for NSmen's Employers
- SAF Award for Employers
- Singapore Health Award

2005

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award

Maritime Knowledge & Innovation Hub

- Enterprising Agency Award
- MOT Minister's Innovation Award

Strong Partnerships

- PEP-SBF Pro-Enterprise Award

2006

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award

Maritime Knowledge & Innovation Hub

- MOT Minister's Innovation Award
- The Enterprise Challenge Public Service Award

Culture of Excellence

- Singapore Quality Class

Strong Partnerships

- PEP-SBF Pro-Enterprise Award

2007

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award

Maritime Knowledge & Innovation Hub

- MOT Minister's Innovation Award

Strong Partnerships

- PEP-SBF Pro-Enterprise Award

Choice Employer

- Home Team NS Awards for Employers (Special Award)

2008

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award
- Best Seaport (ASEAN)
- Environment Protection Award (Joint award with NewEarth Pte Ltd)
- Port Authority Award (Seatrade Asia Award)

Maritime Knowledge & Innovation Hub

- MOT Minister's Innovation Award

Strong Maritime Singapore Identity

- Convention of the Year Award

Strong Partnerships

- PEP-SBF Pro-Enterprise Award

Choice Employer

- May Day Model Partnership Award
- Singapore Health Award

2009

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award

Maritime Knowledge & Innovation Hub

- MOT Minister's Innovation Award

Strong Maritime Singapore Identity

- Trade Conference of the Year Award

Culture of Excellence

- Singapore Quality Class

Strong Partnerships

- PEP-SBF Pro-Enterprise Award

Choice Employer

- May Day Model Partnership Award

MPA'S AWARDS MILESTONE

2010


Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award
- Port Authority Award (Seatrade Asia Award)
- Port of the Year Award


Maritime Knowledge & Innovation Hub

- MOT Minister's Innovation Award


Culture of Excellence

- Community Chest Award 

Strong Partnerships

- PEP-SBF Pro-Enterprise Award 

Choice Employer

- Honorary Member of the Minister for Defence Awards League
- Singapore Health Award 

2011

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award
- Safeguard Strategic Maritime Interests & An Influential Voice
- Norwegian Business Association (Singapore) Award


Maritime Knowledge & Innovation Hub

- MOT Minister's Innovation Award

Culture of Excellence

- Eco-Office Certification

Strong Partnerships

- PEP-SBF Pro-Enterprise Award 

Choice Employer

- MHA Award for NSmen's Employers
- People Developer

2012

Safe, Efficient & Sustainable Global Hub Port

- Best Green Service Provider – Seaport
- Best Seaport in Asia Award


Maritime Knowledge & Innovation Hub

- MOT Minister's Innovation Award


Quality Maritime Workforce

- The International Committee on Seafarers' Welfare Award – Drop-in Centre of the Year

Culture of Excellence

- Community Chest Award 
- Public Service Milestone Award

Strong Partnerships

- PEP-SBF Pro-Enterprise Award 

2013

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award
- Environmental Campaign of the Year Award
- Port of the Year Award

Maritime Knowledge & Innovation Hub

- MOT Minister's Innovation Award
- MOT Minister's Value-For-Money Achievement Award

Culture of Excellence

- Singapore Quality Class Star

2014

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award

Maritime Knowledge & Innovation Hub

- MOT Minister's Innovation Award
- MOT Minister's Value-For-Money Achievement Award

Quality Maritime Workforce

- International Seafarers' Welfare Awards 2014 (1 of 5 finalists)
- MPA Academy achieved accredited VTS training centre status by IALA

2015

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award

Maritime Knowledge & Innovation Hub

- MTI Innovation Award
- MOT Minister's Innovation Award
- MOT Minister's Value-For-Money Achievement Award

Strong Maritime Singapore Identity

- 29th International ARC Awards 
- Gold Tabbie Award


Culture of Excellence

- Eco-Office Re-certification
- Happy Toilet Re-certification

Culture of Excellence

- Corporate ISO Certification
- International Best Practice Competition 2014 
- Restroom Association of Singapore 4-star Happy Toilet Certification
- Team Symposium 2014 

Strong Partnerships

- PEP-SBF Pro-Enterprise Award 

Choice Employer

- May Day Model Partnership Award

2016

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award
- Green Ports Award System
- Top 50 Engineering Feats @ IES-SG50 Award

Maritime Knowledge & Innovation Hub

- CAPAM International Innovations Awards (one of the semi-finalists)
- MOT Minister's Innovation Award
- MOT Minister's Value-For-Money Achievement Award

Strong Maritime Singapore Identity

- 2016 ARC Awards

Choice Employer

- May Day Model Partnership Award
- NS Advocate Award
- People Developer

Strong Partnerships

- PEP-SBF Pro-Enterprise Award 

Culture of Excellence

- 6th Asia Best CSR Practices Awards 2016
- ASEAN Corporate Sustainability Summit and Awards 2016
- Asia Responsible Entrepreneurship Award
- ComChest Special Events Gold Award 
- Eco-Office Re-certification
- International SeaKeepers Society Asia Achievement Award
- PS21 ExCEL Award: Most Innovative Project/Policy
- PS21 Star Service Team Award
- Singapore Quality Award

2017

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia Award


Maritime Knowledge & Innovation Hub

- MOT Minister's Innovation Award
- MOT Minister's Value-For-Money Achievement Award

Strong Maritime Singapore Identity


- 23rd Annual Communicator Awards
- 2017 Galaxy Awards

Culture of Excellence

- ComChest Corporate Gold Award 

- Eco-Office Re-certification
- European Society for Quality Research Quality Achievements Awards 2017
- Golden Peacock Global Award for Sustainability
- International Best Practice Award
- Organisation-Wide Innovation Award
- MPA ISO 9001:2008 Corporate Re-certification
- PS21 Star Service Team Award
- Public Service Premier Award

Strong Partnerships

- PEP-SBF Pro-Enterprise Award 
- Public Sector Pro-Enterprise Initiative Award

2018

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia
- Green Ports Award System
- GREEN4SEA Awards
- Maritime 2020 & LNG Asia Summits

Maritime Knowledge & Innovation Hub

- 6th International Best Practice Competition
- CAPAM International Innovations Awards

- Caterpillar and INFORMS Analytics Society Innovative Applications in Analytics Award
- MOT Minister's Innovation Award
- MOT Minister's Value-For-Money Achievement Award
- New Silk Road CEO of the Year Awards 2018

Quality Maritime Workforce

- International Seafarers' Welfare Award – Port of the Year


Strong Maritime Singapore Identity

- Public Sector Transformation Awards

Culture of Excellence

- Champions of Good 2018
- Charity Bronze Award 
- MPA ISO 9001:2015 Corporate Re-certification
- National Day Awards 2018

Strong Partnerships

- Honorary Fellowship by the Institute of Chartered Shipbrokers
- PEP-SBF Pro-Enterprise Award 

2019

Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia
- Best Green Seaport
- Exemplary Innovator Award
- ShipTek International Awards – Port Authority of the Year

Maritime Knowledge & Innovation Hub

- MOT Minister's Innovation Award
- MOT Minister's Value-For-Money Achievement Award

Quality Maritime Workforce


- International Seafarers' Welfare Awards – Port of the Year

Culture of Excellence


- Charity Gold Award 
- Innovation Excellence Award
- MPA ISO 9001:2015 Corporate Re-certification
- National Day Awards 2019

Strong Partnership

- PEP Best Suggestion (Supporting Agency) Award

- Public Sector Pro-Enterprise Initiative Award 

Choice Employer

- NTUC May Day Awards 

2020


Safe, Efficient & Sustainable Global Hub Port

- Best Seaport in Asia
- IAPH World Ports Sustainability Awards – Community Outreach and Port City Dialogue: Port Development and License to Operate


Maritime Knowledge & Innovation Hub

- MOT Minister's Innovation Award
- MOT Minister's Value-For-Money Achievement Award

Culture of Excellence

- Champions of Good 2020
- Charity Silver Award 
- Exemplary SkillsFuture @ Public Service Award
- National Day Awards 2020

Choice Employer

- Employer of the Year (Bronze) 
- Excellence in Digital Transformation (Gold)

CHAPTER 08

CHOICE EMPLOYER

The workplace and staff engagement policies of the Maritime and Port Authority of Singapore (MPA) centre on three key thrusts.

- digitalMPA: MPA adopts technology and digitalise its work processes to foster collaboration, support job functions and drive efficiency at work. It employs data to support decision-making and enhance operations.
- talentMPA: To meet the career aspirations of its employees and the manpower needs of the organisation, MPA develops its officers professionally and grow their careers in MPA and the public service.
- oneMPA: MPA engages its officers regularly and supports their safety and well-being. It works closely with the Amalgamated Union of Statutory Board Employees (AUSBE) to develop a motivated and engaged workforce, as well as a healthy workplace environment.



DIGITALMPA

MYMPA MOBILE APP

Launched in 2020, myMPA mobile app enables MPA officers to access staff services conveniently on the go. Besides leave application and approval as well as the submission of transport claims, the mobile app includes features such as a staff directory, an IT issue reporting channel and Ask CE – a platform that allows officers to pose questions to the Chief Executive of MPA directly. Officers can also receive organisational news and announcements on the go with myMPA mobile app. Additionally, the mobile app provides access to pooled services adopted by the civil service such as DWP mobile, Workplace (from Facebook) and LEARN. MPA will continue to upgrade myMPA mobile app to include features that support its employees at work.

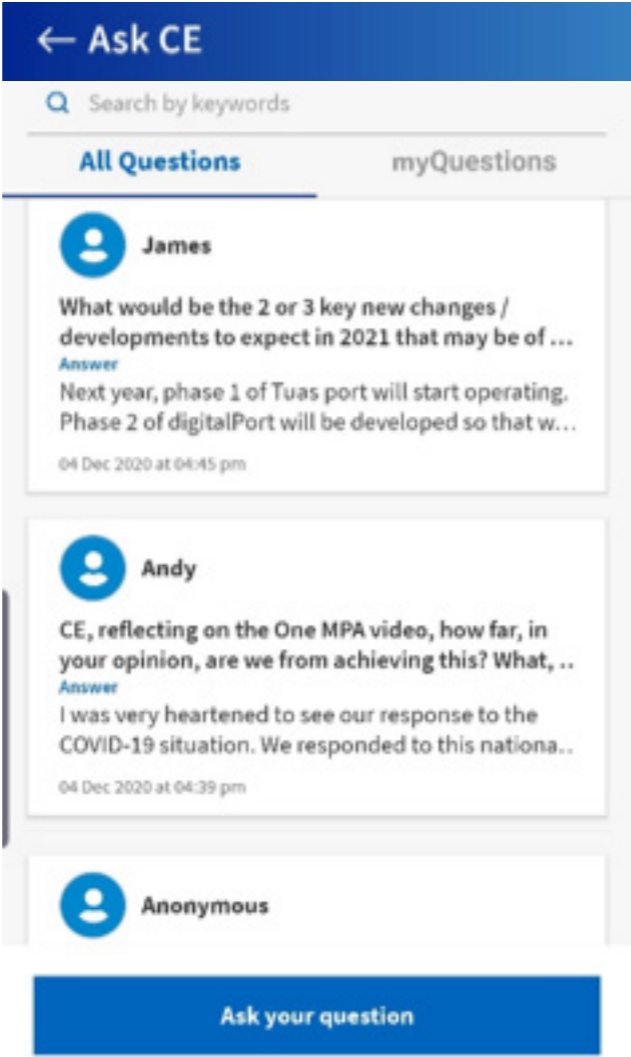
DIGITALISATION OF PROCUREMENT AND FINANCIAL PROCESSES

MPA automated and digitised various financial and procurement processes through electronic workflows. To enhance process efficiency during the COVID-19 pandemic, MPA also fully adopted electronic signature for concluding government procurement contracts and payment approvals.

DATA CENTRE ENHANCEMENTS

In optimising space to support the growth of IT infrastructure requirements, MPA reconfigured its Media Library Room to house servers and network devices. In 2020, all server racks were installed with dual power distribution units for power redundancy to enhance the resilience of servers and devices in the data centre. Additionally, MPA installed a new air-cooled chiller to meet the cooling needs of the data centre.

To upgrade the data centre, MPA will develop an agile IT system by building a new hyper-converged infrastructure to virtualise all the elements of conventional hardware-defined



myMPA mobile app

systems. Such a set-up will lead to simplified infrastructure provisioning and increased resource utilisation. The upgrade aims to reduce the recovery time of critical information infrastructure at the disaster recovery site. MPA will build data security, cloud and applications into the data centre to strengthen its cybersecurity posture at the IT infrastructure level.

TALENTMPA

CHANGE LEADERS PROGRAMME

As part of leadership development, MPA introduced the Change Leaders Programme for selected officers to address complex issues within the industry and drive organisational transformation. Change Leaders run teams to work on 17 commissioned projects that represent

areas of high strategic priorities for the organisation. In addition, the Change Leaders Programme offers structured professional training and group coaching to help officers develop personal awareness, understand team dynamics and explore ways to lead changes in the new normal.



Participants of the Change Leaders Programme undergoing professional training and group coaching

PERFORMANCE MANAGEMENT

MPA adopts a performance-based rewards approach and conducts compensation benchmarking to ensure that remuneration is competitive.

In 2020, MPA enhanced its performance management practice for implementation in 2021 to sharpen performance review for all its officers. Besides assessing

key work deliverables, the enhanced annual appraisal exercise evaluates an officer's demonstration of FIRST (Forward thinking, Integrity, Respect, Service Excellence and Teamwork) values and leadership competencies. This enhancement will enable a holistic review of an employee's performance and help officers to understand their strengths and areas of improvement.

STRUCTURED JOB ROTATION

MPA developed a Structured Job Rotation programme based on the recommendations of MPA's Career Development Workstream. The initiative enables MPA officers to undergo systematic job rotation and training. The job rotation programme creates diverse career pathways within the organisation, builds an agile workforce and develops a workplace culture of continuous learning. It empowers employees to broaden their skillsets and take charge of their own career development.

The Structured Job Rotation exercise will be implemented in phases beginning from the fourth quarter of 2020. MPA will conduct regular reviews of the Structured Job Rotation programme to meet the career aspirations of its officers and support manpower development in the organisation.

LIFELONG EMPLOYABILITY AND ACCELERATED PROGRAMME

MPA's Lifelong Employability and Accelerated Programme aims to build re-employment awareness, provide training support and facilitate career transition for MPA's experienced officers ahead of their re-employment in the organisation. The programme supports regular

communication between experienced officers and their Heads of Department to help employees plan ahead and acquire the necessary skills to remain employable, should they wish to be re-employed.

TRAINING AND E-LEARNING

MPA is committed to the professional development of its officers to enable employees to perform their roles effectively. In growing the domain expertise and knowledge of its officers, the MPA Academy engaged Videotel – an online maritime training provider – to enable Marine Surveyors and other enrolled officers to acquire knowledge in areas such as risk management, ship operations and marine safety through videos.

Additionally, MPA officers in the Hydrographic Division attended in-house hydrographic survey and cartography programmes, as well as local and overseas courses accredited by the International Federation of Surveyors, International Hydrographic Organization and International Cartographic Association. MPA also actively participates in the development and maintenance of national and

international training materials in hydrography, cartography and marine geospatial data and information.



MPA officers attending the in-house Basic Hydrographic Survey course via video conference



'Shipping Entity and Ecosystem Knowledge' webinar: Mr Punit Oza (top left), Executive Director of the Singapore Chamber of Maritime Arbitration and MPA Academy Senior Adjunct Fellow; Mr Rashpal Bhatti (top right), Senior Vice President, Maritime and Supply Chain Excellence, BHP; Mr Apostolos Boutos (bottom left), General Manager, Thenamaris Singapore Pte Ltd; and Mr Michael Jorgensen (bottom right), Head of Dry Bulk, Torvald Klavness

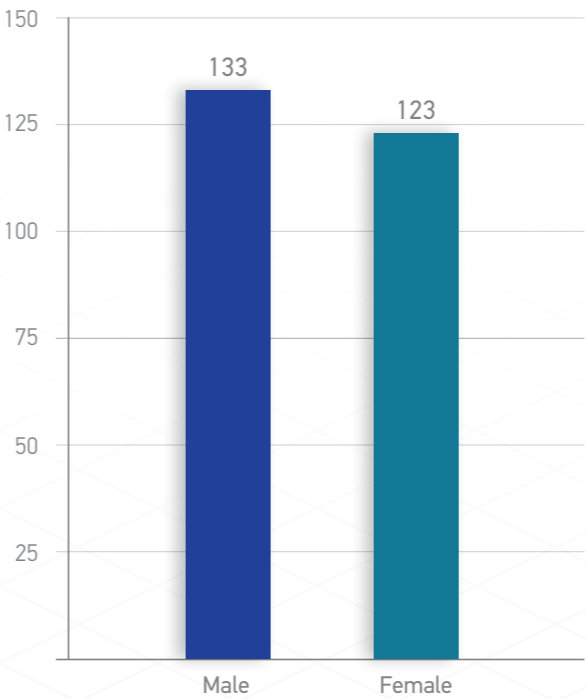
As part of the Concept of Operations for Port Inspector Enforcement Regime 2020 and Beyond, MPA developed the Port Inspector Training and Competency Framework to map out the training requirements of a Port Inspector at various stages of career progression. The framework addresses the learning needs and certification requirements of a Port Inspector in areas such as (i) daily operations; (ii) enforcement; (iii) investigation; and (iv) emergency and incident response.

In 2020, the MPA Academy conducted a webinar training series titled 'Shipping Entity and Ecosystem Knowledge' to help MPA officers build their knowledge on the maritime industry. The series introduced the roles and activities of players in the shipping ecosystem and discussed the experience of working in other maritime centres across the globe.

Despite the COVID-19 pandemic, MPA officers continued to upgrade themselves via e-learning. In 2020, they accumulated 70,452 learning hours, averaging 105 learning hours per officer. By embracing digital learning, employees attended about half of their courses online. They completed digital learning modules on topics such as cyber and data security. To build the digital competencies of MPA officers, the MPA Academy also ran training programmes in areas such as data analytics, design thinking and cybersecurity. Besides conducting virtual workshops to familiarise employees with new digital workplace tools and services, MPA also produces monthly e-newsletters with the Cyber Security Agency of Singapore to promote best practices on managing cybersecurity threats within MPA and the maritime community.

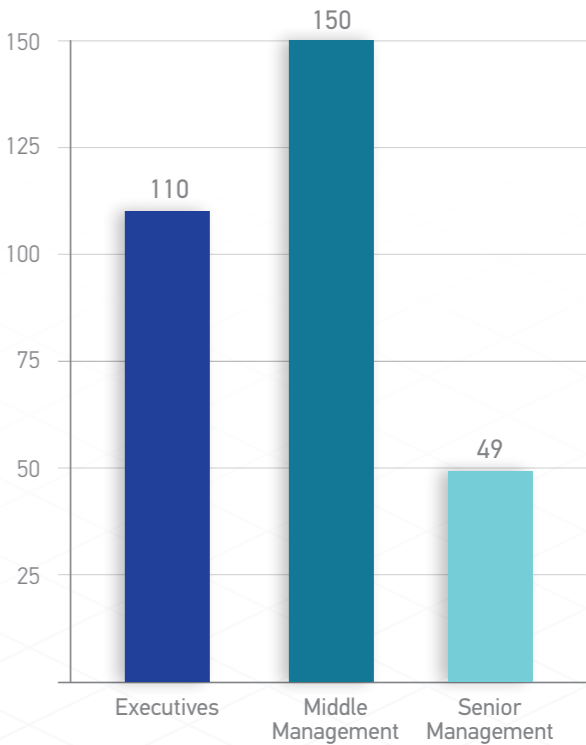
AVERAGE TRAINING HOURS PER OFFICER IN 2020 BY GENDER

Average Training Hours Per Officer



AVERAGE TRAINING HOURS PER OFFICER IN 2020 BY EMPLOYEE CATEGORY

Average Training Hours Per Officer



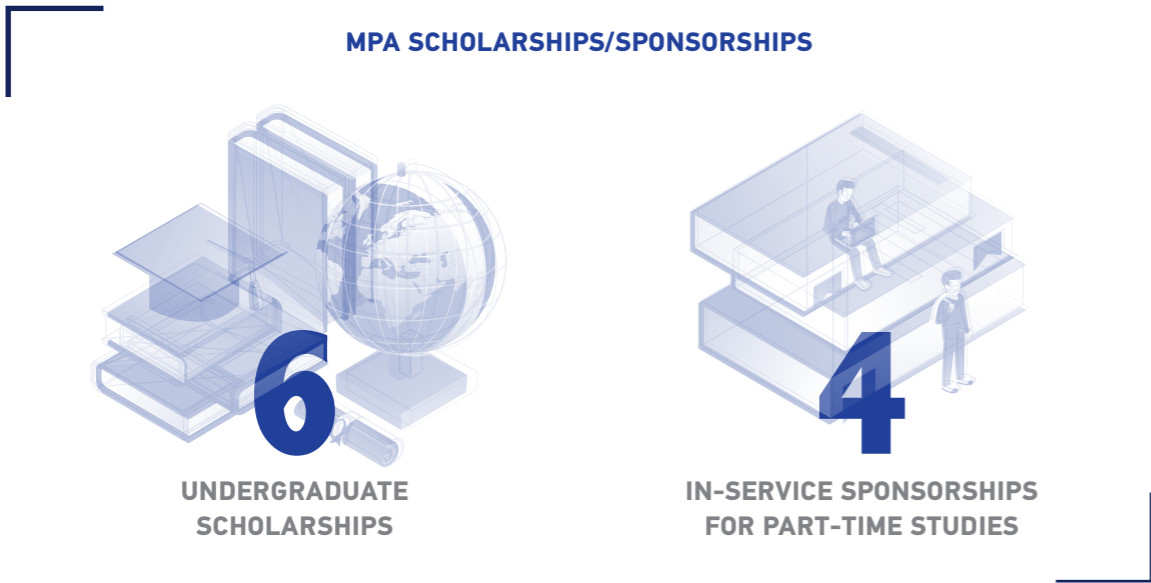
SPONSORSHIPS AND DEVELOPMENTAL OPPORTUNITIES

MPA offers various sponsorships and developmental opportunities to groom talents for the organisation and the maritime industry. In 2020, MPA offered six scholarships to support outstanding individuals in their undergraduate studies at local and overseas universities. Scholarship recipients also take on internships in MPA to gain working experience and understand the maritime sector.

Furthermore, MPA helped four officers attain higher professional/educational qualifications through the MPA

In-Service Sponsorship Programme for Part-Time Studies. This sponsorship not only champions continuous and lifelong learning, but also fosters the personal and professional development of officers beyond their areas of work.

Other developmental opportunities available to MPA officers include working in cross-functional project teams, job rotations, attachments and secondments to other government agencies.



DOCUMENTING INSTITUTIONAL KNOWLEDGE

To ensure that valuable institutional knowledge is preserved and documented, the MPA Academy has been conducting oral history interviews with key maritime pioneers and leaders over the past five years. In 2020, the MPA Academy interviewed (former) MPA employees including

experienced rank and file officers. Their accounts offer valuable insights into the evolution of MPA's work in areas such as port operations, vessel traffic information services and hydrography.

ONEMPA

MPA encourages regular communication between employees and Senior Management. As such, staff engagement is instituted as a regular exercise in MPA. In 2020, MPA ran four e-townhall sessions on (i) Workplan 2020 and the COVID-19 pandemic; (ii) Disruption and the new normal; (iii) Digitalisation for Maritime Singapore and

MPA; and (iv) Decarbonisation and the road ahead in 2021. During these quarterly e-townhall sessions, MPA's Senior Management updated its officers on developments in the organisation and the maritime industry. Besides preparing employees for upcoming changes, Senior Management also received feedback on achievements

and improvements in MPA. The e-townhall sessions fostered two-way communication and candid discussions between Senior Management and MPA officers on issues such as professional development, industry transformation

and staff well-being. In addition, MPA conducted informal dialogue sessions, virtual chats and online teambuilding activities regularly to engage its officers and reinforce a culture of feedback in MPA.



Dialogue session with the MPA Senior Leadership Team at an e-townhall session

MPA's Internal Audit Department operates a dedicated whistle-blowing channel ethics@mpa.gov.sg for employees, suppliers and other stakeholders to report fraud, corruption or unethical practices in good faith without fear of reprisals. In the reporting year, there were no critical concerns on ethics and integrity raised to the Board through the whistle-blowing channel.

In 2020, MPA began to run an internal e-newsletter, 'Transform Today!'. The regular e-newsletter provides MPA officers with timely updates on organisational happenings and insights into the work undertaken by various divisions.

Additionally, MPA officers celebrated Lunar New Year together and conducted an observance ceremony for National Day in 2020. These celebrations promoted bonding and interaction amongst MPA officers across divisions. The MPA Senior Management Team also visited frontline officers during public holidays to show its appreciation for employees working shifts.



Transform Today! Issue 12



Lunar New Year celebrations in February 2020



National Day observance ceremony



MPA's Senior Management visiting frontline officers at the Port Operations Control Centre during Lunar New Year

As part of staff engagement during the COVID-19 pandemic, officers participated in an internal masks design competition and voted for their favourite mask designs. The five winning entries were produced for distribution amongst employees.



Winning entries of the mask design competition

WORKPLACE SAFETY AND HEALTH

WSH STRATEGY

MPA prioritises workplace safety and health (WSH) to ensure that its employees are safe and healthy at work. All MPA officers play their part in following standard operating procedures where applicable, while ensuring that their workspaces are free from safety hazards.

MPA's WSH strategy and its key outcomes are outlined as follows:



MPA's WSH Committee drives the overall WSH strategy. Chaired by Senior Director (Operations Technology), the WSH Committee comprises representatives from the Operations Cluster, the Human Resource Division and AUSBE.

WSH PERFORMANCE

MPA consistently strives to improve safety and health in the workplace. In 2020, WSH became exceptionally vital as the COVID-19 pandemic brought about challenges associated with safe management measures and work-from-home

arrangements. Despite these challenges, MPA's efforts at promoting and enforcing WSH led to improvements in WSH performance. The number of work-related or workplace incidents reduced from 3 in 2019 to 1 in 2020.



WSH INITIATIVES

To champion a safety-first culture, MPA disseminated email bulletins on workplace safety regularly to promote a high level of safety consciousness amongst MPA officers, particularly those working onsite. It appointed Safe Management Officers to champion and monitor compliance to COVID-19 safe management measures within MPA’s premises.

MPA ran several initiatives to improve the mental well-being of its officers and help them adapt to the demands of working from home. Employees received care packs prepared by colleagues including members of the Senior Management Team. MPA also conducted wellness programmes and virtual interest group sessions including online yoga classes. Additionally, MPA introduced vending machines that adopt contactless technology to provide officers with convenient access to stationery and IT accessories as well as a wide selection of subsidised snacks and drinks.



MPA’s Senior Management and officers preparing care packs for distribution in February 2020



MPA officers receiving care packs in February 2020

To improve the health and well-being of its officers, MPA conducted a Human Factor Study to address concerns of fatigue amongst officers managing vessel traffic services (VTS). Following the examination of various shift patterns, MPA reduced the frequency of night shifts for VTS operators and implemented a forward shift pattern that minimises disruption to an officer’s circadian cycle. It also reviewed the distribution of off-screen periods to ensure VTS operators are sufficiently rested between watches. These adjustments, which reduce fatigue amongst VTS operators, enhance navigational safety in the Port of Singapore.

LABOUR RELATIONS

MPA continues to build a collaborative relationship with AUSBE. Both MPA and AUSBE share a common objective of strengthening tripartite collaboration and enhancing the well-being and career prospects of its officers.

MPA values feedback from AUSBE and its branch committee. It regularly convenes union-management meetings to

address issues such as the professional development of MPA employees and the welfare of its officers. MPA’s Senior Management and AUSBE representatives also participate in informal activities to foster a harmonious working relationship between MPA and the union.

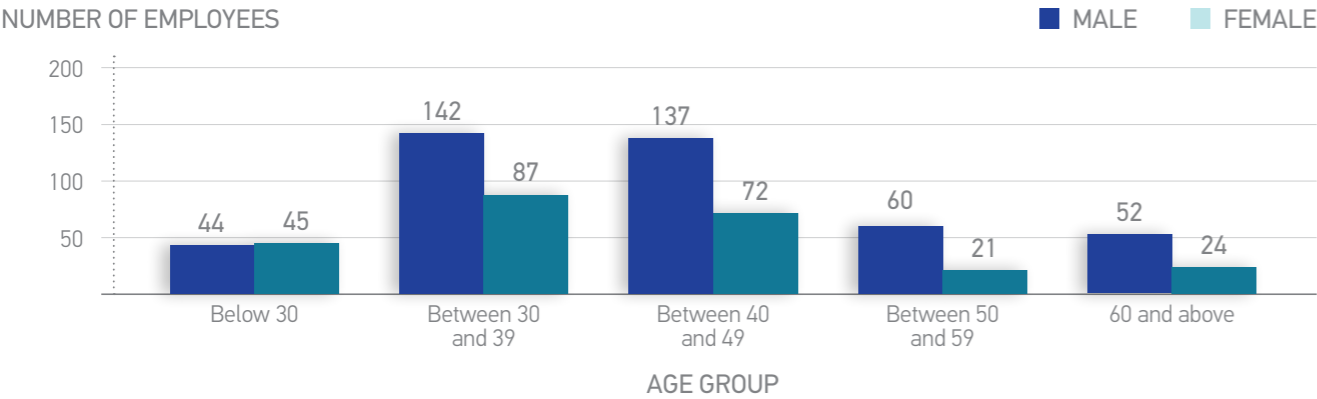
In 2020, 61.4% of MPA officers were unionised under AUSBE.



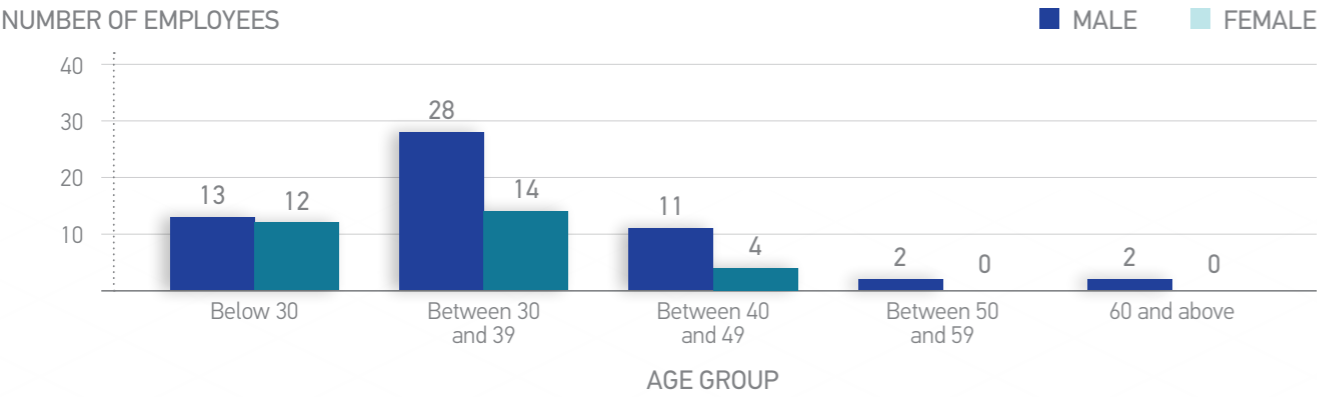
Lunar New Year luncheon with AUSBE members and MPA’s Senior Management in February 2020

2020 EMPLOYEE DEMOGRAPHICS

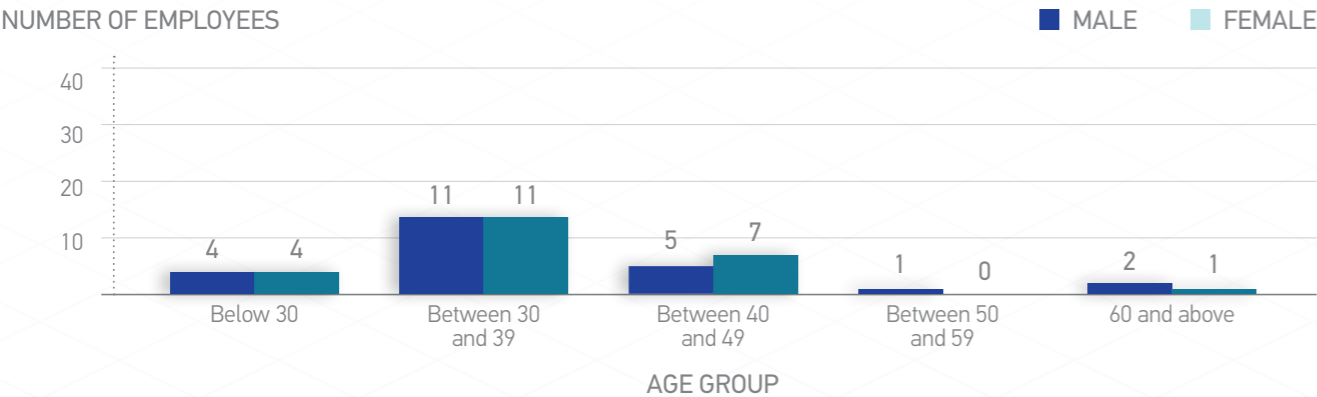
EMPLOYEES' AGE PROFILE BY GENDER



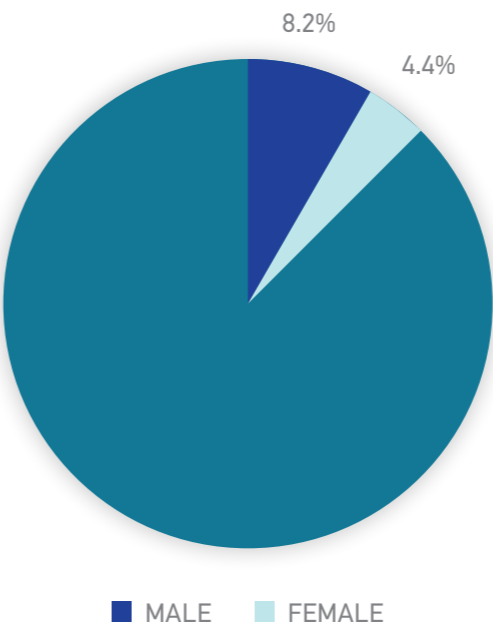
NEW HIRES BY GENDER



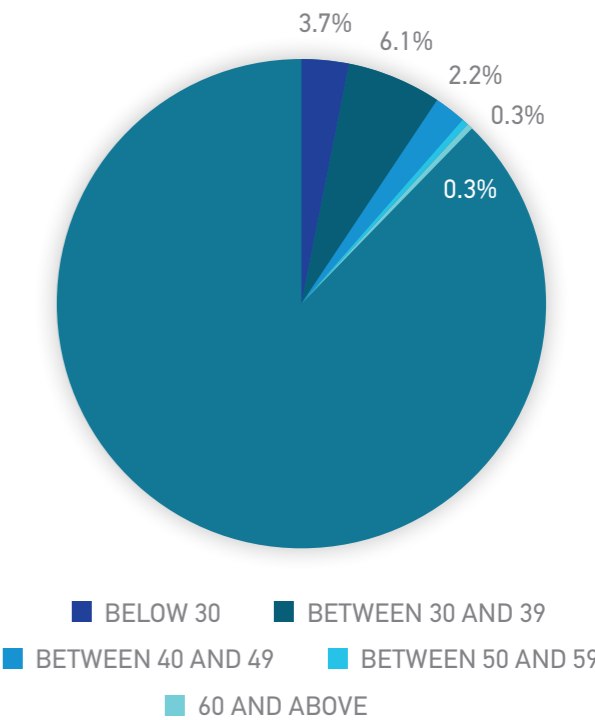
TURNOVER BY GENDER



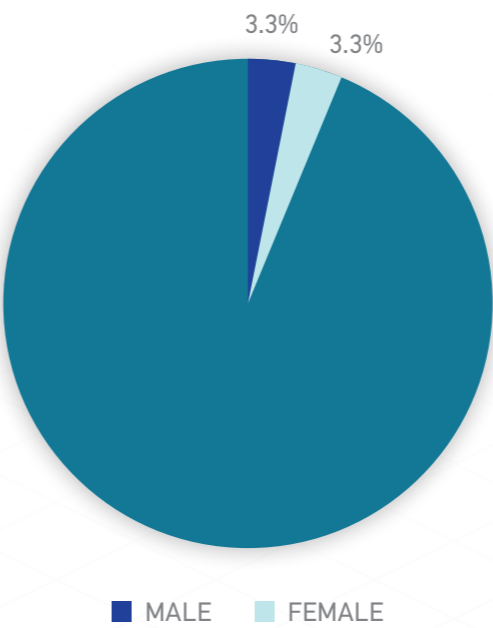
RATE OF NEW HIRES BY GENDER



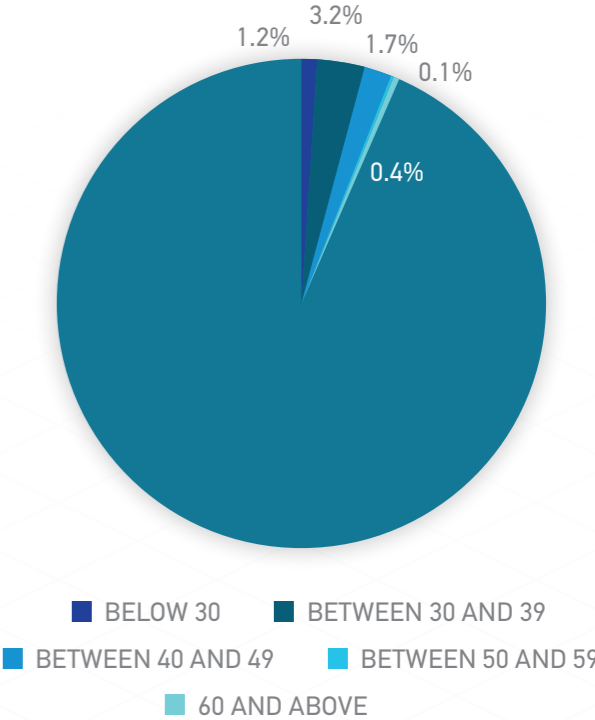
RATE OF NEW HIRES BY AGE GROUP



RATE OF TURNOVER BY GENDER



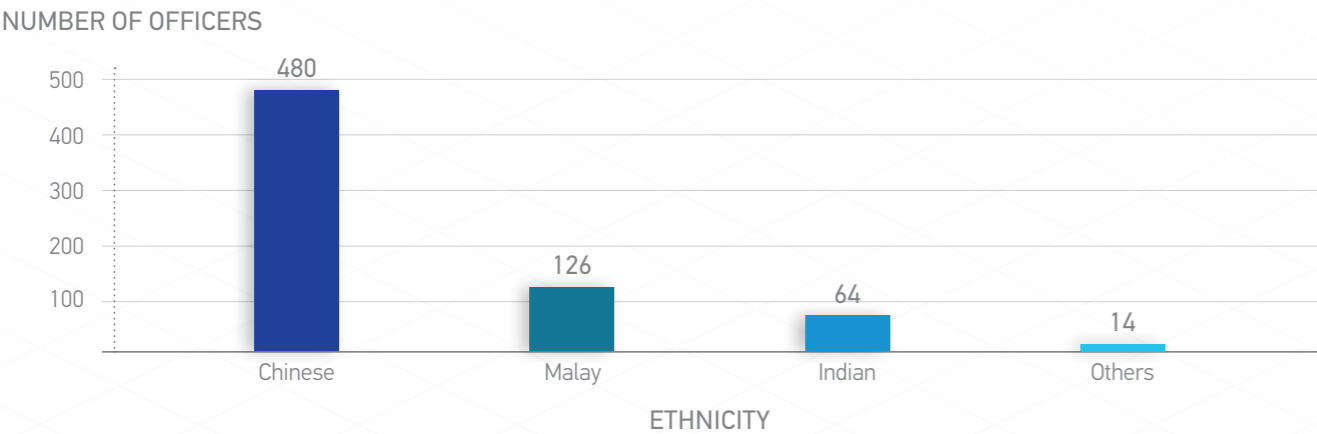
RATE OF TURNOVER BY AGE GROUP



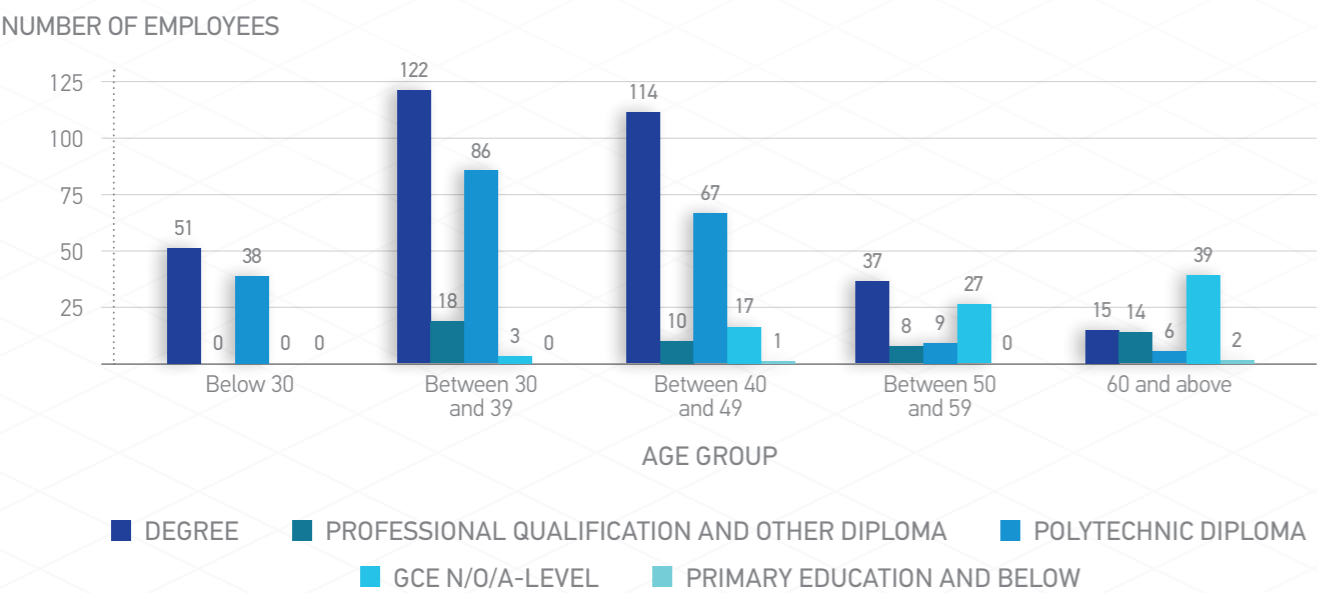
CATEGORIES OF EMPLOYEES BY GENDER



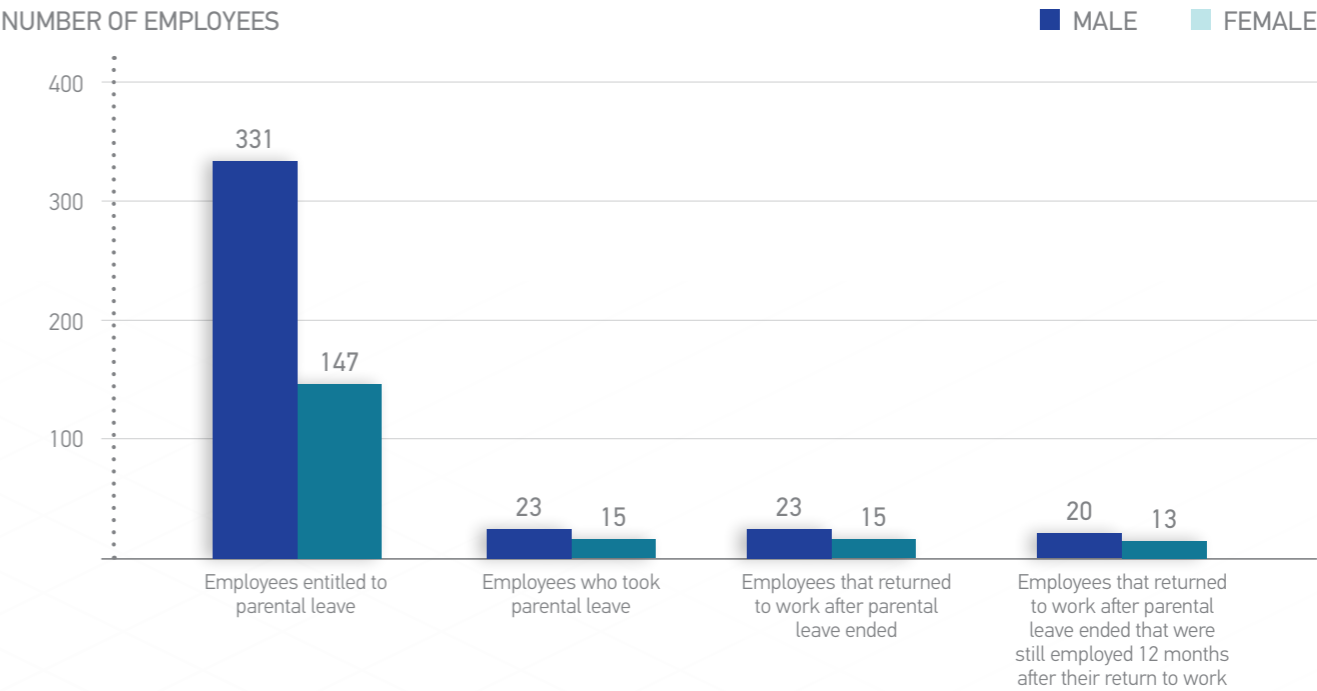
WORKFORCE BY ETHNICITY



EDUCATION LEVELS OF EMPLOYEES BY AGE GROUP

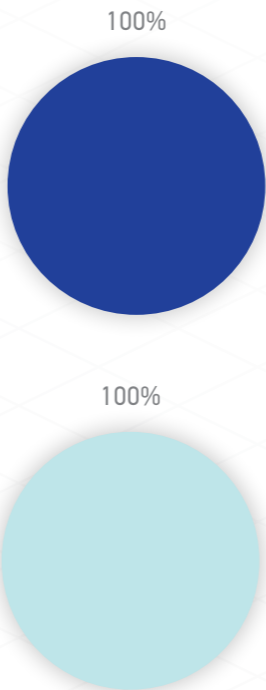


PARENTAL LEAVE



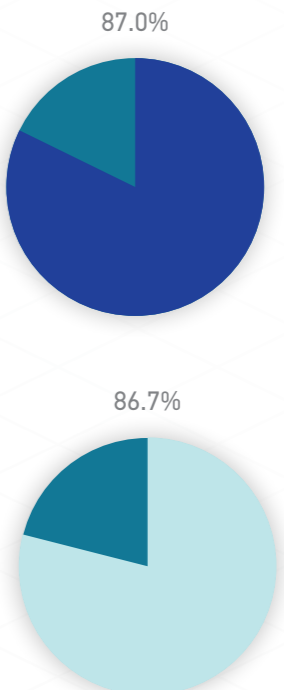
RATE OF RETURN TO WORK FOR EMPLOYEES WHO TOOK PARENTAL LEAVE

MALE FEMALE



RATE OF RETENTION FOR EMPLOYEES WHO TOOK PARENTAL LEAVE

MALE FEMALE



GLOSSARY

| Term & Abbreviation | Definition | Page(s) |
|--|--|------------------------|
| Amalgamated Union of Statutory Board Employees (AUSBE) | AUSBE looks after the interests of employees across 12 statutory boards, including MPA. | 97, 104, 113, 115 |
| Antigen Rapid Test | Antigen Rapid Test is a rapid membrane-based lateral flow immunoassay for the qualitative detection of antigens in human nasopharyngeal and nasal swab specimens. | 51 |
| Artificial Intelligence (AI) | AI refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. | 12, 29, 37, 49, 60, 99 |
| ASEAN Maritime Transport Working Group (MTWG) | The ASEAN MTWG is the principal coordinating and implementing arm of the ASEAN Senior Transport Officials Meeting that advances maritime transport programmes, projects and activities. | 76 |
| Asia-Pacific Economic Cooperation (APEC) | APEC is an intergovernmental forum established in 1989 comprising 21 member economies in the Pacific Rim. It promotes free trade in the Asia-Pacific region. | 56 |
| Association of Southeast Asian Nations (ASEAN) | ASEAN is a regional organisation established in 1967 that comprises 10 Member States. It promotes regional peace and stability while accelerating economic growth, social progress and cultural development in the region. | 45, 56, 76, 101, 103 |
| Automatic Identification System (AIS) | AIS transmits a ship's identity, position and other information to port authorities and other ships automatically. | 63 |
| Baltic and International Maritime Council (BIMCO) | BIMCO is the world's largest direct-membership organisation for shipowners, charterers, shipbrokers and agents. | 67 |
| Bill of lading | A bill of lading is a document issued by a carrier to acknowledge the receipt of cargo for shipment. It is used as a contract for the movement of cargo. | 22, 25 |
| Circuit Breaker | Circuit Breaker was a preventive measure adopted by the Singapore Government in response to the COVID-19 pandemic in the country. It came into effect between 7 April 2020 and 1 June 2020. | 53 |
| Civil Aviation Authority of Singapore (CAAS) | The CAAS is Singapore's national aviation authority and a statutory board under the Ministry of Transport. | 63, 100 |
| Classification society | A classification society carries out statutory surveys and issues certificates to Singapore-registered ships on behalf of MPA. | 65, 97 |
| Consultative Shipping Group | The Consultative Shipping Group consists of 18 countries that adhere to the values and principles of open and unimpeded access to international maritime markets. | 56 |
| COVID-19 Polymerase Chain Reaction (PCR) test | A COVID-19 PCR test is performed to detect genetic material from a specific organism such as a virus | 51 |
| Crew Facilitation Centre (CFC) | The CFC was a self-contained facility with an onsite medical centre, as well as testing and holding facilities. It was converted from a floating accommodation to house sign-on crew for up to 48 hours prior to ship boarding. | 5, 45, 46 |
| digitalOCEANS™ | digitalOCEANS™ is an interoperable platform and information hub that facilitates cross-border data exchanges and automated services across supply chain players, clearance authorities and national single windows. | 2, 61 |
| digitalPORT@SG™ | digitalPORT@SG™ is a maritime single window that serves as a one-stop portal for maritime regulatory and port services transactions. | 2, 60, 61, 71, 100 |
| Electronic Transactions Act | The Act provides a legal framework that sets out the rights and obligations of parties in the course of electronic commerce, as well as the legal aspects of electronic contracts, digital signatures, authentication and non-repudiation. | 2, 25 |

| Term & Abbreviation | Definition | Page(s) |
|--|---|-----------------------------------|
| Enterprise Singapore (ESG) | ESG is a statutory board under the Ministry of Trade and Industry. It champions enterprise development by working with companies to build capabilities, innovate and internationalise. In addition to serving as the national standards and accreditation body, ESG supports the growth of Singapore as a hub for global trading and start-ups. | 31 |
| FIRST values | MPA's FIRST values are forward thinking, integrity, respect, service excellence and teamwork. | 95, 96, 107 |
| GeoSpace-Sea | GeoSpace-Sea is a new national marine spatial data infrastructure that harmonises Singapore's marine and coastal geospatial data and information from various sources. It combines hydrographic data, marine environmental data, coastline details and habitat information to produce a comprehensive visual representation of Singapore's sea space. | 2, 12, 22, 25 |
| Global Internship Award (GIA) | The MPA GIA is a fully sponsored internship programme. It offers high-achieving students internship opportunities at global maritime companies in Singapore and around the world. | 5, 87 |
| Global Maritime Forum Maritime Industry Crew Change Taskforce | The taskforce is established by the Global Maritime Forum to address the crew change crisis. | 47 |
| Global Reporting Initiative Sustainability Reporting Standards (GRI Standards) | GRI Standards create a common language for organisations to report on their sustainability impact in a consistent and credible manner. It enhances global comparability and helps organisations to be transparent and accountable. | 0 (About This Report), 18 |
| Greenhouse gas (GHG) | GHGs are natural and anthropogenic gaseous constituents of the atmosphere that absorb and re-emit infrared radiation. | 5, 32, 35, 36, 37, 42, 71, 74, 83 |
| Gross tonnage (GT) | GT is a non-linear measure of a ship's overall internal volume. | 2, 16, 80 |
| Immigration and Checkpoints Authority (ICA) | The ICA is the border control agency of Singapore under the Ministry of Home Affairs. It is responsible for border control, immigration enforcement and border customs services in Singapore. | 60, 61 |
| IMO 2020 regulations | The IMO 2020 regulations impose a 0.50 per cent global sulphur cap on marine fuel with the aim of cutting sulphur oxide emissions. The regulations kicked in on 1 January 2020. | 32, 39 |
| Institute of Marine Engineering, Science and Technology (IMarEST) | IMarEST is the international membership body and learned society for marine professionals operating in the spheres of marine engineering, science and technology. | 70 |
| Integrated Reporting <IR> | <IR> outlines how an organisation's strategy, governance, performance and prospects lead to value creation over time. | 0 (About This Report), 18 |
| Intergovernmental organisation (IGO) | An IGO is an organisation consisting primarily of sovereign states or other intergovernmental organisations. IGOs are established by a treaty that acts as a charter creating the group. | 75, 97 |
| International Advisory Panel on Maritime Decarbonisation (IAP) | The IAP was established by the Singapore Maritime Foundation with the support of MPA to make recommendations on decarbonising Singapore's maritime industry. It is co-chaired by Mr Andreas Sohmen-Pao and Mr Wong Weng Sun. | 5, 32, 34 |
| International Association of Classification Societies (IACS) | IACS is a non-profit membership organisation of classification societies. It establishes minimum technical standards and requirements that address maritime safety and environmental protection. | 67 |

| Term & Abbreviation | Definition | Page(s) |
|--|--|--|
| International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) | IALA is a non-profit international technical association established in 1957 to facilitate the harmonisation of marine aids to navigation worldwide. It promotes the safe, expeditious and cost-effective movement of vessels. | 3, 27, 58, 59, 68, 69, 75, 76, 102 |
| International Association of Ports and Harbors (IAPH) | IAPH is the global trade association for seaports worldwide. It is headquartered in Tokyo, Japan. | 27, 83, 99, 103 |
| International Chamber of Shipping (ICS) | ICS is a global trade association for shipowners and operators established in 1921 to champion the development, promotion and application of best practices in the shipping industry. | 47, 56, 67 |
| International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessels (STCW-F) | STCW-F, adopted by the International Maritime Organization in 1995, is a binding treaty that sets certification and minimum training requirements for crew of seagoing fishing vessels. It promotes the safety of life at sea and the protection of the marine environment. | 74 |
| International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) | STCW, which was established in 1978, sets the minimum qualifications for masters, officers and watch personnel on seagoing merchant ships and large yachts. | 54 |
| International Hydrographic Organization (IHO) | The IHO is an intergovernmental organisation that champions the survey and charting of the world's seas, oceans and navigable waters. Established in 1921, it coordinates the activities of national hydrographic offices and promotes uniformity in nautical charts and documents. It issues survey best practices, provides guidelines to maximise the use of hydrographic survey data and develops the hydrographic capabilities of Members States. | 3, 58, 68, 76, 108 |
| International Integrated Reporting Council (IIRC) | The IIRC is a coalition of government, business and accounting professionals that aims to develop a globally accepted integrated reporting framework. | 0 (About This Report) |
| International Maritime Centre (IMC) | An IMC provides a comprehensive range of high-quality maritime services. | 1, 2, 9, 13, 14, 18, 20, 21, 22, 78, 80, 84, 89 |
| International Maritime Organization (IMO) | The IMO is a specialised United Nations agency that sets global regulatory standards for the safety, security and environmental performance of international shipping. | 3, 5, 27, 32, 34, 45, 46, 56, 58, 62, 67, 74, 75, 82, 83 |
| Internship Reimbursement Scheme | The Internship Reimbursement Scheme encourages maritime companies to continue offering internships to local students despite the challenges arising from the COVID-19 pandemic. MPA co-funds 50 per cent of the internship allowances paid by maritime companies, capped at S\$500 per intern per month for up to six months. | 53, 86 |
| INTERTANKO | INTERTANKO is a trade association established in 1970 to represent owners of independent tankers. It champions an industry dedicated to support global energy networks by delivering safe, efficient and environmentally sound transport services. | 47 |
| Jurong Port Pte Ltd | Jurong Port Pte Ltd operates the only multi-purpose port in Singapore that handles bulk, break-bulk and containerised cargo. | 11, 52 |
| Liquefied natural gas (LNG) | LNG is a natural gas that has been converted to liquid form for ease of storage or transport. | 2, 3, 20, 32, 36, 69, 73, 102 |
| Maritime and Port Authority of Singapore Act (MPA Act) | The MPA Act is a Singapore Act of Parliament that covers areas including the functions, duties and powers of MPA, the employment of seamen, port regulation and licensing. | 10 |
| Maritime Autonomous Surface Ships (MASS) | MASS is defined as a ship which, to a varying degree, can operate independently of human interaction. | 3, 5, 22, 27, 28, 75, 76 |
| Maritime Cluster Fund (MCF) | The MCF facilitates the growth of Singapore's maritime cluster in the areas of business and manpower development as well as productivity improvements. | 5, 24, 53, 81, 86 |
| Maritime Digitalisation Playbook (MDP) | The MDP helps maritime enterprises formulate plans and implement strategies on digitalisation to improve productivity and competitiveness. It offers maritime companies information and resources on the digitalisation landscape in the maritime sector, examples of technology adoption and a digital transformation framework to identify digital-driven business strategies and priorities. | 2, 22, 24 |

| Term & Abbreviation | Definition | Page(s) |
|---|---|--|
| Maritime Innovation and Technology (MINT) Fund | The MINT Fund supports the growth of Singapore's maritime innovation and technology ecosystem. It aims to grow the competitiveness of the Port of Singapore, build technological capabilities in niche areas of the maritime industry and transform the sector into a highly productive and innovative cluster by leveraging cutting-edge technologies. | 3, 10, 27, 28, 35 |
| MaritimeSG Together Package | The S\$27 million MaritimeSG Together Package comprises a series of relief measures that MPA put together to support maritime companies, employees and seafarers in the wake of the COVID-19 outbreak. | 4, 45, 53, 54 |
| Mass flow meter | A mass flow meter is a device that measures the flow rate through a tube by mass per unit time. | 69 |
| MASSPorts | MASSPorts is a network formed by like-minded countries and organisations to align standards for the trials and operation of Maritime Autonomous Surface Ships across ports. | 5, 27 |
| Port Health | Port Health of the National Environment Agency works with MPA to manage the inbound health clearance and quarantine of vessels at the seaport. | 51 |
| National Maritime Safety at Sea Council | The National Maritime Safety at Sea Council was established in 2015 to drive maritime safety sustainably on a national level. | 66, 67 |
| "NextGEN" ("Green and Efficient Navigation") | "NextGEN" is a concept for a collaborative global ecosystem of maritime decarbonisation initiatives. It facilitates information sharing on decarbonisation initiatives across the industry, academia and Member States of the International Maritime Organization. "NextGEN" also identifies opportunities for decarbonisation in the maritime industry and creates platforms for collaborations. | 3, 75, 83 |
| Norwegian Shipowners' Association | The Norwegian Shipowners' Association is a trade and employment organisation for Norwegian-controlled companies within the shipping and offshore industry. | 47 |
| Pedra Branca | Pedra Branca is an outlying island at the easternmost point of Singapore. | 67 |
| Periodic Commuting Arrangement | The Periodic Commuting Arrangement is a Safe Travel Lane agreement between Singapore and Malaysia. It facilitates the movement of workers between both countries. | 53 |
| Port Authorities Roundtable (PAR) | PAR is a by-invitation event for representatives of leading port authorities. Inaugurated by MPA in 2015, it facilitates discussions to address issues of common interests, exchange best practices and seek mutually beneficial collaboration opportunities. | 56 |
| Port of Singapore | The Port of Singapore refers to the collective facilities and terminals that conduct maritime trade and handle shipping in Singapore. | 2, 3, 4, 14, 18, 21, 27, 32, 35, 36, 37, 39, 45, 50, 51, 53, 54, 55, 57, 58, 61, 64, 70, 71, 72, 91, 114 |
| Port Operations Control Centre | The Port Operations Control Centre monitors vessels plying the Singapore Strait using the Vessel Traffic Information System, which has the capability of tracking up to 10,000 vessels at any one time. | 63, 91 |
| Programme for the Endorsement of Forest Certification | The Programme for the Endorsement of Forest Certification is an international non-profit and non-governmental organisation that promotes sustainable forest management through independent third-party certification. It is considered the certification system of choice for small forest owners. | 41 |
| PSA Corporation Ltd (PSAC) | PSAC (the corporate successor to the Port of Singapore Authority) was established in 1997 to manage and commercially operate container terminals and related businesses in the Port of Singapore. | 11, 52-53 |
| PSA International (PSA) | PSA International (PSA) is a leading port group with port projects spanning across Asia, Europe and America. It is the investment holding company for PSA's group of businesses worldwide. | 26, 27, 61, 73, 82, 98 |

| Term & Abbreviation | Definition | Page(s) |
|---|--|----------------------------|
| Public Sector Taking the Lead in Environmental Sustainability (PSTLES) | The PSTLES initiative encourages public sector agencies to put in place environmental sustainability measures that encompass energy efficiency, water efficiency and recycling. | 32, 41 |
| Quality Shipping for the 21st Century (QUALSHIP 21) programme | The QUALSHIP 21 programme aims to eliminate substandard shipping by identifying high-quality ships and providing incentives to encourage quality operations. | 65 |
| Recognised Organisations | Recognised Organisations are classification societies authorised by MPA to perform statutory certification and survey services for Singapore-flagged ships. | 65 |
| Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP) | ReCAAP is the first regional government-to-government agreement to promote and enhance cooperation against piracy and armed robbery of ships in Asia. It has 20 Contracting Parties. | 77 |
| ReCAAP Information Sharing Centre (ISC) | Based in Singapore, the ReCAAP ISC is the executive unit of ReCAAP that conducts timely and accurate information sharing on incidents of piracy and sea robbery. | 77 |
| Robotic Process Automation (RPA) | RPA is an application of technology, governed by business logic and structured inputs, aimed at automating business processes. | 64 |
| Rostered Routine Testing (RRT) | RRT is a surveillance testing program for identified groups who are vulnerable or have high risk of exposure to COVID-19. The surveillance involves recurrent swab testing every 14 days. | 4, 45, 51 |
| Safety@Sea | Safety@Sea is an industry-wide effort to raise awareness of safe practices and inculcate a safety-first culture at sea. | 1, 25, 58, 64, 67 |
| Sea Transport Industry Digital Plan (IDP) | The Sea Transport IDP is a joint initiative by MPA, the Infocomm Media Development Authority, Enterprise Singapore and SkillsFuture Singapore as part of the SMEs Go Digital programme. It provides SMEs with easy-to-use, step-by-step guide on adopting digital solutions. | 22, 24, 26 |
| Sea Transport Industry Transformation Map (ITM) | The Sea Transport ITM was developed by MPA in partnership with the industry, unions and other government agencies. It built on MPA's long-term plans to develop the next generation port and grow Singapore's international maritime centre. | 24, 26 |
| Seafarers Relief Package (SRP) | The SRP s a financial assistance scheme extended to Singaporean seafarers who are unable to gain shipboard employment due to the COVID-19 outbreak. It is funded by MPA, the Singapore Maritime Officers' Union and the Singapore Organisation for Seamen. | 4, 54 |
| SEEDS Capital | SEEDS Capital is the investment arm of Enterprise Singapore that supports the growth of promising Singapore-based start-ups. It co-invests in innovative start-ups with strong intellectual content and global market potential. | 31 |
| SGAG | SGAG is a social media website and news media company based in Singapore. | 57 |
| Shipbroking | Shipbroking is a financial service integral to the global shipping industry. Shipbrokers are specialist intermediaries between shipowners and charterers or between ship buyers and sellers. | 5, 81 |
| Singapore Chamber of Maritime Arbitration (SCMA) | SCMA is a specialist arbitration institution that provides a neutral, cost-effective and flexible framework for maritime and international trade arbitrations. | 81 |
| Singapore Maritime Foundation (SMF) | SMF forges dialogue and cooperation amongst diverse private and public maritime stakeholders to strengthen Singapore's maritime ecosystem. It also conducts outreach activities to grow awareness of Singapore's maritime industry. | 5, 32, 34, 97 |
| Singapore Maritime Institute (SMI) | SMI charts the maritime research strategy and promotes industry-academia R&D collaborations in Singapore. | 5, 34, 35, 36, 97 |
| Singapore Maritime Officers' Union (SMOU) | SMOU is a global union established in 1951 to safeguard the interests and well-being of seafaring officers. | 6, 46, 47, 54, 55, 97, 100 |
| Singapore Nautilus | Singapore Nautilus is MPA's corporate publication. Available online, in print and via smartphone app SG Nautilus, Singapore Nautilus shares up-to-date and engaging content on the maritime sector. | 93 |

| Term & Abbreviation | Definition | Page(s) |
|--|---|--|
| Singapore Organisation of Seamen (SOS) | SOS represents seamen in promoting sound industrial relations. | 7, 46, 47, 54, 55, 97, 100 |
| Singapore Registry of Ships (SRS) | The SRS is the administration responsible for the registration of ships sailing under the Singapore Flag. It ensures that ships and owners meet the stringent criteria for registration. | 2, 15, 16, 80 |
| Singapore Shipping Association (SSA) | SSA is a national trade association that represents shipping companies and businesses allied to the shipping industry. It promotes the interests of its members and enhances the competitiveness of Singapore as an international maritime centre. | 7, 11, 24, 27, 28, 37, 46, 47, 54, 55, 83, 86, 97, 100 |
| Singapore Shipping Tripartite Alliance Resilience (SG-STAR) Fund | The SG-STAR Fund is the first global ground-up tripartite initiative that reaches out to stakeholders in seafaring nations on the implementation of safe crew change practices and the development of solutions for crew change. | 4, 45, 47 |
| Singapore-Shanghai Comprehensive Cooperation Council | The Singapore-Shanghai Comprehensive Cooperation Council is a Ministerial-level platform to deepen cooperation in the Belt and Road Initiative, financial services, technology and innovation, the ease of doing business, urban governance and people-to-people exchanges. | 77 |
| Smart Port Challenge (SPC) | SPC is an annual competition for global technology start-ups to address challenge statements shared by maritime companies. It is a core programme of PIER71, a collaboration between MPA and NUS Enterprise, the entrepreneurial arm of the National University of Singapore (NUS). | 22, 30 |
| SmartEntry@Sea | SmartEntry@Sea is a digital platform introduced by MPA to facilitate contact tracing of shore-based personnel who regularly board and work on ships in Singapore's anchorages. Using SmartEntry@Sea, workers scan a unique QR code to provide information on the ships they are boarding. | 4, 45, 52 |
| The Nautical Institute | The Nautical Institute is a non-governmental organisation with consultative status at the International Maritime Organization. It represents the interests of its members and promotes professionalism, best practice and safety in the maritime industry. | 67 |
| Throughput | Throughput is the amount of material or items passing through a system or process. | 2, 17 |
| Tripartite Maritime Scholarship (TMSS) | TMSS is sponsored by MPA, the Singapore Maritime Officers' Union, the Singapore Organisation of Seamen and shipping companies. It grooms promising students to become Ship Captains or Chief Engineers of ocean-going merchant vessels. | 87 |
| Tuas Port | Tuas Port will be a digital and automated port capable of handling up to 65 million twenty-foot equivalent units annually. It will cater for the future growth in container-handling demand when completed by the 2040s. | 12, 21, 40, 53, 58, 70, 71, 72, 73, 92, 96, 99 |
| Twenty-foot equivalent unit (TEU) | TEU is a standard unit for describing a ship or terminal's cargo-carrying capacity. | 2, 17, 71 |
| United Nations (UN) | The UN is an intergovernmental organisation that maintains international peace and security, develops friendly relations amongst nations, fosters international cooperation and facilitates the harmonisation of actions amongst nations. | 18, 45, 56 |
| United Nations Sustainable Development Goals (UN SDGs) | The UN SDGs are a set of 17 interconnected goals adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. | 0 (About This Report),18 |
| United States Coast Guard (USCG) | The USCG is the maritime security, search and rescue, and law enforcement service branch of the United States Armed Forces. | 65 |
| Vessel Traffic Services (VTS) | VTS are established by harbour and port authorities to maintain the safety and efficiency of vessel traffic. They interact with the traffic and respond to vessel traffic situations. | 3, 75, 76, 102,114 |
| World Shipping Council | The World Shipping Council is an industry trade group that represents the international liner shipping industry. It works with policymakers and other industry groups with an interest in international transportation. | 47 |

MPA’S APPROACH TO INTEGRATED REPORTING

In the seventh edition of MPA’s Sustainability/Integrated Report, MPA continues to review and enhance its value creation process to benefit its stakeholders. Despite the COVID-19 pandemic, MPA presses on in driving industry transformation to build Singapore into a global maritime hub for connectivity, innovation and talent.

The content elements of the <IR> framework are reflected in the table as follows:

| Content Element | Section | Page(s) |
|---|--|---------|
| A. Organisational overview and external environment | Chairman's Message | 2-3 |
| | Chief Executive's Message | 4-5 |
| | Board of Directors | 6-7 |
| | Senior Management | 8-9 |
| | Organisation Structure | 12-13 |
| | About MPA | 14 |
| | About Maritime Singapore | 15 |
| | | |
| B. Governance | Corporate Governance | 10-11 |
| C. Business model | MPA's Business Model | 20-21 |
| D. Risks and opportunities | Key Material Issues | 18-19 |
| E. Strategy and resource allocation | Chairman's Message | 2-3 |
| | Chief Executive's Message | 4-5 |
| | Key Material Issues | 18-19 |
| | MPA's Business Model | 20-21 |
| F. Performance | About Maritime Singapore | 15 |
| | 2020 Performance Summary | 16-17 |
| | Awards Received in 2020 | 99-100 |
| | MPA's Awards Milestone | 101-103 |
| | FY2020 Financial Statements - published separately | - |
| G. Outlook | Chairman's Message | 2-3 |
| | Chief Executive's Message | 4-5 |
| | About This Report | 0 |
| H. Basis of preparation and presentation | Key Material Issues | 18-19 |
| | Statutory Board Financial Reporting Standards (FY2020 Financial Statements) - published separately | - |

GRI CONTENT INDEX



For the Materiality Disclosures Service, GRI Services reviewed that the GRI content index is clearly presented and the references for Disclosures 102-40 to 102-49 align with appropriate sections in the body of the report.

| GRI Standard | Disclosure Number | Disclosure Title | References/Remarks |
|--|-------------------|--|--|
| GRI 101: Foundation 2016 In preparing its sustainability report based on the GRI Standards: Comprehensive option, MPA has applied the GRI's Reporting Principles for defining report content and quality. | | | |
| GENERAL DISCLOSURES | | | |
| 1. Organizational Profile | | | |
| GRI 102: General Disclosures 2016 | 102-1 | Name of the organization | About MPA (Pg 14) |
| | 102-2 | Activities, brands, products, and services | About MPA/ About Maritime Singapore (Pg 14-15) |
| | 102-3 | Location of headquarters | About MPA/ About Maritime Singapore (Pg 14-15) |
| | 102-4 | Location of operations | About MPA/ About Maritime Singapore (Pg 14-15) |
| | 102-5 | Ownership and legal form | About MPA (Pg 14) |
| | 102-6 | Markets served | About MPA/ About Maritime Singapore (Pg 14-15) |
| | 102-7 | Scale of the organization | Organisation Structure (Pg 12-13) About MPA (Pg 14) Choice Employer > 2020 Employee Demographics (Pg 116-119) FY2020 Financial Statements – published separately |
| | 102-8 | Information on employees and other workers | Choice Employer > 2020 Employee Demographics (Pg 116-119) |
| | 102-9 | Supply chain | Culture of Excellence > Supplier Management (Pg 98) |
| | 102-10 | Significant changes to the organization and its supply chain | There were no significant organisational changes during the reporting period |
| | 102-11 | Precautionary Principle or approach | Key Material Issues (Pg 18-19) MPA's Business Model (Pg 20-21) |
| | 102-12 | External initiatives | Digitalisation & Innovation (Pg 22-31) Decarbonisation & Sustainability (Pg 32-43) Our Fight Against COVID-19 (Pg 44-57) Vital (Pg 58-77) Versatile (Pg 78-83) Resilient (Pg 84-93) |
| | 102-13 | Membership of associations | About MPA (Pg 14) Digitalisation & Innovation > Technology Development (Pg 27-29) Decarbonisation & Sustainability > Sustainable Shipping (Pg 34-39) Our Fight Against COVID-19 > Crew Change (Pg 46-47) Our Fight Against COVID-19 > Keeping Maritime Trade Going Globally (Pg 56) Vital > Building Digital Infrastructure to Strengthen Port Operations (Pg 60-64) Vital > Advancing Singapore's Maritime Interests on a Global Stage (Pg 74-77) |
| 2. Strategy | | | |
| GRI 102: General Disclosures 2016 | 102-14 | Statement from senior decision-maker | Chairman's Message (Pg 2-3) Chief Executive's Message (Pg 4-5) |
| | 102-15 | Key impacts, risks, and opportunities | Chairman's Message (Pg 2-3) Chief Executive's Message (Pg 4-5) Key Material Issues (Pg 18-19) MPA's Business Model (Pg 20-21) |

| GRI Standard | Disclosure Number | Disclosure Title | References/Remarks |
|-----------------------------------|-------------------|---|---|
| 3. Ethics and Integrity | | | |
| GRI 102: General Disclosures 2016 | 102-16 | Values, principles, standards, and norms of behavior | Culture of Excellence > MPA Values (Pg 96) Culture of Excellence > Supplier Management (Pg 98) Choice Employer > talentMPA > (Pg 107-110) |
| | 102-17 | Mechanisms for advice and concerns about ethics | Choice Employer > oneMPA (Pg 110-112) |
| 4. Governance | | | |
| GRI 102: General Disclosures 2016 | 102-18 | Governance structure | Board of Directors (Pg 6-7) Senior Management (Pg 8-9) Corporate Governance (Pg 10-11) Organisation Structure (Pg 12-13) |
| | 102-19 | Delegating authority | Corporate Governance (Pg 10-11) |
| | 102-20 | Executive-level responsibility for economic, environmental, and social topics | Senior Management (Pg 8-9) Organisation Structure (Pg 12-13) |
| | 102-21 | Consulting stakeholders on economic, environmental, and social topics | Corporate Governance (Pg 10-11) Organisation Structure (Pg 12-13) Key Material Issues (Pg 18-19) MPA's Business Model (Pg 20-21) Digitalisation & Innovation (Pg 22-31) Decarbonisation & Sustainability (Pg 32-43) Our Fight Against COVID-19 (Pg 44-57) Vital (Pg 58-77) Versatile > Running Maritime Business Events (Pg 82-83) Resilient > Building the Future Maritime Workforce (Pg 88) Culture of Excellence> Stakeholder Engagement (Pg 97) Choice Employer (Pg 104-119) |
| | 102-22 | Composition of the highest governance body and its committees | Board of Directors (Pg 6-7) Corporate Governance (Pg 10-11) |
| | 102-23 | Chair of the highest governance body | Board of Directors (Pg 6-7) |
| | 102-24 | Nominating and selecting the highest governance body | Corporate Governance (Pg 10-11) |
| | 102-25 | Conflicts of interest | Culture of Excellence > MPA Values (Pg 96) Culture of Excellence > MPA Values (Pg 98) Choice Employer > oneMPA (Pg 110-112) |
| | 102-26 | Role of highest governance body in setting purpose, values, and strategy | Corporate Governance (Pg 10-11) |
| | 102-27 | Collective knowledge of highest governance body | Corporate Governance (Pg 10-11) |
| | 102-28 | Evaluating the highest governance body's performance | Not applicable – The Board plays a non-executive role |
| | 102-29 | Identifying and managing economic, environmental, and social impacts | Corporate Governance (Pg 10-11) Key Material Issues (Pg 18-19) |
| | 102-30 | Effectiveness of risk management processes | Corporate Governance (Pg 10-11) |
| | 102-31 | Review of economic, environmental, and social topics | Corporate Governance (Pg 10-11) Key Material Issues (Pg 18-19) |
| | 102-32 | Highest governance body's role in sustainability reporting | Corporate Governance (Pg 10-11) Key Material Issues (Pg 18-19) |
| | 102-33 | Communicating critical concerns | Choice Employer > oneMPA (Pg 110-111) |

| GRI Standard | Disclosure Number | Disclosure Title | References/Remarks |
|-----------------------------------|-------------------|--|--|
| | 102-34 | Nature and total number of critical concerns | Choice Employer > oneMPA (Pg 110-111) |
| | 102-35 | Remuneration policies | Corporate Governance (Pg 10-11) Choice Employer > talentMPA (Pg 107-110) |
| | 102-36 | Process for determining remuneration | Corporate Governance (Pg 10-11) Choice Employer > talentMPA (Pg 107-110) |
| | 102-37 | Stakeholders' involvement in remuneration | Corporate Governance (Pg 10-11) Choice Employer > talentMPA (Pg 107-110) |
| | 102-38 | Annual total compensation ratio | Corporate Governance (Pg 10-11) |
| | 102-39 | Percentage increase in annual total compensation ratio | Corporate Governance (Pg 10-11) |
| 5. Stakeholder Engagement | | | |
| GRI 102: General Disclosures 2016 | 102-40 | List of stakeholder groups | Culture of Excellence> Stakeholder Engagement (Pg 97) |
| | 102-41 | Collective bargaining agreements | Choice Employer > Labour Relations (Pg 115) |
| | 102-42 | Identifying and selecting stakeholders | Stakeholders are entities or individuals that can reasonably expect to be significantly affected by MPA's activities, or whose actions can reasonably expect to affect the ability of MPA to successfully implement its strategies and achieve its objectives In determining key stakeholders, MPA considers their interests in sustainability, potential influence, as well as the extent to which MPA's activities can impact them |
| | 102-43 | Approach to stakeholder engagement | Corporate Governance (Pg 10-11) Key Material Issues (Pg 18-19) MPA's Business Model (Pg 20-21) Digitalisation & Innovation (Pg 22-31) Decarbonisation & Sustainability (Pg 32-43) Our Fight Against COVID-19 (Pg 44-57) Vital (Pg 58-77) Versatile > Running Maritime Business Events (Pg 82-83) Resilient > Building the Future Maritime Workforce (Pg 88) Culture of Excellence> Stakeholder Engagement (Pg 97) Choice Employer (Pg 104-119) |
| | 102-44 | Key topics and concerns raised | Key Material Issues (Pg 18-19) MPA's Business Model (Pg 20-21) Digitalisation & Innovation (Pg 22-31) Decarbonisation & Sustainability (Pg 32-43) Our Fight Against COVID-19 (Pg 44-57) Vital (Pg 58-77) Versatile > Running Maritime Business Events (Pg 82-83) Resilient > Building the Future Maritime Workforce (Pg 88) Culture of Excellence> Stakeholder Engagement (Pg 97) Choice Employer (Pg 104-119) |
| 6. Reporting Practice | | | |
| GRI 102: General Disclosures 2016 | 102-45 | Entities included in the consolidated financial statements | FY2020 Financial Statements > Notes to the Financial Statements – published separately |
| | 102-46 | Defining report content and topic Boundaries | About This Report (Pg 0) Key Material Issues (Pg 18-19) MPA's Business Model (Pg 20-21) |
| | 102-47 | List of material topics | Key Material Issues (Pg 18-19) |
| | 102-48 | Restatements of information | There are no restatements of information |
| | 102-49 | Changes in reporting | There were no significant changes in the list of material issues and topic boundaries from MPA's previous Sustainability/ Integrated Report |
| | 102-50 | Reporting period | About This Report (Pg 0) |

| GRI Standard | Disclosure Number | Disclosure Title | References/Remarks |
|---|-------------------|---|--|
| | 102-51 | Date of most recent report | MPA's previous Sustainability/Integrated Report was published in July 2020 |
| | 102-52 | Reporting cycle | MPA publishes its Sustainability/Integrated Reports annually |
| | 102-53 | Contact point for questions regarding the report | About This Report (Pg 0) |
| | 102-54 | Claims of reporting in accordance with the GRI Standards | About This Report (Pg 0) |
| | 102-55 | GRI content index | GRI Content Index (Pg 127-134) |
| | 102-56 | External assurance | MPA has not sought external assurance for the report |
| TOPIC-SPECIFIC DISCLOSURES | | | |
| Safe, Efficient and Sustainable Global Hub Port | | | |
| GRI 103: Management Approach 2016 | 103-1 | Explanation of the material topic and its Boundary | Key Material Issues (Pg 18-19) |
| | 103-2 | The management approach and its components | MPA's Business Model (Pg 20-21) Digitalisation & Innovation (Pg 22-31) Decarbonisation & Sustainability (Pg 32-43) Our Fight Against COVID-19 (Pg 44-57) Vital (Pg 58-77) |
| | 103-3 | Evaluation of the management approach | MPA's Business Model (Pg 20-21) Digitalisation & Innovation (Pg 22-31) Decarbonisation & Sustainability (Pg 32-43) Our Fight Against COVID-19 (Pg 44-57) Vital (Pg 58-77) |
| GRI 415: Public Policy 2016 | 415-1 | Political contributions | Not applicable – MPA does not make any financial or in-kind political contributions |
| GRI 416: Customer Health and Safety 2016 | 416-1 | Assessment of the health and safety impacts of product and service categories | Information unavailable – MPA does not currently measure this indicator |
| | 416-2 | Incidents of non-compliance concerning the health and safety impacts of products and services | MPA did not observe any incidents of non-compliance during the reporting period |
| Economic Contribution | | | |
| GRI 103: Management Approach 2016 | 103-1 | Explanation of the material topic and its Boundary | Key Material Issues (Pg 18-19) |
| | 103-2 | The management approach and its components | MPA's Business Model (Pg 20-21) Digitalisation & Innovation (Pg 22-31) Our Fight Against COVID-19 (Pg 44-57) Vital (Pg 58-77) Versatile (Pg 78-83) Resilient (Pg 84-93) |
| | 103-3 | Evaluation of the management approach | MPA's Business Model (Pg 20-21) Digitalisation & Innovation (Pg 22-31) Our Fight Against COVID-19 (Pg 44-57) Vital (Pg 58-77) Versatile (Pg 78-83) Resilient (Pg 84-93) |
| GRI 203: Indirect Economic Impacts 2016 | 203-1 | Infrastructure investments and services supported | 2020 Performance Summary (Pg 16-17) Digitalisation & Innovation (Pg 22-31) Decarbonisation & Sustainability (Pg 32-43) Our Fight Against COVID-19 (Pg 44-57) Vital (Pg 58-77) Versatile (Pg 78-83) Resilient (Pg 84-93) Culture of Excellence > Supplier Management (Pg 98) |

| GRI Standard | Disclosure Number | Disclosure Title | References/Remarks |
|---|-------------------|---|--|
| GRI 204: Procurement Practices 2016 | 203-2 | Significant indirect economic impacts | 2020 Performance Summary (Pg 16-17) Digitalisation & Innovation (Pg 22-31) Decarbonisation & Sustainability (Pg 32-43) Our Fight Against COVID-19 (Pg 44-57) Vital (Pg 58-77) Versatile (Pg 78-83) Resilient (Pg 84-93) Culture of Excellence > Supplier Management (Pg 98) |
| | 204-1 | Proportion of spending on local suppliers | Information unavailable - MPA does not currently measure this indicator |
| | 205-1 | Operations assessed for risks related to corruption | Information unavailable - MPA does not currently measure this indicator |
| GRI 205: Anti-corruption 2016 | 205-2 | Communication and training about anti-corruption policies and procedures | Information unavailable - MPA does not currently measure this indicator |
| | 205-3 | Confirmed incidents of corruption and actions taken | There were no confirmed incidents of corruption in the reporting year |
| GRI 206: Anti-competitive Behavior 2016 | 206-1 | Legal actions for anti-competitive behavior, anti-trust, and monopoly practices | Not applicable - MPA is a statutory board |
| Environmental Sustainability | | | |
| GRI 103: Management Approach 2016 | 103-1 | Explanation of the material topic and its Boundary | Key Material Issues (Pg 18-19) |
| | 103-2 | The management approach and its components | MPA's Business Model (Pg 20-21) Corporate Governance (Pg 10-11) Digitalisation & Innovation > Maritime Digitalisation (Pg 24-26) Decarbonisation & Sustainability (Pg 32-43) Vital > Next-Generation Port at Tuas (Pg 71-73) Vital > Advancing Singapore's Maritime Interests on a Global Stage (Pg 74-77) Versatile > Running Maritime Business Events (Pg 82-83) |
| | 103-3 | Evaluation of the management approach | MPA's Business Model (Pg 20-21) Corporate Governance (Pg 10-11) Digitalisation & Innovation > Maritime Digitalisation (Pg 24-26) Decarbonisation & Sustainability (Pg 32-43) Vital > Next-Generation Port at Tuas (Pg 71-73) Vital > Advancing Singapore's Maritime Interests on a Global Stage (Pg 74-77) Versatile > Running Maritime Business Events (Pg 82-83) |
| GRI 302: Energy 2016 | 302-1 | Energy consumption within the organization | Decarbonisation & Sustainability > Eco-Office (Pg 41-43) |
| | 302-2 | Energy consumption outside of the organization | Information unavailable - MPA does not currently measure energy consumption outside of the organisation Nonetheless, MPA has reported its responsibilities and initiatives in managing the industry's energy consumption Decarbonisation & Sustainability > Sustainable Shipping (Pg 34-39) Vital > Building Digital Infrastructure to Strengthen Port Operations (Pg 60-64) Vital > Next-Generation Port at Tuas (Pg 71-73) Vital > Advancing Singapore's Maritime Interests on a Global Stage (Pg 74-77) Versatile > Running Maritime Business Events (Pg 82-83) |
| | 302-3 | Energy intensity | Decarbonisation & Sustainability > Eco-Office (Pg 41-43) |
| | 302-4 | Reduction of energy consumption | Information unavailable - MPA does not measure the amount of reduction in energy consumption as a result of energy conservation initiatives |

| GRI Standard | Disclosure Number | Disclosure Title | References/Remarks |
|--|-------------------|---|---|
| GRI 303: Water and Effluents 2018 | 302-5 | Reductions in energy requirements of products and services | Information unavailable - MPA does not measure the energy requirements of its services |
| | 303-1 | Interactions with water as a shared resource | Decarbonisation & Sustainability (Pg 32-43) Vital > Next-Generation Port at Tuas (Pg 71-73) |
| | 303-2 | Management of water discharge-related impacts | Not applicable - MPA does not discharge water (excluding office sewage) |
| | 303-3 | Water withdrawal | MPA's water use, mainly for its office premises, comes from PUB, Singapore's National Water Agency |
| | 303-4 | Water discharge | Not applicable - MPA does not discharge water (excluding office sewage) |
| | 303-5 | Water consumption | Decarbonisation & Sustainability > Eco-Office (Pg 41-43) |
| GRI 304: Biodiversity 2016 | 304-1 | Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas | Vital > Next Generation Port at Tuas (Pg 71-73) |
| | 304-2 | Significant impacts of activities, products, and services on biodiversity | For the reclamation of Tuas Port, MPA conducted environmental impact assessments and adhered to strict environmental quality objectives to protect marine biodiversity MPA has reported its responsibilities and initiatives in managing the impact on biodiversity brought about by the activities of Singapore's maritime industry Decarbonisation & Sustainability (Pg 32-43) Vital > Next-Generation Port at Tuas (Pg 71-73) |
| | 304-3 | Habitats protected or restored | Decarbonisation & Sustainability > Public Outreach on Marine Environmental Protection (Pg 39-40) |
| | 304-4 | IUCN Red List species and national conservation list species with habitats in areas affected by operations | Not applicable - MPA's operations do not affect IUCN Red List species and national conservation list species |
| | | | |
| GRI 305: Emissions 2016 | 305-1 | Direct (Scope 1) GHG emissions | Decarbonisation & Sustainability > Energy and Emissions (Pg 42) |
| | 305-2 | Energy indirect (Scope 2) GHG emissions | Decarbonisation & Sustainability > Energy and Emissions (Pg 42) |
| | 305-3 | Other indirect (Scope 3) GHG emissions | Decarbonisation & Sustainability > Energy and Emissions (Pg 42) |
| | 305-4 | GHG emissions intensity | Decarbonisation & Sustainability > Energy and Emissions (Pg 42) |
| | 305-5 | Reduction of GHG emissions | Decarbonisation & Sustainability > Energy and Emissions (Pg 42) |
| | 305-6 | Emissions of ozone-depleting substances (ODS) | Not applicable - MPA's operations do not emit ODS |
| | 305-7 | Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions | Not applicable - MPA's operations produce minimal NOx, SOx and other significant air emissions |
| | | | |
| International Support and Community Engagement | | | |
| GRI 103: Management Approach 2016 | 103-1 | Explanation of the material topic and its Boundary | Key Material Issues (Pg 18-19) |

| GRI Standard | Disclosure Number | Disclosure Title | References/Remarks |
|------------------------------------|-------------------|--|---|
| | 103-2 | The management approach and its components | MPA's Business Model (Pg 20-21) Digitalisation & Innovation (Pg 22-31) Decarbonisation & Sustainability (Pg 32-43) Our Fight Against COVID-19 (Pg 44-57) Vital (Pg 58-77) Versatile (Pg 78-83) Resilient (Pg 84-93) |
| | 103-3 | Evaluation of the management approach | MPA's Business Model (Pg 20-21) Digitalisation & Innovation (Pg 22-31) Decarbonisation & Sustainability (Pg 32-43) Our Fight Against COVID-19 (Pg 44-57) Vital (Pg 58-77) Versatile (Pg 78-83) Resilient (Pg 84-93) |
| GRI 202: Market Presence 2016 | 202-1 | Ratios of standard entry level wage by gender compared to local minimum wage | Not applicable - the Ministry of Manpower does not prescribe minimum wage for workers in Singapore, whether local or foreign |
| | 202-2 | Proportion of senior management hired from the local community | All members of MPA's Senior Management Team are hired locally from Singapore |
| GRI 413: Local Communities 2016 | 413-1 | Operations with local community engagement, impact assessments, and development programs | Digitalisation & Innovation (Pg 22-31) Decarbonisation & Sustainability (Pg 32-43) Our Fight Against COVID-19 (Pg 44-57) Vital (Pg 58-77) Versatile (Pg 78-83) Resilient (Pg 84-93) |
| | 413-2 | Operations with significant actual and potential negative impacts on local communities | Not applicable - MPA did not observe significant actual/potential negative impact on local communities that arose from its operations during the reporting period |
| Financial Sustainability | | | |
| GRI 103: Management Approach 2016 | 103-1 | Explanation of the material topic and its Boundary | Key Material Issues (Pg 18-19) |
| | 103-2 | The management approach and its components | MPA's Business Model (Pg 20-21) FY2020 Financial Statements – published separately |
| | 103-3 | Evaluation of the management approach | MPA's Business Model (Pg 20-21) FY2020 Financial Statements – published separately |
| GRI 201: Economic Performance 2016 | 201-1 | Direct economic value generated and distributed | FY2020 Financial Statements - published separately |
| | 201-2 | Financial implications and other risks and opportunities due to climate change | Information unavailable - MPA has not formally assessed the financial implications of climate change on the organisation |
| | 201-3 | Defined benefit plan obligations and other retirement plans | Not applicable |
| | 201-4 | Financial assistance received from government | Not applicable |
| Our People and Culture | | | |
| GRI 103: Management Approach 2016 | 103-1 | Explanation of the material topic and its Boundary | Key Material Issues (Pg 18-19) |
| | 103-2 | The management approach and its components | MPA's Business Model (Pg 20-21) Choice Employer (Pg 104-119) |

| GRI Standard | Disclosure Number | Disclosure Title | References/Remarks |
|--|-------------------|---|--|
| | 103-3 | Evaluation of the management approach | MPA's Business Model (Pg 20-21) Choice Employer (Pg 104-119) |
| GRI 401: Employment 2016 | 401-1 | New employee hires and employee turnover | Choice Employer > 2020 Employee Demographics (Pg 116-119) |
| | 401-2 | Benefits provided to full-time employees that are not provided to temporary or part-time employees | MPA provides pro-rated benefits to its part-time employees |
| | 401-3 | Parental leave | Choice Employer > 2020 Employee Demographics (Pg 116-119) |
| GRI 402: Labor/Management Relations 2016 | 402-1 | Minimum notice periods regarding operational changes | When operational changes occur, MPA gives employees as much notice as it can |
| GRI 403: Occupational Health and Safety 2018 | 403-1 | Occupational health and safety management system | Choice Employer > Workplace Safety and Health (Pg 113-114) |
| | 403-2 | Hazard identification, risk assessment, and incident investigation | Choice Employer > Workplace Safety and Health (Pg 113-114) |
| | 403-3 | Occupational health services | Choice Employer > Workplace Safety and Health (Pg 113-114) |
| | 403-4 | Worker participation, consultation, and communication on occupational health and safety | Choice Employer > Workplace Safety and Health (Pg 113-114) |
| | 403-5 | Worker training on occupational health and safety | Choice Employer > talentMPA (Pg 107-110) |
| | 403-6 | Promotion of worker health | Choice Employer > Workplace Safety and Health (Pg 113-114) |
| | 403-7 | Prevention and mitigation of occupational health and safety impacts directly linked by business relationships | Choice Employer > Workplace Safety and Health (Pg 113-114) |
| | 403-8 | Workers covered by an occupational health and safety management system | Choice Employer > Workplace Safety and Health (Pg 113-114) |
| | 403-9 | Work-related injuries | Choice Employer > Workplace Safety and Health (Pg 113-114) |
| | 403-10 | Work-related ill health | Choice Employer > Workplace Safety and Health (Pg 113-114) |
| GRI 404: Training and Education 2016 | 404-1 | Average hours of training per year per employee | Choice Employer > talentMPA (Pg 107-110) |
| | 404-2 | Programs for upgrading employee skills and transition assistance programs | Choice Employer > talentMPA (Pg 107-110) |
| | 404-3 | Percentage of employees receiving regular performance and career development reviews | Choice Employer > talentMPA (Pg 107-110) |

UN SDGS INDEX

| Goal | Target Indicator | Section | Pages |
|--|------------------|--|--|
|  <div>4 QUALITY EDUCATION</div> <div>Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all</div> | 4.4 | By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship | Chapter 1: Digitalisation & Innovation Chapter 3: Our Fight Against COVID-19 Chapter 4: Vital Chapter 6: Resilient Chapter 8: Choice Employer 22-31 44-57 58-77 84-93 104-119 |
| | 4.7 | By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development | Chapter 2: Decarbonisation & Sustainability Chapter 4: Vital Chapter 5: Versatile Chapter 6: Resilient 32-43 58-77 78-83 84-93 |
|  <div>7 AFFORDABLE AND CLEAN ENERGY</div> <div>Ensure access to affordable, reliable, sustainable and modern energy for all</div> | 7.3 | By 2030, double the global rate of improvement in energy efficiency | Chapter 2: Decarbonisation & Sustainability Chapter 4: Vital 32-43 58-77 |
|  <div>8 DECENT WORK AND ECONOMIC GROWTH</div> <div>Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all</div> | 8.3 | Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalisation and growth of micro-, small- and medium-sized enterprises, including through access to financial services | Chapter 1: Digitalisation & Innovation Chapter 2: Decarbonisation & Sustainability Chapter 3: Our Fight Against COVID-19 Chapter 4: Vital Chapter 5: Versatile Chapter 6: Resilient 22-31 32-43 44-57 58-77 78-83 84-93 |
| | 8.5 | By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value | Chapter 3: Our Fight Against COVID-19 Chapter 6: Resilient Chapter 8: Choice Employer 44-57 84-93 104-119 |
| | 8.6 | By 2020, substantially reduce the proportion of youth not in employment, education or training | Chapter 3: Our Fight Against COVID-19 Chapter 6: Resilient 44-57 86-93 |
| | 8.8 | Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment | Chapter 3: Our Fight Against COVID-19 Chapter 4: Vital Chapter 8: Choice Employer 44-57 58-77 104-119 |
| | | | |
| | | | |

| Goal | | Target Indicator | | Section | Pages |
|---|--|---|--|---|-------|
| <div>9</div> <div>INDUSTRY, INNOVATION AND INFRASTRUCTURE</div>  | Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation | 9.1 | Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all | Chapter 1: Digitalisation & Innovation | 22-31 |
| | | | | Chapter 3: Our Fight Against COVID-19 | 44-57 |
| | | | | Chapter 4: Vital | 58-77 |
| | | 9.4 | By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities | Chapter 1: Digitalisation & Innovation | 22-31 |
| | | | | Chapter 4: Vital | 58-77 |
| | | 9.5 | Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending | Chapter 1: Digitalisation & Innovation | 22-31 |
| | | Chapter 2: Decarbonisation & Sustainability | 32-43 | | |
| | | Chapter 4: Vital | 58-77 | | |
| <div>11</div> <div>SUSTAINABLE CITIES AND COMMUNITIES</div>  | Make cities and human settlements inclusive, safe, resilient and sustainable | 11.2 | By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons | Chapter 1: Digitalisation & Innovation | 22-31 |
| | | | | Chapter 2: Decarbonisation & Sustainability | 32-43 |
| | | | | Chapter 3: Our Fight Against COVID-19 | 44-57 |
| | | | | Chapter 4: Vital | 58-77 |
| | | 11.4 | Strengthen efforts to protect and safeguard the world's cultural and natural heritage | Chapter 2: Decarbonisation & Sustainability | 32-43 |
| | | | | Chapter 6: Resilient | 84-93 |
| 11.5 | By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations | Chapter 4: Vital | 58-77 | | |
| <div>12</div> <div>RESPONSIBLE CONSUMPTION AND PRODUCTION</div>  | Ensure sustainable consumption and production patterns | 12.5 | By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse | Chapter 2: Decarbonisation & Sustainability | 32-43 |
| | | 12.6 | Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle | Chapter 2: Decarbonisation & Sustainability | 32-43 |
| | | | | Chapter 5: Versatile | 78-83 |

| Goal | | Target Indicator | Section | Pages | | | |
|---|--|--|---|---|--|----------------------------------|---------|
| | | 12.7 | Promote public procurement practices that are sustainable, in accordance with national policies and priorities | Chapter 7: Culture of Excellence | 94-103 | | |
| | | 12.8 | By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature | Chapter 1: Digitalisation & Innovation | 22-31 | | |
| | | | | Chapter 2: Decarbonisation & Sustainability | 32-43 | | |
| | | | | Chapter 4: Vital | 58-77 | | |
| | | | | Chapter 5: Versatile | 78-83 | | |
|  | Conserve and sustainably use the oceans, seas and marine resources for sustainable development | 14.1 | By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution | Chapter 2: Decarbonisation & Sustainability | 32-43 | | |
| | | | | Chapter 4: Vital | 58-77 | | |
| | | 14.2 | By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans | Chapter 1: Digitalisation & Innovation | 22-31 | | |
| | | | | Chapter 2: Decarbonisation & Sustainability | 32-43 | | |
| | | | | Chapter 4: Vital | 58-77 | | |
| | | 14.5 | By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information | Chapter 2: Decarbonisation & Sustainability | 32-43 | | |
| | |  | Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels | 16.5 | Substantially reduce corruption and bribery in all their forms | Chapter 7: Culture of Excellence | 94-103 |
| | | | | | | Chapter 8: Choice Employer | 104-119 |
| 16.A | Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime | | | Chapter 4: Vital | 58-77 | | |
|  | Strengthen the means of implementation and revitalize the global partnership for sustainable development | 17.6 | Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilise and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries | Chapter 1: Digitalisation & Innovation | 22-31 | | |
| | | | | Chapter 2: Decarbonisation & Sustainability | 32-43 | | |
| | | | | Chapter 4: Vital | 58-77 | | |
| | | | | Chapter 5: Versatile | 78-83 | | |
| | | 17.17 | Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships | Chapter 1: Digitalisation & Innovation | 22-31 | | |
| | | | | Chapter 2: Decarbonisation & Sustainability | 32-43 | | |
| | | | | Chapter 3: Our Fight Against COVID-19 | 44-57 | | |
| | | | | Chapter 4: Vital | 58-77 | | |
| | | | | Chapter 6: Resilient | 84-93 | | |

OUR
CONTRIBUTORS



FROM LEFT TO RIGHT:

- Vivien Cheow
- Kester Kiong
- Hermione Choong
- Ong Ah Kiong
- Ariel Lim
- Sharon Tan (Deputy Executive Editor)
- Stefan Tan (Managing Editor)
- Caitlin Fua (Executive Editor)
- Cassandra Yue
- Goldwin Koh
- Pearlyn Pang
- Melissa Ng
- Ho Jian Ming
- Neo Jia Ling

NOT IN PHOTO:

- Aveline
- Carmel Cheng
- Foo Chi Jao
- Sabrina Chiok
- Saddiq Haque
- Scott Ngiam

THE MARITIME AND PORT AUTHORITY
OF SINGAPORE AND ITS SUBSIDIARY

ANNUAL FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

ANNUAL REPORT
For the financial year ended 31 December 2020

Contents

| | Page |
|--|------|
| Statement by Board of Members | 1 |
| Independent Auditor's Report | 2 |
| Consolidated Balance Sheet | 6 |
| Consolidated Statement of Comprehensive Income | 7 |
| Consolidated Statement of Changes in Equity | 8 |
| Consolidated Statement of Cash Flows | 9 |
| Notes to the Financial Statements | 10 |

**THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY**

STATEMENT BY BOARD OF MEMBERS

For the financial year ended 31 December 2020

In the opinion of the Board of Members,

- (a) the consolidated financial statements of the Maritime and Port Authority of Singapore and its subsidiary (the "Authority") as set out on pages 6 to 59 are properly drawn up so as to present fairly, in all material respects, the state of affairs of the Authority as at 31 December 2020 and of the results of the business, changes in equity and cash flows of the Authority for the financial year then ended in accordance with the provisions of the Public Sector (Governance) Act 2018, the Maritime and Port Authority of Singapore Act (Cap. 170A) and Statutory Board Financial Reporting Standards; and
- (b) at the date of this statement, there are reasonable grounds to believe that the Authority will be able to pay its debts as and when they fall due.

On behalf of the Board of Members,


Niam Chiang Meng
Chairman
Quah Lay Hoon
Chief Executive and Board Member

25 March 2021

**INDEPENDENT AUDITOR'S REPORT TO THE MEMBERS OF THE BOARD
OF THE MARITIME AND PORT AUTHORITY OF SINGAPORE**

Report on the Audit of the Financial Statements

Our Opinion

In our opinion, the accompanying consolidated financial statements of the Maritime and Port Authority of Singapore and its subsidiary (the "Authority") are properly drawn up in accordance with the provisions of the Public Sector (Governance) Act 2018, Act 5 of 2018 (the "Public Sector (Governance) Act"), the Maritime and Port Authority of Singapore Act (Cap. 170A) (the "Act") and Statutory Board Financial Reporting Standards ("SB-FRS") so as to present fairly, in all material respects, the state of affairs of the Authority as at 31 December 2020 and the results, changes in equity and cash flows of the Authority for the year ended on that date.

What we have audited

The financial statements of the Authority comprise:

- The consolidated balance sheet as at 31 December 2020;
- the consolidated statement of comprehensive income for the financial year ended 31 December 2020;
- the consolidated statement of changes in equity for the financial year then ended;
- the consolidated statement of cash flows for the financial year then ended; and
- the notes to the financial statements, including a summary of significant accounting policies.

Basis for Opinion

We conducted our audit in accordance with Singapore Standards on Auditing ("SSAs"). Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Independence

We are independent of the Authority in accordance with the Accounting and Corporate Regulatory Authority Code of Professional Conduct and Ethics for Public Accountants and Accounting Entities ("ACRA Code") together with the ethical requirements that are relevant to our audit of the financial statements in Singapore, and we have fulfilled our other ethical responsibilities in accordance with these requirements and the ACRA Code.

Other Information

Management is responsible for the other information. The other information comprises the Statement by Board of Members but does not include the financial statements and our auditor's report thereon.

**INDEPENDENT AUDITOR'S REPORT TO THE MEMBERS OF THE BOARD
OF THE MARITIME AND PORT AUTHORITY OF SINGAPORE (continued)**

Other Information (continued)

Our opinion on the financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with the provisions of the Public Sector (Governance) Act, the Act and SB-FRS, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

A statutory board is constituted based on its Act and its dissolution requires Parliament's approval. In preparing the financial statements, management is responsible for assessing the Authority's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless there is intention to wind up the Authority or for the Authority to cease operations.

Those charged with governance are responsible for overseeing the Authority's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with SSAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

**INDEPENDENT AUDITOR'S REPORT TO THE MEMBERS OF THE BOARD
OF THE MARITIME AND PORT AUTHORITY OF SINGAPORE (continued)**

Auditor's Responsibilities for the Audit of the Financial Statements (continued)

As part of an audit in accordance with SSAs, we exercise professional judgement and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Authority's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Authority's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Authority to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Authority to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Report on Other Legal and Regulatory Requirements

Opinion

In our opinion:

- (a) the receipts, expenditure, investment of moneys and the acquisition and disposal of assets by the Authority during the year are, in all material respects, in accordance with the provisions of the Public Sector (Governance) Act, the Act and the requirements of any other written law applicable to moneys of or managed by the Authority; and

**INDEPENDENT AUDITOR'S REPORT TO THE MEMBERS OF THE BOARD
OF THE MARITIME AND PORT AUTHORITY OF SINGAPORE (continued)**

Report on Other Legal and Regulatory Requirements (continued)

- (b) proper accounting and other records have been kept, including records of all assets of the Authority whether purchased, donated or otherwise.

Basis for Opinion

We conducted our audit in accordance with SSAs. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Compliance Audit* section of our report. We are independent of the Authority in accordance with the ACRA Code together with the ethical requirements that are relevant to our audit of the financial statements in Singapore, and we have fulfilled our other ethical responsibilities in accordance with these requirements and the ACRA Code. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion on management's compliance.

Responsibilities of Management for Compliance with Legal and Regulatory Requirements

Management is responsible for ensuring that the receipts, expenditure, investment of moneys and the acquisition and disposal of assets, are in accordance with the provisions of the Public Sector (Governance) Act, the Act and the requirements of any other written law applicable to moneys of or managed by the Authority. This responsibility include monitoring related compliance requirements relevant to the Authority, and implementing internal controls as management determines are necessary to enable compliance with the requirements.

Auditor's Responsibilities for the Compliance Audit

Our responsibility is to express an opinion on management's compliance based on our audit of the financial statements. We planned and performed the compliance audit to obtain reasonable assurance about whether the receipts, expenditure, investment of moneys and the acquisition and disposal of assets, are in accordance with the provisions of the Public Sector (Governance) Act, the Act and the requirements of any other written law applicable to moneys of or managed by the Authority.

Our compliance audit includes obtaining an understanding of the internal control relevant to the receipts, expenditure, investment of moneys and the acquisition and disposal of assets; and assessing the risks of material misstatement of the financial statements from non-compliance, if any, but not for the purpose of expressing an opinion on the effectiveness of the Authority's internal control. Because of the inherent limitations in any internal control system, non-compliances may nevertheless occur and not be detected.



PricewaterhouseCoopers LLP
Public Accountants and Chartered Accountants
Singapore, 25 March 2021

**THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY**

CONSOLIDATED BALANCE SHEET

As at 31 December 2020

| | Note | 2020 \$ | 2019 \$ |
|--|------|----------------------|----------------------|
| ASSETS | | | |
| Non-current assets | | | |
| Property, plant and equipment | 4 | 95,171,289 | 99,272,779 |
| Right-of-use assets | 5 | 23,275,470 | 4,312,712 |
| Capital work-in-progress | 4,6 | 10,903,072 | 9,481,644 |
| Financial assets | 8 | 472,529,894 | 614,867,828 |
| | | <u>601,879,725</u> | <u>727,934,963</u> |
| Current assets | | | |
| Trade receivables | 9 | 37,664,104 | 50,215,521 |
| Deposits, prepayments and other receivables | 10 | 14,508,637 | 16,367,361 |
| Cash and cash equivalents | 11 | 1,076,002,109 | 866,021,715 |
| | | <u>1,128,174,850</u> | <u>932,604,597</u> |
| Total assets | | <u>1,730,054,575</u> | <u>1,660,539,560</u> |
| EQUITY | | | |
| Establishment account | 12 | 147,375,155 | 147,375,155 |
| Equity financing account | 13 | 3,978,616 | 3,978,616 |
| Accumulated surplus | | 1,469,001,368 | 1,388,790,452 |
| Total equity | | <u>1,620,355,139</u> | <u>1,540,144,223</u> |
| LIABILITIES | | | |
| Non-current liabilities | | | |
| Employment benefits | 14 | - | 422,377 |
| Deferred capital grant | 15 | 15,093,927 | 16,403,403 |
| Lease liabilities | 16 | 19,096,765 | 2,115,496 |
| | | <u>34,190,692</u> | <u>18,941,276</u> |
| Current liabilities | | | |
| Trade and other payables | 17 | 40,522,551 | 47,573,426 |
| Advances, deposits and unearned income | 18 | 11,340,407 | 13,238,104 |
| Lease liabilities | 16 | 4,899,309 | 2,282,953 |
| Provision for contribution to Consolidated Fund | 23 | 18,746,477 | 38,359,578 |
| | | <u>75,508,744</u> | <u>101,454,061</u> |
| Total liabilities | | <u>109,699,436</u> | <u>120,395,337</u> |
| Total equity and liabilities | | <u>1,730,054,575</u> | <u>1,660,539,560</u> |
| Funds managed/held on behalf of others | | | |
| Funds managed/held on behalf of others | 28 | 38,245,434 | 7,092,603 |
| Funds' net assets managed/held on behalf of others | 28 | (38,245,434) | (7,092,603) |

The accompanying notes form an integral part of these financial statements.

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

For the financial year ended 31 December 2020

| | Note | 2020 \$ | 2019 \$ |
|---|------|--------------------|--------------------|
| Operating revenue | | | |
| Port dues and marine services | 19 | 229,295,388 | 283,222,209 |
| Shipping services | 19 | 5,987,240 | 6,573,119 |
| Rental income | 19 | 2,654,561 | 4,354,813 |
| Training | 19 | 500,705 | 540,669 |
| Miscellaneous revenue | 19 | 328,236 | 766,740 |
| | | <u>238,766,130</u> | <u>295,457,550</u> |
| Operating expenditure | | | |
| Staff cost | 20 | 83,735,410 | 86,606,893 |
| Depreciation of property, plant and equipment | 4 | 21,637,209 | 18,654,348 |
| Depreciation of right-of-use assets | 5 | 5,409,655 | 2,494,198 |
| Hire of marine craft and sea garbage services | | 11,220,036 | 11,642,075 |
| Fuel, repairs and maintenance | | 16,964,926 | 18,062,708 |
| Interest on lease liabilities | 16 | 735,686 | 181,992 |
| Other operating expenses | 21 | 69,834,996 | 70,857,722 |
| | | <u>209,537,918</u> | <u>208,499,936</u> |
| Operating surplus | | 29,228,212 | 86,957,614 |
| Net other operating surplus | 22 | 79,710,705 | 74,525,727 |
| Surplus from operations | | <u>108,938,917</u> | <u>161,483,341</u> |
| Amortisation of deferred capital grant | 15 | 1,309,476 | 1,261,950 |
| Surplus before contribution to Consolidated Fund | | <u>110,248,393</u> | <u>162,745,291</u> |
| Contribution to Consolidated Fund | 23 | (18,746,477) | (27,676,304) |
| Surplus for the year, representing total comprehensive income for the year | | <u>91,501,916</u> | <u>135,068,987</u> |

There is no other comprehensive income for the financial years ended 31 December 2020 and 2019.

The accompanying notes form an integral part of these financial statements.

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

For the financial year ended 31 December 2020

| | Establishment account \$ | Equity financing account \$ | Accumulated surplus \$ | Total \$ |
|---|--------------------------------|-----------------------------------|------------------------------|----------------------|
| 2020 | | | | |
| Beginning of financial year | 147,375,155 | 3,978,616 | 1,388,790,452 | 1,540,144,223 |
| <u>Total comprehensive income for the year</u> | | | | |
| Surplus for the year | - | - | 91,501,916 | 91,501,916 |
| Dividends paid, representing total transaction with owners, recognised directly in equity | - | - | (11,291,000) | (11,291,000) |
| End of financial year | <u>147,375,155</u> | <u>3,978,616</u> | <u>1,469,001,368</u> | <u>1,620,355,139</u> |
| 2019 | | | | |
| Beginning of financial year | 147,375,155 | 3,978,616 | 1,258,838,465 | 1,410,192,236 |
| <u>Total comprehensive income for the year</u> | | | | |
| Surplus for the year | - | - | 135,068,987 | 135,068,987 |
| Dividends paid, representing total transaction with owners, recognised directly in equity | - | - | (5,117,000) | (5,117,000) |
| End of financial year | <u>147,375,155</u> | <u>3,978,616</u> | <u>1,388,790,452</u> | <u>1,540,144,223</u> |

The accompanying notes form an integral part of these financial statements.

**THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY**

CONSOLIDATED STATEMENT OF CASH FLOWS

For the financial year ended 31 December 2020

| | Note | 2020 \$ | 2019 \$ |
|---|------|--------------|--------------|
| Cash flows from operating activities | | | |
| Surplus before contribution to Consolidated Fund | | 110,248,393 | 162,745,291 |
| Adjustments for: | | | |
| - Depreciation of property, plant and equipment | 4 | 21,637,209 | 18,654,348 |
| - Depreciation of right-of-use assets | 5 | 5,409,655 | 2,494,198 |
| - Impairment loss on financial assets | 9 | 74,114 | 51,608 |
| - Provision for employee benefits | 14 | 77,718 | 16,215 |
| - Amortisation of deferred capital grant | 15 | (1,309,476) | (1,261,950) |
| - Interest on lease liabilities | 16 | 735,686 | 181,992 |
| - Net investment gain from funds with fund managers | 22 | (34,719,780) | (70,824,010) |
| - Gain from sale of equity managed internally | | - | (13,873) |
| - Interest income on bank deposits | 22 | (3,626,354) | (3,691,038) |
| - Net (gain)/loss on disposal of property, plant and equipment | 22 | (40,821,281) | 198,228 |
| | | 57,705,884 | 108,551,009 |
| Changes in working capital: | | | |
| - Trade receivables | | 12,477,303 | (4,930,113) |
| - Deposits, prepayments and other receivables | | 1,005,888 | (3,121,063) |
| - Trade and other payables | | (2,286,126) | 5,587,692 |
| - Advances, deposits and unearned income | | (1,897,697) | 2,003,237 |
| Cash generated from operations | | 67,005,252 | 108,090,792 |
| Payment of employee benefits | 14 | (500,095) | (16,215) |
| Contribution paid to Consolidated Fund | 23 | (38,359,578) | - |
| Net cash from operating activities | | 28,145,579 | 108,074,547 |
| Cash flows from investing activities | | | |
| Withdrawal of industry funds with Accountant-General's Department | | 27,136,210 | 33,210,583 |
| Proceeds from sale of property, plant and equipment | | 41,003,565 | 6,742 |
| Purchases of property, plant and equipment and capital work-in-progress | | (23,953,704) | (24,528,986) |
| (Placement)/Withdrawal of funds with custodian | | (30,917,486) | 43,901,171 |
| Proceeds from sale of equity managed internally | | - | 13,873 |
| Interest received | | 4,479,190 | 2,534,495 |
| Net cash from investing activities | | 17,747,775 | 55,137,878 |
| Cash flows from financing activities | | | |
| Dividends paid | | (11,291,000) | (5,117,000) |
| Principal repayment of lease liabilities | 16 | (4,725,264) | (2,408,461) |
| Interest paid | 16 | (735,686) | (181,992) |
| Net cash used in financing activities | | (16,751,950) | (7,707,453) |
| Net increase in cash and cash equivalents | | 29,141,404 | 155,504,972 |
| Cash and cash equivalents at beginning of financial year | | 250,631,711 | 95,126,739 |
| Cash and cash equivalents at end of financial year | 11 | 279,773,115 | 250,631,711 |

The accompanying notes form an integral part of these financial statements.

**THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY**

NOTES TO THE FINANCIAL STATEMENTS

For the financial year ended 31 December 2020

These notes form an integral part of and should be read in conjunction with the accompanying financial statements.

1. General information

The Maritime and Port Authority of Singapore ("MPA") under the purview of Ministry of Transport, was established on 2 February 1996 under the Maritime and Port Authority of Singapore Act (Cap. 170A) with the merger of the following organisations:

- The National Maritime Board (NMB);
- The Marine Department (MD); and
- The regulatory departments of the Port of Singapore Authority (PSA).

MPA is domiciled in Singapore and the address of its registered office is 460 Alexandra Road, 19th Storey, mTower, Singapore 119963.

The principal activities of MPA include the control of vessel movements to ensure a safe and secure port, and also the regulation of the port and marine services and facilities. MPA is the champion agency to develop and promote Singapore as an International Maritime Centre. MPA also represents Singapore regionally and internationally to safeguard Singapore's maritime interests.

The principal activities of its subsidiary and associated company are set out in Note 7.

2. Significant accounting policies

2.1 Basis of preparation

These consolidated financial statements of MPA and its subsidiary ("the Authority") have been prepared in accordance with the provisions of the Public Sector (Governance) Act 2018 and the Maritime and Port Authority of Singapore Act (Cap. 170A) and Statutory Board Financial Reporting Standards ("SB-FRS").

The financial statements have been prepared under the historical cost convention except as disclosed in the accounting policies below.

The preparation of financial statements in conformity with SB-FRS requires management to exercise its judgement in the process of applying the Authority's accounting policies. It also requires the use of certain critical accounting estimates and assumptions. The areas involving a higher degree of judgement or complexity, or areas where assumptions and estimates are significant to the financial statements are disclosed in Note 3.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.1 Basis of preparation (continued)

Interpretations and amendments to published Standards effective in 2020

On 1 January 2020, the Authority adopted the new or amended SB-FRS and Interpretations of SB-FRS ("INT SB-FRS") that are mandatory for application for the financial year. Changes to the Authority's accounting policies have been made as required, in accordance with the transitional provisions in the respective SB-FRS and INT SB-FRS.

The adoption of these new or amended SB-FRS and INT SB-FRS did not result in substantial changes to the Authority's accounting policies and had no material effect on the amounts reported for the current or prior financial years except as disclosed below.

SB-FRS 116 – Leases

Early adoption of amendment to SB-FRS 116 Leases

The Authority has elected to early adopt the amendments to SB-FRS 116 which introduced a practical expedient for a lessee to elect not to assess whether a rent concession is a lease modification, if all the following conditions are met:

- (a) the change in lease payments results in revised consideration for the lease that is substantially the same as, or less than, the consideration for the lease immediately preceding the change;
- (b) any reduction in lease payments affects only payments originally due on or before 30 June 2021; and
- (c) there is no substantive change to other terms and conditions of the lease.

The Authority has elected to apply this practical expedient to all property leases. As a result of applying the practical expedient, rent concessions of \$49,524 (Note 21) was recognised as reduction in the rental expenses in the consolidated statement of comprehensive income during the year.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.2 Revenue recognition

Revenue is measured based on the consideration specified in a contract with a customer and excludes amounts collected on behalf of third parties. The Authority recognises revenue when it transfers control of a product or service to a customer. Revenue comprises the fair value of the consideration received or receivable for the rendering of services in the ordinary course of the Authority's activities. Revenue is presented net of goods and services tax, rebates and discounts.

The Authority recognises revenue when the amount of revenue and related cost can be reliably measured, it is probable that the collectability of the related receivables is reasonably assured and when the specific criteria for each of the Authority's activities are met as follows:

(a) *Port dues and marine services*

Dues, licence and permit fees, and agency fee are recognised over time as and when services are performed. Any other marine services are recognised as and when the services are completed.

(b) *Training revenue*

Training revenue are recognised over time as and when services are performed.

(c) *Shipping services*

Shipping services, which comprise registration fees and seaman engagement and discharge fees, are recognised as and when services are completed. Annual payment scheme, such as annual administrative fee, will be recognised over time as and when services are performed.

(d) *Rental income*

Rental income from operating leases (net of any incentives given to the lessees) is recognised on a straight-line basis over lease term.

(e) *Interest income*

Interest income is accrued on a time basis, by reference to the principal outstanding and at the effective interest rate applicable.

(f) *Dividend income*

Dividend income is recognised when the right to receive payment is established.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.3 Government grants

Government grants received for the purchase or the construction of depreciable assets are accounted for as deferred capital grants. The deferred capital grants are amortised and charged to income or expenditure over the period necessary to match the annual depreciation charge of these assets or when the assets are disposed or written off. Where the grants relate to an expense item, they are recognised in income or expenditure over the periods necessary to match them on a systematic basis, to the costs, which they are intended to compensate.

2.4 Group accounting

(a) *Subsidiary*

A subsidiary is an entity over which the Authority has control. The Authority controls an entity when the Authority is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. A subsidiary is fully consolidated from the date on which control is transferred to the Authority. It is deconsolidated from the date on that control ceases.

(b) *Associated company*

Associated company is an entity over which the Authority has significant influence, but not control, generally accompanied by a shareholding giving rise to voting rights of 20% and above but not exceeding 50%.

Investments in associated company is accounted for in the consolidated financial statements using the equity method of accounting less impairment losses, if any.

To the extent the Authority's associated company is limited by guarantee and it does not share in their profits or losses, the Authority records its contributions to associated company as grants in the consolidated statement of comprehensive income.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.5 Property, plant and equipment

(a) *Measurement*

Property, plant and equipment are initially recognised at cost and subsequently carried at cost less accumulated depreciation and accumulated impairment losses.

The cost of an item of property, plant and equipment initially recognised includes its purchase price and any cost that is directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management.

The cost of a self-constructed asset includes the cost of materials and direct labour, any other costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management, and the cost of dismantling and removing the items and restoring the site on which they are located. Purchased software that is integral to the functionality of the related equipment is capitalised as part of that equipment.

When parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

Assets previously from the former National Maritime Board, the Marine Department and the regulatory departments of the Port of Singapore Authority were taken in at their transacted cost.

Property, plant and equipment acquired and funded under Government grants are capitalised and depreciated over their useful lives. The related accretion of deferred capital grants is matched against the depreciation (please refer to Note 2.3).

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.5 Property, plant and equipment (continued)

(b) Depreciation

Depreciation on property, plant and equipment is calculated using the straight-line method to allocate their depreciable amounts over their estimated useful lives as follows:

| | Useful lives |
|----------------------------------|---|
| Leasehold land | Over the lease periods ranging from 6 to 58 years |
| Building structures | Over the lease periods ranging from 2 to 38 years |
| Wharves, hard-standing and roads | Over the lease periods ranging from 3 to 28 years |
| Renovation | 8 years |
| Plant, machinery and equipment | 5 to 15 years |
| Vehicles | 10 years |
| Computers | 5 years |
| Furniture and fittings | 8 years |
| Floating craft | 8 or 15 years |

The residual values, estimated useful lives and depreciation method of property, plant and equipment are reviewed, and adjusted as appropriate, at each balance sheet date. The effects of any revision are recognised in income or expenditure when the changes arise.

(c) Subsequent expenditure

Subsequent expenditure relating to property, plant and equipment that has already been recognised is added to the carrying amount of the asset only when it is probable that future economic benefits associated with the item will flow to the Authority and the cost of the item can be measured reliably. All other repair and maintenance expenses are recognised in income or expenditure when incurred.

(d) Disposal

On disposal of an item of property, plant and equipment, the difference between the disposal proceeds and its carrying amount is recognised in income or expenditure within "Net other operating surplus".

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.6 Capital work-in-progress

Capital work-in-progress is stated at cost. Expenditure relating to the capital work-in-progress is capitalised when incurred. No depreciation is provided until the capital work-in-progress is completed and the related property, plant and equipment are available for use.

2.7 Impairment of non-financial assets

Property, plant and equipment

Right-of-use assets

Capital work-in-progress

Investments in subsidiary and associated company

Property, plant and equipment, right-of-use assets, capital work-in-progress and investments in subsidiary and associated company are tested for impairment whenever there is any objective evidence or indication that these assets may be impaired.

For the purpose of impairment testing, the recoverable amount (i.e. the higher of the fair value less cost to sell and the value-in-use) is determined on an individual asset basis unless the asset does not generate cash inflows that are largely independent of those from other assets. If this is the case, the recoverable amount is determined for the CGU to which the asset belongs.

If the recoverable amount of the asset (or CGU) is estimated to be less than its carrying amount, the carrying amount of the asset (or CGU) is reduced to its recoverable amount.

The difference between the carrying amount and recoverable amount is recognised as an impairment loss in income or expenditure.

An impairment loss for an asset other than goodwill is reversed only if, there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment loss was recognised. The carrying amount of this asset is increased to its revised recoverable amount, provided that this amount does not exceed the carrying amount that would have been determined (net of any accumulated amortisation or depreciation) had no impairment loss been recognised for the asset in prior years. A reversal of impairment loss for an asset other than goodwill is recognised in income or expenditure.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.8 Financial assets

(a) Classification

The Authority classifies its financial assets in the following categories: amortised cost and fair value through profit or loss ("FVTPL") under SB-FRS 109. The classification depends on the nature of the asset and the purpose for which the assets were acquired. The Authority determines the classification of its financial assets at initial recognition, based on SB-FRS 109's Business Model and Contractual Cash Flows tests.

(i) Financial Assets held at Amortised Cost

Financial assets held at Amortised Cost comprises mainly non-derivative cash and bank balances and trade and other receivables with fixed or determinable payments that are not quoted in an active market. They are presented as current assets except for those expected to be realised later than 12 months after the balance sheet date which are presented as non-current assets. These financial assets are presented as "trade receivables" (Note 9), "other receivables" (Note 10) and "cash and cash equivalents" (Note 11) on the balance sheet.

(ii) Financial assets held at Fair Value through Profit or Loss ("FVTPL")

Financial assets held at FVTPL are non-derivatives that are either classified or designated in this category. They are presented as non-current assets unless the investment matures or the Authority intends to dispose of the assets within 12 months after the balance sheet date.

The Authority's investments in equity and debt securities, including equity and debt securities placed by fund managers, where investment performance is evaluated on a fair value (total return) basis, are classified as FVTPL financial assets.

(b) Recognition and derecognition

Regular way purchases and sales of financial assets are recognised on trade-date - the date on which the Authority commits to purchase or sell the asset.

Financial assets are derecognised when the rights to receive cash flows from the financial assets have expired or have been transferred and the Authority has transferred substantially all risks and rewards of ownership. On disposal of a financial asset, the difference between the carrying amount and the sale proceeds is recognised in income or expenditure. Any amount previously recognised in other comprehensive income relating to that asset is reclassified to income or expenditure.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.8 Financial assets (continued)

(c) Initial measurement

Except for trade receivables measured at transaction price, at initial recognition, financial assets are measured at its fair value plus or minus, in the case of a financial asset or financial liability not at fair value through profit or loss, transaction costs that are directly attributable to the acquisition or issue of the financial asset. Financial assets held at FVTPL are recognised at fair value.

(d) Subsequent measurement

FVTPL financial assets are subsequently carried at fair value. Trade and other receivables are subsequently carried at amortised cost using the effective interest method.

Interest and dividend income on FVTPL financial assets, and changes in fair values of FVTPL debt and equity securities are recognised in income or expenditure.

(e) Impairment

The Authority recognises a loss allowance for expected credit losses ("ECL") on trade and other receivables. The amount of expected credit losses is updated at each reporting date to reflect changes in credit risk since initial recognition of the respective financial instrument.

The Authority recognises lifetime ECL for trade receivables. The expected credit losses on these financial assets are estimated using a provision matrix based on the Authority's historical credit loss experience, adjusted for factors that are specific to the debtors, general economic conditions and an assessment of both the current as well as the forecast direction of conditions at the reporting date, including time value of money where appropriate.

For all other financial instruments, the Authority recognises lifetime ECL when there has been a significant increase in credit risk since initial recognition. If, on the other hand, the credit risk on the financial instrument has not increased significantly since initial recognition, the Authority measures the loss allowance for that financial instrument at an amount equal to 12-month ECL. The assessment of whether lifetime ECL should be recognised is based on significant increases in the likelihood or risk of a default occurring since initial recognition instead of on evidence of a financial asset being credit-impaired at the reporting date or an actual default occurring.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.8 Financial assets (continued)

(e) Impairment (continued)

Significant increase in credit risk

In assessing whether the credit risk on a financial instrument has increased significantly since initial recognition, the Authority compares the risk of a default occurring on the financial instrument as at the reporting date with the risk of a default occurring on the financial instrument as at the date of initial recognition. In making this assessment, the Authority considers historical loss rates for each category of customers and adjusts to reflect current and forward-looking macroeconomic factors affecting the ability of the customers to settle the receivables. The Authority has identified the credit default risk for logistics and transportation industry to be the most relevant factors, and accordingly adjusts the historical loss rates based on expected changes in these factors.

The Authority presumes that the credit risk on a financial asset has increased significantly since initial recognition when contractual payments are more than 30 days past due, unless the Authority has reasonable and supportable information that demonstrates otherwise.

The Authority assumes that the credit risk on a financial instrument has not increased significantly since initial recognition if the financial instrument is determined to have low credit risk at the reporting date. A financial instrument is determined to have low credit risk if i) the financial instrument has a low risk of default, ii) the borrower has a strong capacity to meet its contractual cash flow obligations in the near term and iii) adverse changes in economic and business conditions in the longer term may, but will not necessarily, reduce the ability of the borrower to fulfil its contractual cash flow obligations.

The Authority regularly monitors the effectiveness of the criteria used to identify whether there has been a significant increase in credit risk and revises them as appropriate to ensure that the criteria are capable of identifying significant increase in credit risk before the amount becomes past due.

Definition of default

The Authority considers that default has occurred when a financial asset is more than 90 days past due unless the Authority has reasonable and supportable information to demonstrate that a more lagging default criterion is more appropriate.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.8 Financial assets (continued)

(e) Impairment (continued)

Credit-impaired financial assets

A financial asset is credit-impaired when one or more events that have a detrimental impact on the estimated future cash flows of that financial asset have occurred.

Write-off policy

The Authority writes off a financial asset when there is information indicating that the counterparty is in severe financial difficulty and there is no realistic prospect of recovery, e.g. when the counterparty has been placed under liquidation or has entered into bankruptcy proceedings, or in the case of trade receivables, when the chances of recovery are remote. Financial assets written off may still be subject to enforcement activities under the Authority's recovery procedures, taking into account legal advice where appropriate. Any recoveries made are recognised in income or expenditure.

Measurement and recognition of expected credit losses

For financial assets, the expected credit loss is estimated as the difference between all contractual cash flows that are due to the Authority in accordance with the contract and all the cash flows that the Authority expects to receive, discounted at the original effective interest rate.

If the Authority has measured the loss allowance for a financial instrument at an amount equal to lifetime ECL in the previous reporting period, but determines at the current reporting date that the conditions for lifetime ECL are no longer met, the Authority measures the loss allowance at an amount equal to 12-month ECL at the current reporting date.

2.9 Offsetting financial instruments

Financial assets and liabilities are offset and the net amount reported in the balance sheet when there is a legally enforceable right to offset and there is an intention to settle on a net basis or realise the asset and settle the liability simultaneously.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.10 Trade and other payables

Trade and other payables represent liabilities for goods and services provided to the Authority prior to the end of financial year which are unpaid. They are classified as current liabilities if payment is due within one year or less (or in the normal operating cycle of the business if longer). Otherwise, they are presented as non-current liabilities.

Trade and other payables are initially recognised at fair value, and subsequently carried at amortised cost using the effective interest method.

2.11 Derivative financial instruments

The Authority engages external fund managers to manage some of its surplus funds. The Authority is exposed primarily to the financial risks of foreign exchange and interest rate fluctuations on debt and equity securities and cash and cash equivalents placed by the fund managers. The fund managers also hold derivative financial instruments to manage these risks. The use of hedging instruments is governed by the Authority's investment mandate which provides guidelines on the use of financial instruments consistent with the Authority's risk management strategy.

A derivative financial instrument is initially recognised at its fair value on the date the contract is entered into and is subsequently carried at its fair value. Changes in fair value are recognised in income or expenditure.

2.12 Fair value estimation of financial assets and liabilities

The fair values of financial instruments traded in active markets (such as exchange-traded and over-the-counter securities and derivatives) are based on quoted market prices at the balance sheet date. The quoted market prices used for financial assets are the current bid prices; the appropriate quoted market prices for financial liabilities are the current asking prices.

The fair values of financial instruments that are not traded in an active market are determined by using valuation techniques. The Authority uses a variety of methods and makes assumptions based on market conditions that are existing at each balance sheet date. Where appropriate, quoted market prices or dealer quotes for similar instruments are used. Valuation techniques, such as discounted cash flow analysis, are also used to determine the fair values of the financial instruments.

The fair values of current financial assets and liabilities carried at amortised cost approximate their carrying amounts.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.13 Leases

(a) Leases

(i) The Authority as lessee

The Authority assess whether a contract is or contains a lease, at inception of the contract. The Authority recognises a right-of-use asset and a corresponding lease liability with respect to all lease arrangements in which it is the lessee, except for short-term lease (defined as leases with a lease term of 12 months or less) and leases of low value assets. For these leases, the Authority recognises the lease payments as an operating expense on a straight-line basis over the lease term of the lease unless another systematic basis is more representative of the time pattern in which economic benefits from the leased assets are consumed.

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted by using the rate implicit in the lease. If this rate cannot be readily determined, the Authority uses the incremental borrowing rate specific to the lessee.

Lease payments included in the measurement of the lease liability comprise:

- fixed lease payments (including in-substance fixed payments), less any lease incentives;
- variable lease payments that depend on an index or rate, initially measured using the index or rate at the commencement date;
- the amount expected to be payable by the lessee under residual value guarantees;
- the exercise price of purchase options, if the lessee is reasonably certain to exercise the options; and
- payments of penalties for terminating the lease, if the lease term reflects the exercise of an option to terminate the lease.

The lease liability is presented as a separate line in the consolidated balance sheet.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.13 Leases (continued)

(a) Leases (continued)

(i) The Authority as lessee (continued)

The lease liability is subsequently measured by increasing the carrying amount to reflect interest on the lease liability (using the effective interest method) and by reducing the carrying amount to reflect the lease payments made.

The Authority remeasures the lease liability (and makes a corresponding adjustment to the related right-of-use asset) whenever:

- the lease term has changed or there is significant event or change in circumstances resulting in a change in the assessment of exercise of a purchase option, in which case the lease liability is remeasured by discounting the revised lease payments using a revised discount rate;
- the lease payments change due to changes in an index or rate or a change in expected payment under a guaranteed residual value, in which cases the lease liability is remeasured by discounting the revised lease payments using the initial discount rate (unless the lease payments change is due to a change in a floating interest rate, in which case a revised discount rate is used); or
- a lease contract is modified and the lease modification is not accounted for as a separate lease, in which case the lease liability is remeasured by discounting the revised lease payments using a revised discount rate at the effective date of the modification.

The right-of-use assets comprise the initial measurement of the corresponding lease liability, lease payments made at or before the commencement day, less any lease incentives received and any initial direct costs. They are subsequently measured at cost less accumulated depreciation and impairment losses.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.13 Leases (continued)

(a) Leases (continued)

(i) The Authority as lessee (continued)

Whenever the Authority incurs an obligation for costs to dismantle and remove a leased asset, restore the site on which it is located or restore the underlying asset to the condition required by the terms and conditions of the lease, a provision is recognised and measured under SB-FRS 37. To the extent that the costs relate to a right-of-use asset, the costs are included in the related right-of-use asset.

Right-of-use assets are depreciated over the shorter period of lease term and useful life of the underlying asset. If a lease transfers ownership of the underlying asset or the cost of the right-of-use asset reflects that the Authority expects to exercise a purchase option, the related right-of-use asset is depreciated over the useful life of the underlying asset. The depreciation starts at the commencement date of the lease.

The right-of-use assets are presented as a separate line in the consolidated balance sheet.

The Authority applies SB-FRS 36 to determine whether a right-of-use asset is impaired and accounts for any identified impairment loss as described in Note 2.7.

Variable rents that do not depend on an index or rate are not included in the measurement of the lease liability and the right-of-use asset. The related payments are recognised as an expense in the period in which the event or condition that triggers those payments occurs and are included in the line "Other operating expenses" in the consolidated statement of comprehensive income.

As a practical expedient, SB-FRS 116 permits a lessee not to separate non-lease components, and instead account for any lease and associated non-lease components as a single arrangement. The Authority has not used this practical expedient. For a contract that contains a lease component and one or more additional lease or non-lease components, the Authority allocates the consideration in the contract to each lease component on the basis of the relative stand-alone price of the lease component and the aggregate stand-alone price of the non-lease components.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.13 Leases (continued)

(a) Leases (continued)

(ii) The Authority as lessor

The Authority enters into lease agreements as a lessor with respect to rental space and buildings.

Leases for which the Authority is a lessor are classified as finance or operating lease. Whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee, the contract is classified as a finance lease. All other leases are classified as operating lease.

Rental income from operating leases is recognised on a straight-line basis over the term of the relevant lease. Initial direct costs incurred in negotiating and arranging an operating lease are added to the carrying amount of the leased asset and recognised on a straight-line basis over the leased term.

When a contract includes lease and non-lease components, the Authority applies SB-FRS 15 to allocate the consideration under the contract to each component.

2.14 Provisions

A provision is recognised when the Authority has a present legal or constructive obligation as a result of past events, it is more likely than not that an outflow of resources will be required to settle the obligation and the amount can be reliably estimated.

The amount recognised as a provision is the best estimate of the consideration required to settle the present obligation at the end of the reporting period, taking into account the risks and uncertainties surrounding the obligation. Where a provision is measured using the cash flows estimated to settle the present obligation, its carrying amount is the present value of those cash flows.

When some or all of the economic benefits required to settle a provision are expected to be recovered from a third party, the receivable is recognised as an asset if it is virtually certain that reimbursement will be received and the amount of the receivable can be measured reliably.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.15 Employee compensation

Employment benefits are recognised as an expense, unless the cost qualifies to be capitalised as an asset.

(a) Defined contribution plans

Defined contribution plans are post-employment benefit plans under which the Authority pays fixed contributions into separate entities such as the Central Provident Fund on a mandatory, contractual or voluntary basis. The Authority has no further payment obligations once the contributions have been paid.

(b) Pension benefits

Provision for pensions is made for the payment of retirement benefits to pensionable officers transferred to the Authority on 2 February 1996.

The cost of pension benefit due to pensionable officers is determined based on the estimated present value of the future cash outflows to be made in respect of services provided by these pensionable officers up to the balance sheet date.

(c) Employee leave entitlement

Employee entitlements to annual leave are recognised when they accrue to employees. A provision is made for the estimated liability for annual leave as a result of services rendered by employees up to the balance sheet date.

2.16 Currency translation

(a) Functional and presentation currency

The financial statements are presented in Singapore Dollars, which is the functional currency of the Authority.

(b) Transactions and balances

Transactions in a currency other than Singapore Dollar ("foreign currency") are translated into Singapore Dollars using the exchange rates at the dates of the transactions. Currency exchange differences resulting from the settlement of such transactions and from the translation of monetary assets and liabilities denominated in foreign currencies at the closing rates at the balance sheet date are recognised in income or expenditure. Non-monetary items measured at fair values in foreign currencies are translated using the exchange rates at the date when the fair values are determined. Currency translation differences on these items are included in income or expenditure.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

2. Significant accounting policies (continued)

2.17 Cash and cash equivalents

For the purpose of presentation in the consolidated statement of cash flows, cash and cash equivalents include cash on hand, deposits with financial institutions, commercial papers, short-term bills and notes which are readily convertible to cash and are subject to an insignificant risk of change in value, and bank overdrafts, except those which are managed by the fund managers or which are placed under the Statutory Board Approved Funds with the Accountant-General's Department. Bank overdrafts are presented as current borrowings on the consolidated balance sheet.

2.18 Funds managed/held on behalf of others

Funds are set up to account for contributions received from external sources for specific purposes.

The assets and liabilities of funds - Singapore Stranded Seafarers' Fund, and agency funds held in trust for Ministry of Transport are presented as a line item at the bottom of the consolidated balance sheet of the financial statements as prescribed by SB-FRS Guidance Note 3 *Accounting and Disclosures for Trust Funds*. Income or expenditure relating to these funds are accounted for directly in these funds. Details of income, expenditure, assets and liabilities are disclosed in Note 28 to the financial statements.

3. Critical accounting estimates, assumptions and judgements

Estimates, assumptions and judgements are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances.

3.1 Critical accounting estimates and assumptions

Useful lives of property, plant and equipment

The Authority reviews the estimated useful lives of property, plant and equipment regularly, in accordance with the accounting policy in Note 2.5, in order to determine the amount of depreciation expense to be recorded for each financial year. Changes in the expected level of use of the assets and the Authority's historical experience with similar assets after taking into account anticipated technological changes could impact the economic useful lives and the residual values of the assets, and therefore, future depreciation charges could be revised. Any changes in the economic useful lives could impact the depreciation charges and consequently affect the Authority's results. Refer to Note 4 for the carrying value of property, plant and equipment at the balance sheet date.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

3. Critical accounting estimates, assumptions and judgements (continued)

3.2 Critical judgements in applying the entity's accounting policies

Accounting for investments in and contributions to associated company

MPA has determined that it has significant influence over its associated company based on the voting rights of 20% and above but not exceeding 50%, held by its representatives at the board of directors of the associated company. As the associated company are incorporated as company limited by guarantee and MPA does not share in their profits or losses, MPA has recorded the contributions of \$11,603,144 (2019: \$5,171,945) made to the associated company as grant expenditure in the consolidated statement of comprehensive income.

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS

For the financial year ended 31 December 2020

4. Property, plant and equipment

| | Leasehold land* | Building structures | Wharves, hard-standing and roads* | Renovation | Plant, machinery and equipment | Vehicles | Computers | Furniture and fittings | Floating craft | Capital work-in-progress | Total |
|---------------------------------|------------------|---------------------|-----------------------------------|------------------|--------------------------------|----------------|-------------------|------------------------|------------------|--------------------------|--------------------|
| | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ |
| 2020 | | | | | | | | | | | |
| Cost | | | | | | | | | | | |
| Beginning of financial year | 8,449,290 | 57,686,103 | 120,378,140 | 18,155,835 | 16,447,828 | 669,276 | 102,557,782 | 3,562,144 | 9,769,026 | 9,481,644 | 347,157,068 |
| Additions | 28,227 | 471,771 | 912,150 | 186,773 | 1,202,180 | - | 8,447,351 | 128,803 | - | 7,762,176 | 19,139,431 |
| Transfers | - | 54,053 | - | 145,892 | - | - | 6,140,803 | - | - | (6,340,748) | - |
| Disposals/write-off | - | (35,988) | (7,795,805) | (115,307) | (1,484,970) | - | (6,415,515) | (126,875) | (12,500) | - | (15,966,960) |
| End of financial year | 8,477,517 | 58,175,939 | 113,494,485 | 18,373,193 | 16,185,038 | 669,276 | 110,730,421 | 3,564,072 | 9,756,526 | 10,903,072 | 350,329,539 |
| Accumulated depreciation | | | | | | | | | | | |
| Beginning of financial year | 4,252,583 | 40,817,509 | 84,958,672 | 11,621,343 | 11,468,977 | 280,335 | 75,615,613 | 1,796,837 | 7,590,776 | - | 238,402,645 |
| Depreciation charge | 348,398 | 1,594,402 | 6,455,964 | 1,268,312 | 905,190 | 66,928 | 10,372,286 | 383,979 | 241,750 | - | 21,637,209 |
| Disposals/write-off | - | (35,988) | (7,795,805) | (85,107) | (1,388,036) | - | (6,371,696) | (98,044) | (10,000) | - | (15,784,676) |
| End of financial year | 4,600,981 | 42,375,923 | 83,618,831 | 12,804,548 | 10,986,131 | 347,263 | 79,616,203 | 2,082,772 | 7,822,526 | - | 244,255,178 |
| Carrying amount: | | | | | | | | | | | |
| End of financial year | 3,876,536 | 15,800,016 | 29,875,654 | 5,568,645 | 5,198,907 | 322,013 | 31,114,218 | 1,481,300 | 1,934,000 | 10,903,072 | 106,074,361 |
| 2019 | | | | | | | | | | | |
| Cost | | | | | | | | | | | |
| Beginning of financial year | 8,319,830 | 60,947,764 | 120,378,140 | 12,500,592 | 14,611,031 | 669,276 | 85,761,882 | 3,145,626 | 9,867,425 | 10,743,480 | 326,945,046 |
| Additions | - | - | - | 2,764,150 | 1,931,386 | - | 14,323,192 | 579,581 | - | 4,930,677 | 24,528,986 |
| Transfers | 131,370 | (3,221,191) | - | 3,340,437 | 1,182,089 | - | 4,765,608 | 17,150 | (22,950) | (6,192,513) | - |
| Disposals/write-off | (1,910) | (40,470) | - | (449,344) | (1,276,678) | - | (2,292,900) | (180,213) | (75,449) | - | (4,316,964) |
| End of financial year | 8,449,290 | 57,686,103 | 120,378,140 | 18,155,835 | 16,447,828 | 669,276 | 102,557,782 | 3,562,144 | 9,769,026 | 9,481,644 | 347,157,068 |
| Accumulated depreciation | | | | | | | | | | | |
| Beginning of financial year | 3,900,932 | 39,953,471 | 78,420,451 | 10,632,447 | 11,444,470 | 213,407 | 70,298,021 | 1,599,822 | 7,397,270 | - | 223,880,291 |
| Depreciation charge | 351,651 | 1,592,307 | 6,538,221 | 960,543 | 922,130 | 66,928 | 7,610,492 | 347,058 | 265,018 | - | 18,654,348 |
| Transfers | - | (887,799) | - | 423,884 | 275,007 | - | - | - | (11,092) | - | - |
| Disposals/write-off | - | (40,470) | - | (395,531) | (1,172,630) | - | (2,292,900) | (150,043) | (60,420) | - | (4,111,994) |
| End of financial year | 4,252,583 | 40,817,509 | 84,958,672 | 11,621,343 | 11,468,977 | 280,335 | 75,615,613 | 1,796,837 | 7,590,776 | - | 238,402,645 |
| Carrying amount: | | | | | | | | | | | |
| End of financial year | 4,196,707 | 16,868,594 | 35,419,468 | 6,534,492 | 4,978,851 | 388,941 | 26,942,169 | 1,765,307 | 2,178,250 | 9,481,644 | 108,754,423 |

* Include right-of-use assets with carrying amounts of \$7,242,531 (2019: \$9,248,076) and depreciation charge of \$2,005,545 (2019: \$2,005,545). There are no corresponding lease liabilities as these leases have been fully paid for.

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS

For the financial year ended 31 December 2020

5. Right-of-use assets

The Authority leases a number of building structures, plant, machinery and equipment and floating craft. The lease term ranges from 1 year to 9 years (2019: 1 year to 4 years).

| | Building structures | Plant, machinery and equipment | Other equipment | Floating craft | Total |
|-----------------------------------|---------------------|--------------------------------|-----------------|-------------------|-------------------|
| | \$ | \$ | \$ | \$ | \$ |
| 2020 | | | | | |
| Cost | | | | | |
| Beginning of financial year | 5,261,618 | 36,168 | - | 1,509,124 | 6,806,910 |
| Additions | 2,746,504 | - | 17,800 | 20,106,524 | 22,870,828 |
| Modification of lease liabilities | 1,501,585 | - | - | - | 1,501,585 |
| Disposals | (1,782,257) | - | - | - | (1,782,257) |
| End of financial year | 7,727,450 | 36,168 | 17,800 | 21,615,648 | 29,397,066 |
| Accumulated depreciation | | | | | |
| Beginning of financial year | 2,109,884 | 7,033 | - | 377,281 | 2,494,198 |
| Depreciation charge | 2,570,782 | 12,056 | 2,472 | 2,824,345 | 5,409,655 |
| Disposals | (1,782,257) | - | - | - | (1,782,257) |
| End of financial year | 2,898,409 | 19,089 | 2,472 | 3,201,626 | 6,121,596 |
| Carrying amount: | | | | | |
| End of financial year | 4,829,041 | 17,079 | 15,328 | 18,414,022 | 23,275,470 |

| | Building structures | Plant, machinery and equipment | Other equipment | Floating craft | Total |
|---------------------------------|---------------------|--------------------------------|-----------------|------------------|------------------|
| | \$ | \$ | \$ | \$ | \$ |
| 2019 | | | | | |
| Cost | | | | | |
| Beginning of financial year | 5,114,505 | - | - | 1,509,124 | 6,623,629 |
| Additions | 147,113 | 36,168 | - | - | 183,281 |
| End of financial year | 5,261,618 | 36,168 | - | 1,509,124 | 6,806,910 |
| Accumulated depreciation | | | | | |
| Beginning of financial year | - | - | - | - | - |
| Depreciation charge | 2,109,884 | 7,033 | - | 377,281 | 2,494,198 |
| End of financial year | 2,109,884 | 7,033 | - | 377,281 | 2,494,198 |
| Carrying amount: | | | | | |
| End of financial year | 3,151,734 | 29,135 | - | 1,131,843 | 4,312,712 |

During the current year, the Authority renegotiated and modified existing lease contracts for 2 building structures by revising the lease periods at revised lease payments. These revisions are accounted for as lease modifications to the right-of-use assets. The corresponding remeasurement to lease liabilities is recorded under Note 16.

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

6. Capital work-in-progress

Capital work-in-progress relates mainly to the cost of computer systems and maritime and port projects under development.

7. Investments in subsidiary and associated company

(a) Subsidiary

| | 2020 \$ | 2019 \$ |
|--|------------|------------|
| Cost of investment At beginning and end of financial year | 2 | 2 |

Details of the subsidiary are as follows:

| Name of subsidiary | Country of incorporation | Effective equity held by the Authority | |
|-----------------------|--------------------------|---|-----------|
| | | 2020 % | 2019 % |
| MPA Venture Pte. Ltd. | Singapore | 100 | 100 |

The principal activity of the subsidiary is to act as a holding company to own jointly intellectual properties and manage investments in maritime technology start-ups and companies and joint ventures with partners.

The subsidiary is dormant.

(b) Associated company

Singapore Maritime Institute

In January 2011, the Authority, together with Agency for Science, Technology and Research ("A*STAR"), incorporated Singapore Maritime Institute ("SMI"), a company limited by guarantee. The principal activity of SMI is to develop strategies and programmes related to the academic, policy and research and development aspects of the maritime industry. As at 31 December 2020, the Authority had contributed a total amount of \$64,460,633 (2019: \$55,650,633) of grants to SMI (including unutilised amount of \$1,151,220 (2019: \$3,944,364)).

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

8. Financial assets

| | 2020 \$ | 2019 \$ |
|--|--------------------|--------------------|
| Non-current investments | | |
| Classified as Fair Value through Profit or Loss: | | |
| - Quoted equity securities managed by fund managers | 158,560,028 | 217,404,602 |
| - Quoted debt securities managed by fund managers | | |
| - Government bonds | 94,722,668 | 209,302,314 |
| - Corporate Bonds | 219,247,198 | 188,160,912 |
| | 472,529,894 | 614,867,828 |

The Authority manages its holding of investments in quoted equity securities on a portfolio level with the objective of ensuring long term growth of its portfolio. The objective is not to collect contractual cash flows, nor is it to collect contractual cash flows and by selling these securities. These securities have no fixed maturity or coupon rate. The fair values of these securities are based on closing quoted market prices on the last market day of the financial year.

The investment in quoted debt securities are held by the Authority for trading purposes with the objective of ensuring long term growth of its portfolio. The fair values of these securities are based on closing quoted market prices on the last market day of the financial year.

Investment income, amounting to \$34,719,780 (2019: \$70,824,010) have been included in income or expenditure for the financial year as part of "net other operating surplus" in Note 22.

9. Trade receivables

| | 2020 \$ | 2019 \$ |
|-------------------------|-------------------|-------------------|
| Trade receivables | 37,823,642 | 50,300,945 |
| Less: Loss allowance | (159,538) | (85,424) |
| Trade receivables - net | 37,664,104 | 50,215,521 |

The Authority's exposure to credit risk arises through its trade receivables. Due to the nature of the Authority's business, credit risk is not concentrated in any specific geographical region but concentrated in many shipping companies exposed to business cyclical fluctuations.

Trade receivables are mainly denominated in Singapore Dollar, which is the Authority's functional currency.

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

9. Trade receivables (continued)

Impairment losses

The average credit period on sale of goods is 30 days (2019: 30 days).

The loss allowance on trade receivables has been measured at an amount equal to lifetime expected credit losses. In addition, trade receivable is written off when there is information indicating that the debtor is in severe financial difficulty and there is no realistic prospect of recovery.

The following tables detail the Authority's credit risk exposure in relation to trade receivables from contracts with customers based on the Authority's provision matrix. As the Authority's historical credit loss experience show significantly different loss patterns for different customer segments (including normal and low risk type), the provision for loss allowance based on past due status is further distinguished between the Authority's customer segment of different risk type.

| Normal risk type customers | | | | |
|----------------------------|----------|--|------------------|-------------------|
| | ECL rate | Estimated total gross carrying amount at default | Lifetime ECL | Total |
| | | \$ | \$ | \$ |
| 2020 | | | | |
| Current | - | 33,575,457 | - | 33,575,457 |
| 1 - 30 days | 0.45% | 508,117 | (2,281) | 505,836 |
| 31 - 60 days | 13.20% | 376,054 | (49,637) | 326,417 |
| 61 - 90 days | 0.93% | 1,010,202 | (9,366) | 1,000,836 |
| > 90 days | 18.30% | 536,917 | (98,254) | 438,663 |
| Total | | 36,006,747 | (159,538) | 35,847,209 |

| Low risk type customers | | | | |
|-------------------------|----------|--|--------------|------------------|
| | ECL rate | Estimated total gross carrying amount at default | Lifetime ECL | Total |
| | | \$ | \$ | \$ |
| 2020 | | | | |
| Current | - | 493 | - | 493 |
| 1 - 30 days | - | - | - | - |
| 31 - 60 days | - | 599,244 | - | 599,244 |
| 61 - 90 days | - | 132,804 | - | 132,804 |
| > 90 days | - | 1,084,354 | - | 1,084,354 |
| Total | | 1,816,895 | - | 1,816,895 |

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

9. Trade receivables (continued)

Impairment losses (continued)

| Normal risk type customers | | | | |
|----------------------------|----------|--|-----------------|-------------------|
| | ECL rate | Estimated total gross carrying amount at default | Lifetime ECL | Total |
| | | \$ | \$ | \$ |
| 2019 | | | | |
| Current | - | 43,740,714 | - | 43,740,714 |
| 1 - 30 days | 0.19% | 157,553 | (303) | 157,250 |
| 31 - 60 days | 2.22% | 533,193 | (11,829) | 521,364 |
| 61 - 90 days | 7.90% | 349,109 | (27,582) | 321,527 |
| > 90 days | 10.05% | 454,774 | (45,710) | 409,064 |
| Total | | 45,235,343 | (85,424) | 45,149,919 |

| Low risk type customers | | | | |
|-------------------------|----------|--|--------------|------------------|
| | ECL rate | Estimated total gross carrying amount at default | Lifetime ECL | Total |
| | | \$ | \$ | \$ |
| 2019 | | | | |
| Current | - | 111,562 | - | 111,562 |
| 1 - 30 days | - | - | - | - |
| 31 - 60 days | - | 85,895 | - | 85,895 |
| 61 - 90 days | - | 4,319 | - | 4,319 |
| > 90 days | - | 4,863,826 | - | 4,863,826 |
| Total | | 5,065,602 | - | 5,065,602 |

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

9. Trade receivables (continued)

The movements in credit loss allowance are as follows:

| | 2020 \$ | 2019 \$ |
|--|------------|------------|
| Beginning of financial year | 85,424 | 33,816 |
| Loss allowance recognised in income or expenditure during the year on: | | |
| - Asset originated | 159,538 | 85,424 |
| - Reversal of unutilised amounts | (85,424) | (33,816) |
| | 74,114 | 51,608 |
| End of financial year | 159,538 | 85,424 |

Based on historical default rate, the Authority believes that, apart from the above, no impairment allowance is necessary in respect of other trade receivables outstanding at the balance sheet date.

10. Deposits, prepayments and other receivables

| | 2020 \$ | 2019 \$ |
|---------------------------------------|------------|------------|
| Deposits | 830,921 | 656,946 |
| Prepayments | 1,683,061 | 1,641,500 |
| Other receivables | 7,029,407 | 4,811,975 |
| Amount due from associate (non-trade) | 1,151,220 | 3,944,364 |
| | 8,180,627 | 8,756,339 |
| Interest receivable | 3,814,028 | 5,312,576 |
| | 14,508,637 | 16,367,361 |

Other receivables mainly comprise dividends receivable, receivables on sale of financial instruments and derivative assets.

Amount due from associate is unsecured, interest-free and is repayable on demand.

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

10. Deposits, prepayments and other receivables (continued)

As at the balance sheet date, other receivables and accrued interest receivable include the following items managed by fund managers:

| | 2020 \$ | 2019 \$ |
|---|------------|------------|
| Interest receivable | 2,196,526 | 2,842,238 |
| Receivables on sale of financial instruments | 427,199 | 140,538 |
| Forward foreign exchange purchases, futures and options (net) | 2,339,477 | 3,602,924 |
| Other receivables (mainly dividend receivables and withholding tax receivables) | 243,087 | 401,739 |
| | 5,206,289 | 6,987,439 |

The Authority has not made any allowance for ECL on the financial assets as the Authority is of the view that these are recoverable.

11. Cash and cash equivalents

| | 2020 \$ | 2019 \$ |
|---|---------------|-------------|
| Cash at bank and on hand | 260,438,192 | 33,095,406 |
| Placement with Accountant-General's Department | 741,469,291 | 735,608,159 |
| - Statutory Board Approved Funds ("SBAF") | 462,120,977 | 489,257,187 |
| - Centralised Liquidity Management Framework ("CLMF") | 279,348,314 | 246,350,972 |
| Short-term bills and notes | 74,094,626 | 97,318,150 |
| | 1,076,002,109 | 866,021,715 |

For the purpose of presenting the consolidated statement of cash flows, cash and cash equivalents comprise the following:

| | 2020 \$ | 2019 \$ |
|--|---------------|---------------|
| Cash and bank balances (as above) | 1,076,002,109 | 866,021,715 |
| Less: Cash and cash equivalents managed by fund managers | (334,108,017) | (126,132,817) |
| Less: Placement with SBAF | (462,120,977) | (489,257,187) |
| Cash and cash equivalents per consolidated statement of cash flows | 279,773,115 | 250,631,711 |

**THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY**

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

11. Cash and cash equivalents (continued)

The Authority's cash and cash equivalents (excluding those managed by fund managers) are mainly denominated in Singapore Dollar, which is the Authority's functional currency.

Placement with the Accountant-General's Department comprise:

- (i) \$279,348,314 (2019: \$246,350,972) which is centrally managed by the Accountant-General's Department under the CLMF, as set out in the Accountant-General's Circular No. 4/2009 Centralised Liquidity Management for Statutory Boards and Ministries, and
- (ii) Industry funds of \$462,120,977 (2019: \$489,257,187) which is placed under the SBAF and is subject to restrictions.

As at the balance sheet date, cash and cash equivalents include the following managed by fund managers:

| | 2020 \$ | 2019 \$ |
|----------------------------|--------------------|--------------------|
| Cash at bank and on hand | 260,013,391 | 28,814,667 |
| Short-term bills and notes | 74,094,626 | 97,318,150 |
| | <u>334,108,017</u> | <u>126,132,817</u> |

The effective interest rates of fixed deposits with the Accountant-General's Department under the CLMF vary from 0.51 to 1.77% (2019: 1.86% to 2.13%) per annum ("p.a."). The maturity of CLM fixed deposits are from 7 months to 14 months (2019: from 1 day to 1.5 years). It is highly liquid that are readily convertible to a known amount of cash and are subject to an insignificant risk of changes in value.

The effective interest rates of cash and cash equivalents managed by fund managers are as follows:

| | 2020 % p.a. | 2019 % p.a. |
|----------------------------|-----------------------|-----------------------|
| Commercial paper | 0.21 to 0.49 | (0.94) to (0.83) |
| Short-term bills and notes | <u>(0.81) to 1.76</u> | <u>(0.37) to 2.07</u> |

**THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY**

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

12. Establishment account

The establishment account comprises the net book value of assets transferred to the Authority from the former National Maritime Board, the Marine Department and the regulatory departments of the Port of Singapore Authority.

Capital management

The Authority defines "capital" to include establishment account and reserves. The Board's policy is to maintain a strong capital base to safeguard the ability to meet the long-term development needs of the Authority. The Board of Directors monitors the "Operating Surplus" and "Net Other Operating Surplus/(Deficit)" on a regular basis. The Board monitors the major capital expenditure which is strategic in nature and may draw on reserves.

There were no changes in the capital management approach during the year.

The Authority is not subject to externally imposed capital requirements.

13. Equity financing account

The Equity financing account refers to equity injections by the Minister for Finance ("MOF") in its capacity as shareholder under the Capital Management Framework for statutory boards, implemented with effect from 1 September 2004.

14. Employment benefits

| | 2020 \$ | 2019 \$ |
|-----------------------------|------------|----------------|
| Beginning of financial year | 422,377 | 422,377 |
| Provision made | 77,718 | 16,215 |
| Provision utilised | (500,095) | (16,215) |
| End of financial year | <u>-</u> | <u>422,377</u> |

The Authority operates an unfunded employment benefit plan for a limited pool of employees under the provisions of the Pensions Act (Cap. 225). Benefits are payable based on the last drawn salary of the employees and the number of years of service with the Authority.

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

15. Deferred capital grant

| | 2020 \$ | 2019 \$ |
|-----------------------------|-------------|-------------|
| Beginning of financial year | 16,403,403 | 17,665,353 |
| Amortisation to income | (1,309,476) | (1,261,950) |
| End of financial year | 15,093,927 | 16,403,403 |

The above represents the unamortised portion of Government grant received in connection with specific property, plant and equipment acquired by the Authority.

16. Lease liabilities

| | 2020 \$ | 2019 \$ |
|-------------------------|-------------|------------|
| Maturity Analysis: | | |
| Year 1 | 5,614,819 | 2,388,309 |
| Year 2 | 4,917,114 | 844,038 |
| Year 3 | 3,909,238 | 803,370 |
| Year 4 | 3,688,280 | 336,319 |
| Year 5 | 3,274,895 | 116,793 |
| Year 6 onwards | 4,997,665 | 128,919 |
| | 26,402,011 | 4,617,748 |
| Less: Unearned interest | (2,405,937) | (219,299) |
| | 23,996,074 | 4,398,449 |
| Analysed as: | | |
| Current | 4,899,309 | 2,282,953 |
| Non-current | 19,096,765 | 2,115,496 |
| | 23,996,074 | 4,398,449 |

The Authority leases building structures, plant, machinery and equipment and floating craft, which are used in the Authority's operations. There are no externally imposed covenant on these lease arrangements.

Reconciliation of lease liabilities from financing activities

| | Beginning of the year | Principal and interest payments | Non-cash changes | | | | End of the year |
|------|-----------------------|---------------------------------|--------------------------|-----------------------------------|-----------------|------------------|-----------------|
| | | | Addition during the year | Modification of lease liabilities | Rent concession | Interest expense | |
| | \$ | \$ | \$ | \$ | \$ | \$ | \$ |
| 2020 | 4,398,449 | (5,460,950) | 22,870,828 | 1,501,585 | (49,524) | 735,686 | 23,996,074 |
| 2019 | - | (2,590,453) | 6,806,910 | - | - | 181,992 | 4,398,449 |

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

16. Lease liabilities (continued)

| | 2020 \$ | 2019 \$ |
|--|------------|------------|
| (a) Lease expense not capitalised in lease liabilities | | |
| Lease expense – short term and low value lease | 2,259,957 | 2,579,234 |
| (b) Total cash outflow for all the leases | 6,985,221 | 5,169,687 |
| (c) Future cash outflow which are not capitalised in lease liabilities | | |

Extension options

The leases for certain ROU assets contain extension periods, for which the related lease payments had not been included in lease liabilities as the Authority is not reasonably certain to exercise these extension option. The Authority negotiates extension options to optimise operational flexibility in terms of managing the assets used in the Authority's operations. The extension options are exercisable by the Authority and not by the lessor.

17. Trade and other payables

| | 2020 \$ | 2019 \$ |
|---|------------|------------|
| Trade payables | 1,306,167 | 5,376,784 |
| Payables on purchase of financial instruments | 291,383 | 1,344,019 |
| Accrued capital expenditure | 6,272,144 | 11,086,417 |
| Accrued operating expenses | 27,028,987 | 25,062,315 |
| Other payables | 5,623,870 | 4,247,886 |
| | 40,522,551 | 47,573,426 |

Trade payables are mainly denominated in Singapore Dollar, which is the Authority's functional currency. Payables on purchase of financial instruments, managed by fund managers, are mainly denominated in Singapore Dollar.

Accrued operating expenses include accrual for performance bonus and group bonus of \$10,300,000 (2019: \$12,138,694) and accrued administrative fee payable to the fund managers and custodian bank amounting to \$1,043,860 (2019: \$708,056).

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

17. Trade and other payables (continued)

The following are the expected contractual undiscounted cash outflows of the financial liabilities, including interest payments and excluding the impact of netting agreements:

| | 2020 \$ | 2019 \$ |
|--|---------------------|--------------|
| Undiscounted cash flows within 1 year | | |
| Non-derivative financial liabilities | | |
| Trade and other payables | (40,231,168) | (46,229,407) |

18. Advances, deposits and unearned income

| | 2020 \$ | 2019 \$ |
|---|-------------------|------------|
| Advances and deposits | 5,558,046 | 5,638,393 |
| Unearned operating lease income [Note (a)] | 5,300,784 | 6,180,614 |
| Unearned annual port dues and Maritime Welfare Fee [Note (b)] | 481,577 | 1,419,097 |
| | 11,340,407 | 13,238,104 |

(a) Unearned operating lease income mainly relates to sub-lease of properties to third party for a period of 6 to 7 years (2019: 7 to 8 years), of which payments were received in advance.

(b) Unearned annual port dues and Maritime Welfare Fee relate to specific customers under annual and 6-months port dues schemes, and the advance payments of Maritime Welfare Fee. These customers, whose ships that call frequently at the port are allowed to pay port dues on an annual or 6-months basis in advance instead of on a per-call basis.

Deposits due within 1 year approximate their carrying amount of \$5,263,717 (2019: \$5,351,014).

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

19. Operating revenue

| | 2020 \$ | 2019 \$ |
|---|--------------------|-------------|
| Timing of revenue recognition | | |
| SB-FRS 115 revenue | | |
| Over time | | |
| - Dues, licence & permit fees, and agency fee | 161,994,351 | 191,963,003 |
| - Annual Administrative Fee | 1,095,241 | 1,163,948 |
| - Training | 500,705 | 540,669 |
| At a point in time | | |
| - Other marine services | 67,301,037 | 91,259,206 |
| - Shipping services | 4,891,999 | 5,409,171 |
| Non SB-FRS 115 revenue | | |
| - Rental income | 2,654,561 | 4,354,813 |
| - Miscellaneous revenue | 328,236 | 766,740 |
| | 238,766,130 | 295,457,550 |

To help the maritime industry weather the crisis due to the COVID-19 outbreak, MPA rolled out stimulus economic packages which were first announced on 18 February 2020 under the overall Singapore Budget and later on 26 March 2020 as part of the Resilience Budget. These included rental rebates, public license fee waivers and port dues concessions. MPA also rolled out MaritimeSG Together Package which took effect from 1 May 2020 to 31 December 2020 and subsequently extended to 30 June 2021, to provide targeted financial support for maritime companies, individuals and seafarers, on top of economic relief measures announced earlier. These initiatives bring the total expected relief measures for the maritime industry to \$33 million.

20. Staff cost

| | 2020 \$ | 2019 \$ |
|--|-------------------|------------|
| Wages and salaries | 68,710,884 | 71,195,703 |
| Employer's contribution to Central Provident Fund | 10,165,510 | 9,865,287 |
| Employer's contribution to other defined benefit plans (Note 14) | 77,718 | 16,215 |
| Other benefits | 4,781,298 | 5,529,688 |
| | 83,735,410 | 86,606,893 |

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

21. Other operating expenses

| | 2020 \$ | 2019 \$ |
|--|-------------------|-------------------|
| Project grants | 22,050,969 | 13,356,997 |
| Contribution to Maritime Cluster Fund projects | 12,091,845 | 13,782,559 |
| Contribution to International Organisations | 4,334,482 | 4,990,721 |
| Transport & travel | 795,852 | 2,164,066 |
| Rental expense [Note (a)] | 2,259,957 | 2,579,234 |
| Property tax [Note (b)] | 779,048 | 1,443,810 |
| Telecommunication | 2,460,688 | 2,516,089 |
| Water cost & water sales service fee | 1,192,347 | 1,397,363 |
| Utility charges | 1,329,633 | 1,140,327 |
| Events & publicity | 2,428,270 | 8,033,200 |
| Professional & consultancy fees | 9,209,832 | 9,333,641 |
| Other administrative expenses | 9,109,208 | 8,903,250 |
| Other miscellaneous expenses | 1,792,865 | 1,216,465 |
| | 69,834,996 | 70,857,722 |

(a) Included within rental expense are COVID-19 related rent concessions received from lessors of \$49,524 to which the Authority applied the practical expedient as disclosed in Note 2.1.

(b) Included within property tax expenses are COVID-19 related property tax rebates received from the government of \$639,706 to which the Authority had transferred to tenants in the form of rent rebates during the year and rental waivers provided to eligible tenants as part of the qualifying conditions of the grant.

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

22. Net other operating surplus

| | 2020 \$ | 2019 \$ |
|--|-------------------|-------------------|
| Investment gain - net | | |
| Dividend income | 3,597,720 | 4,610,797 |
| Interest income | 9,981,410 | 11,476,186 |
| Fair value gain on investment - realised | 17,545,945 | 17,464,352 |
| Fair value gain on investment - unrealised | 6,585,627 | 42,713,179 |
| Gain/(loss) on foreign exchange - net | 580,764 | (2,121,694) |
| Other investment expenses | (3,571,686) | (3,318,810) |
| Investment gain from funds with fund managers - net | 34,719,780 | 70,824,010 |
| Other operating surplus - net | | |
| Interest income | 3,626,354 | 3,691,038 |
| Gain on foreign exchange - net | 107,675 | 83,979 |
| Gain/(loss) on disposal of property, plant and equipment - net | 40,821,281 | (198,228) |
| Others - net | 435,615 | 124,928 |
| Other operating surplus - net | 44,990,925 | 3,701,717 |
| | 79,710,705 | 74,525,727 |

23. Contribution to Consolidated Fund

The contribution to the Consolidated Fund is made in accordance with Section 3(a) of the Statutory Corporations (Contributions to Consolidated Fund) Act (Cap. 319A). The contribution is based on 17% (2019: 17%) of the surplus for the year.

| | 2020 \$ | 2019 \$ |
|-----------------------------|-------------------|-------------------|
| Beginning of financial year | 38,359,578 | 10,683,274 |
| Amount contributed | (38,359,578) | - |
| Provision for the year | 18,746,477 | 27,676,304 |
| End of financial year | 18,746,477 | 38,359,578 |

**THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY**

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

24. Financial Derivatives at Fair Value

The Authority places its surplus funds with fund managers to manage its investment portfolio under a balanced mandate. These fund managers are given discretion in managing their portfolio, subject to the investment guidelines set out in the fund management agreements.

As part of risk management activities, the fund managers use financial derivatives for hedging purposes. The financial derivatives used include financial futures, swaps and forward foreign exchange contracts.

As at balance sheet date, the notional amounts of the financial derivatives held by the fund managers are as follows:

| | 2020 \$ | 2019 \$ |
|---|---------------|---------------|
| Notional amounts | | |
| Futures contracts | | |
| - Gross inflow | 65,957,724 | 54,241,809 |
| - Gross outflow | (21,395,226) | (28,534,846) |
| Foreign currency swap and forward contracts | | |
| - Gross inflow | 554,405,665 | 772,627,082 |
| - Gross outflow | (554,405,665) | (772,637,082) |

25. Commitments

(a) Capital commitments

Capital expenditures contracted for at the balance sheet date but not recognised in the financial statements are as follows:

| | 2020 \$ | 2019 \$ |
|-------------------------------|------------|------------|
| Property, plant and equipment | 35,356,458 | 10,526,542 |

(b) Operating lease commitments - Where the Authority is a lessor:

Operating leases, in which the Authority is the lessor, relates to rental space and buildings owned by the Authority with lease terms of between 1 year to 30 years (2019: 2 years to 30 years). The lessee does not have the option to purchase the property at the expiry of the lease period.

**THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY**

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

25. Commitments (continued)

(b) Operating lease commitments - Where the Authority is a lessor: (continued)

Maturity analysis of operating lease payments to be received:

| | 2020 \$ | 2019 \$ |
|--------------------|------------|------------|
| Maturity Analysis: | | |
| Year 1 | 2,448,500 | 2,483,730 |
| Year 2 | 1,550,814 | 1,790,788 |
| Year 3 | 915,511 | 1,324,848 |
| Year 4 | 915,511 | 940,716 |
| Year 5 | 915,511 | 940,716 |
| Year 6 onwards | 1,085,147 | 1,862,536 |
| Total | 7,830,994 | 9,343,334 |

During the year ended 31 December 2020, the Authority recognised \$2,586,161 (2019: \$3,558,017) of rental income from non-cancellable operating leases.

26. Financial risk management

Financial risk factors

The Authority's activities expose it to market risk (including currency risk, interest rate risk and price risk), credit risk and liquidity risk.

Risk management is integral to the whole operations of the Authority. The Authority has a system of controls in place to create an acceptable balance between the cost of risks occurring and the cost of managing the risks. The management continually monitors the Authority's risk management process to ensure that an appropriate balance between risk and control is achieved.

Funds with fund managers

In connection with the funds placed with fund managers, the funds placed with fund managers are exposed to a variety of financial risk: credit risk, liquidity risk and market risk (including currency risk, fair value interest rate risk, cash flow interest rate risk and price risk).

The fund managers appointed under the balanced mandate are held responsible in achieving the investment objectives set forth in their respective fund manager agreements entered with the Authority. All income and realised capital gains are to be reinvested by the fund managers unless otherwise instructed by the Authority.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

26. Financial risk management (continued)

Funds with fund managers (continued)

The fund managers' overall risk management programme seeks to maximise the returns derived for the level of risk to which they are exposed and seeks to minimise the potential adverse effects on the fund managers' financial performance.

A significant proportion of the Authority's security investments present a risk of loss of capital. The maximum loss of capital is represented by the carrying values of those security investments.

The management of these risks carried out by the fund managers is governed by the mandate set forth in the fund manager agreements approved by the Investment Committee of the Authority. The mandate provides written principles for overall risk management, as well as written policies covering specific areas, such as foreign exchange risk, interest rate risk, credit risk, the use of derivative and non-derivative financial instruments.

(a) Market risk

(i) *Currency risk*

The Authority invests in financial instruments and enters into transactions denominated in currencies other than its functional currency. Consequently, the Authority is exposed to risks that the exchange rate of its functional currency relative to other foreign currencies may change in a manner that has an adverse effect on the value of that portion of the Authority's assets or liabilities denominated in currencies other than the functional currency.

The financial assets managed by fund managers denominated in currencies other than the Authority's functional currency comprise the following:

| | 2020 \$ | 2019 \$ |
|----------------------------------|--------------------|--------------------|
| British pound sterling | 10,008,900 | 30,876,757 |
| Canadian dollar | 26,074,457 | 41,765,234 |
| Euro | 37,618,751 | 55,271,613 |
| Japanese yen | 22,465,507 | 31,463,660 |
| Swiss franc | 6,813,400 | 9,953,086 |
| United States dollar | 355,444,480 | 441,287,377 |
| Various other foreign currencies | 43,893,235 | 49,376,128 |
| | <u>502,318,730</u> | <u>659,993,855</u> |

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

26. Financial risk management (continued)

(a) Market risk (continued)

(i) *Currency risk (continued)*

At the balance sheet date, if there is a +/-5% movement in exchange rates relative to the Singapore Dollar, with all other variables held constant, the increase/(decrease) in the fair value of financial assets in income or expenditure would be as follows:

| | 2020 \$ | 2019 \$ |
|-----------------------|---------------------|---------------------|
| +5% scenario | | |
| Income or expenditure | <u>25,115,936</u> | <u>32,999,693</u> |
| -5% scenario | | |
| Income or expenditure | <u>(25,115,936)</u> | <u>(32,999,693)</u> |

(ii) *Interest rate risk*

Interest rate risk arises from the effects of fluctuations in the prevailing levels of market interest rates on the fair value of financial assets and liabilities and future cash flows. The Authority holds debt securities and derivatives that expose the Authority to fair value interest rate risk.

FVTPL debt securities, managed by fund managers

At the balance sheet date, assuming that all other variables are held constant and no loss event has occurred, a 100 basis point increase/(decrease) in the interest rate would (decrease)/increase the fair values of the financial assets in income or expenditure by the following amounts:

| | 2020 \$ | 2019 \$ |
|----------------------------------|---------------------|---------------------|
| +100 basis point scenario | | |
| Income or expenditure | <u>(17,865,625)</u> | <u>(18,023,549)</u> |
| -100 basis point scenario | | |
| Income or expenditure | <u>20,439,454</u> | <u>18,023,549</u> |

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

26. Financial risk management (continued)

(a) Market risk (continued)

(ii) Interest rate risk

FVTPL debt securities, managed by fund managers (continued)

At the balance sheet date, assuming that all other variables are held constant, a 100 basis point increase/(decrease) in interest rate would increase/(decrease) the interest income of the floating rate debt securities recorded in income or expenditure by the following amounts:

| | 2020 \$ | 2019 \$ |
|----------------------------------|------------|------------|
| +100 basis point scenario | | |
| Income or expenditure | 4,359 | 18,000 |
| -100 basis point scenario | | |
| Income or expenditure | (4,359) | (18,000) |

Derivatives (futures), managed by fund managers

At the balance sheet date, if interest rates had been 100 basis point higher/(lower) with all other variables held constant, the increase/(decrease) in the fair values of the interest rate derivatives in the income or expenditure would be as follows:

| | 2020 \$ | 2019 \$ |
|----------------------------------|-------------|------------|
| +100 basis point scenario | | |
| Income or expenditure | 2,216,585 | 52,690 |
| -100 basis point scenario | | |
| Income or expenditure | (2,084,450) | (52,690) |

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

26. Financial risk management (continued)

(a) Market risk (continued)

(ii) Interest rate risk (continued)

Derivatives (futures), managed by fund managers (continued)

The fair values at balance sheet date of the debt securities held by the fund managers and the period in which they mature or reprice are as follows:

| | 2020 \$ | 2019 \$ |
|------------------------------------|--------------------|--------------------|
| Fixed rate | | |
| Maturing in less than 1 year | 27,854,822 | 10,796,661 |
| Maturing between 1 to 5 years | 123,207,450 | 181,389,833 |
| Maturing in more than 5 years | 141,383,426 | 163,308,809 |
| Floating rate | | |
| Repricing in less than 3 months | 15,314,988 | 30,804,787 |
| Repricing in between 3 to 6 months | 2,640,235 | - |
| Repricing in more than 6 months | 3,568,944 | 11,163,136 |
| | 313,969,865 | 397,463,226 |

(iii) Equity price risk

The Authority is exposed to equity price risk. This arises from investments held by the Authority for which prices in the future are uncertain. Where equity securities are denominated in currencies other than the functional currency of the Authority, the price initially expressed in foreign currency and then converted into the functional currency will also fluctuate because of changes in foreign exchange rates. Paragraph (a)(i) "Currency risk" sets out how this component of price risk is managed and measured.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

26. Financial risk management (continued)

(a) Market risk (continued)

(iii) Equity price risk (continued)

The Authority's policy to manage price risk is via diversification and selection of securities and other financial instruments within specified limits set by the Investment Committee. The majority of the Authority's equity investments is publicly traded. The overall market position of these equity investments is monitored on a daily basis by the fund managers and is reviewed on a quarterly basis by the members of the Investment Committee. Compliance with the Authority's fund management mandate is reported to the members of the Investment Committee on a quarterly basis.

At the balance sheet date, assuming that all other variables are held constant, a 5% increase/(decrease) in the underlying equity prices would increase/(decrease) the Authority's net surplus for the year by the following amounts:

| | 2020 \$ | 2019 \$ |
|---|-------------|--------------|
| +5% scenario | | |
| Equity securities, managed by fund managers | | |
| Income or expenditure | 7,928,001 | 10,870,230 |
| -5% scenario | | |
| Equity securities, managed by fund managers | | |
| Income or expenditure | (7,928,001) | (10,870,230) |

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

26. Financial risk management (continued)

(b) Credit risk

The Authority's current credit risk grading framework comprises the following categories:

| Category | Description | Basis for recognising expected credit losses (ECL) |
|------------|---|--|
| Performing | The counterparty has a low risk of default and does not have any past-due amounts. | 12-month ECL |
| Doubtful | Amount is >30 days past due or there has been a significant increase in credit risk since initial recognition. | Lifetime ECL - not credit-impaired |
| In default | Amount is >90 days past due or there is evidence indicating the asset is credit-impaired. | Lifetime ECL - credit-impaired |
| Write-off | There is evidence indicating that the debtor is in severe financial difficulty and the Authority has no realistic prospect of recovery. | Amount is written off |

The table below details the credit quality of the Authority's financial assets as well as maximum exposure to credit risk by credit risk rating grades:

| | Note | Internal credit rating | 12-month or lifetime ECL | Gross carrying amount \$ | Loss allowance \$ | Net carrying amount \$ |
|-------------------|------|------------------------|------------------------------------|-----------------------------|----------------------|---------------------------|
| 2020 | | | | | | |
| Trade receivable | 9 | (i) | Lifetime ECL (simplified approach) | 37,823,642 | 159,538 | 37,664,104 |
| Other receivables | 10 | Performing | 12-month ECL | 12,825,576 | - | 12,825,576 |
| | | | | | 159,538 | |

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

26. Financial risk management (continued)

(b) Credit risk (continued)

| | Note | Internal credit rating | 12-month or lifetime ECL | Gross carrying amount \$ | Loss allowance \$ | Net carrying amount \$ |
|-------------------|------|---------------------------|---|-----------------------------------|-------------------------|------------------------------|
| 2019 | | | | | | |
| Trade receivable | 9 | (i) | Lifetime ECL (simplified approach) | 50,300,945 | 85,424 | 50,215,521 |
| Other receivables | 10 | Performing | 12-month ECL | 14,725,861 | - | 14,725,861 |
| | | | | | 85,424 | |

- (i) The Authority determines the expected credit losses on these items by using a provision matrix, estimated based on historical credit loss experience based on the past due status of the debtors, adjusted as appropriate to reflect current conditions and estimates of future economic conditions.

The Authority has adopted procedures in extending credit terms to customers and in monitoring its credit risk. The Authority only grants credit to creditworthy counterparties. Cash is held with creditworthy institutions and is subject to immaterial credit loss.

Although the Authority's credit exposure is concentrated mainly in Singapore, it has no significant concentration of credit risk with any single customer or group of customers.

Funds with fund managers

Credit risk is the risk that a counterparty to a financial instrument will fail to discharge an obligation or commitment that it has entered into with the Authority. The fund manager has a credit policy in place and the exposure to credit risk is monitored on an on-going basis.

As at 31 December 2020, the following financial assets were exposed to credit risk: investment in equity and debt securities, receivables on sale of financial instruments, forward foreign exchange purchases, cash and cash equivalents, derivative financial assets and other receivables. The total carrying amount of financial assets exposed to credit risk amounted to \$ 811,844,200 (2019: \$ 747,988,084).

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

26. Financial risk management (continued)

(b) Credit risk (continued)

The Authority limits its credit risk exposure in respect of investments in debt securities by restricting the fund managers to invest in debt securities that have a sound credit rating from Standard & Poor's and Moody's (at least BBB by the former or Baa2 by the latter, on the lower rating of both in the event of split ratings). Given these credit ratings, management does not expect any counterparty to fail to meet its obligations.

The maximum exposure to credit risk is represented by the carrying amount of each financial asset on the consolidated balance sheet.

(c) Liquidity risk

The Authority monitors its liquidity risk and maintains a level of cash and cash equivalents deemed adequate by management to finance the Authority's operations and to mitigate the effects of fluctuations in cash flows.

Funds with fund managers

The Authority's listed debt and equity securities are considered readily realisable, as they are listed on the major stock exchanges. The fund managers are required to comply with the restrictions and limitations as stipulated in the investment mandate. All transactions carried out by the fund managers are settled daily through the Authority's custodian of the portfolio of investments placed by fund managers.

The fund managers may periodically invest in some debt securities and derivative contracts on behalf of the Authority that are traded over the counter, which are not traded in an organised market and may be illiquid. As a result, the Authority may not be able to liquidate its investments in these instruments at an amount close to their fair value to meet its liquidity requirements or be able to respond to specific events such as the deterioration in the creditworthiness of any particular issuer.

At the balance sheet date, non-derivative financial liabilities held by the Authority are as disclosed in Note 16, 17 and 18.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

26. Financial risk management (continued)

(d) Fair value measurements

The following presents assets and liabilities measured and carried at fair value and classified by level of the following fair value measurement hierarchy:

- (a) quoted prices (unadjusted) in active markets for identical assets or liabilities (Level 1);
- (b) inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices) (Level 2); and
- (c) inputs for the asset or liability that are not based on observable market data (unobservable inputs) (Level 3).

The fair value of financial instruments traded in active markets (the Authority's equity and debt securities managed by fund managers) is based on quoted market prices at the balance sheet date. The quoted market price used for financial assets held by the Authority is the current bid price. These instruments are classified as Level 1.

Derivatives used by fund managers

Futures contracts are marked to market daily using listed market prices with any gains or losses posted to the related variation margin accounts.

The fair value of forward exchange contracts is based on their listed market price and the fair value of swaps is based on quotations from independent third party vendors and sources that apply fair value techniques. These instruments are classified as Level 2.

There were no transfers between Levels 1 and 2 during the year.

The fair values of current financial assets and liabilities carried at amortised cost approximate their carrying amounts.

(e) Financial instruments by category

The carrying amounts of financial assets measured at fair value are disclosed on the face of the balance sheet. The carrying amounts of financial instruments at amortised cost approximate their fair values.

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

26. Financial risk management (continued)

(e) Financial instruments by category (continued)

The aggregate carrying amounts of loans and receivables and financial liabilities at amortised cost are as follows:

| | 2020 \$ | 2019 \$ |
|--|---------------|-------------|
| Financial assets, at amortised cost | 1,126,491,789 | 930,963,097 |
| Financial liabilities, at amortised cost | 70,076,671 | 57,610,268 |

27. Related party transactions

In addition to the information disclosed elsewhere in the financial statements, the following transactions took place between the Authority and related parties at terms agreed between the parties.

(a) Sales of services

| | 2020 \$ | 2019 \$ |
|---|------------|------------|
| Provision of dumping and monitoring services to Statutory Boards | 18,982,752 | 32,271,997 |
| Provision of agency and project management services to a Ministry | 7,354,529 | 16,270,728 |
| Provision of private wharfage services to a Statutory Board | 2,195,338 | 3,640,778 |

(b) Key management personnel compensation

Key management personnel of the Authority are those persons having the Authority and responsibility for planning, directing and controlling the activities of the Authority. These key management personnel comprise the Board of Members and Executive Management Team of the Authority.

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

27. Related party transactions (continued)

(b) Key management personnel compensation (continued)

Key management personnel compensation is as follows:

| | 2020 \$ | 2019 \$ |
|---|------------------|------------------|
| Salary and short-term employee benefits | 5,896,116 | 5,454,311 |
| CPF contributions | 346,080 | 285,767 |
| Directors' fees | 222,974 | 205,542 |
| | <u>6,465,170</u> | <u>5,945,620</u> |

28. Funds managed/held on behalf of others - Funds held in trust

Funds held in trust and managed by the Authority comprise the following:

| | 2020 \$ | 2019 \$ |
|---|-------------------|------------------|
| Singapore Stranded Seafarers' Fund | 341,720 | 340,627 |
| Agency funds held in trust of Ministry of Transport | 37,903,714 | 6,751,976 |
| | <u>38,245,434</u> | <u>7,092,603</u> |

Singapore Stranded Seafarers' Fund ("SSSF")

- (a) The SSSF was set up in September 1999 (following the Authority's Board approval for its creation at an earlier board meeting in July 1999). The SSSF is managed by a Committee made up of representatives from the Authority and the unions, namely Singapore Maritime Officers' Union and Singapore Organisation of Seamen.

The Fund is humanitarian in nature. It shall be used only as a last resort when it becomes evidently clear that the ship owners concerned are no longer able to bear responsibility towards their ship crew, e.g. due to insolvency. It is used mainly to buy fuel (i.e. to run the ship's generators) and provide food and portable water to sustain the stranded ship crew onboard Singapore-registered ships stranded in Singapore or overseas, until such time they are repatriated or the dispute is settled.

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

28. Funds managed/held on behalf of others - Funds held in trust (continued)

- (b) The assets and liabilities of the SSSF as at 31 December are as follows:

| | 2020 \$ | 2019 \$ |
|---------------------------|----------------|----------------|
| Accumulated fund | <u>341,720</u> | <u>340,627</u> |
| Current assets | | |
| Interest receivable | 642 | 642 |
| Cash and cash equivalents | <u>341,078</u> | <u>339,985</u> |
| | <u>341,720</u> | <u>340,627</u> |

- (c) The results of the SSSF for the year ended 31 December are as follows:

| | 2020 \$ | 2019 \$ |
|------------------------------------|----------------|----------------|
| Interest income | 1,093 | 1,088 |
| Surplus for the year | <u>1,093</u> | <u>1,088</u> |
| Accumulated fund as at 1 January | 340,627 | 339,539 |
| Accumulated fund as at 31 December | <u>341,720</u> | <u>340,627</u> |

Agency funds held in trust of Ministry of Transport

- (a) On 11 March 2005, the Authority was appointed by Ministry of Transport ("MOT") as its managing agent in connection with the proposed land reclamation at Pasir Panjang Terminal Phases 3 and 4 and Tuas Port.
- (b) The assets and liabilities of the agency funds held in trust as at 31 December are as follows:

| | 2020 \$ | 2019 \$ |
|---|-------------------|-------------------|
| Accumulated fund | <u>37,903,714</u> | <u>6,751,976</u> |
| Current assets | | |
| Cash at bank | 40,597,447 | 7,078,041 |
| Amount due from various Government bodies | 8 | 57 |
| GST receivable | <u>3,047,720</u> | <u>12,056,063</u> |
| | <u>43,645,175</u> | <u>19,134,161</u> |
| Current liabilities | | |
| GST payable | (5,741,461) | (12,324,417) |
| Amount due to various Government bodies | - | (57,766) |
| Other payable | - | (2) |
| Net assets | <u>37,903,714</u> | <u>6,751,976</u> |

THE MARITIME AND PORT AUTHORITY OF SINGAPORE
AND ITS SUBSIDIARY

NOTES TO THE FINANCIAL STATEMENTS
For the financial year ended 31 December 2020

28. Funds managed/held on behalf of others - Funds held in trust (continued)

- (c) The results of the agency funds held in trust for the year ended 31 December are as follows:

| | 2020 \$ | 2019 \$ |
|------------------------------------|--------------------|--------------------|
| Grants received | 453,423,324 | 965,616,376 |
| Interest income | 610,390 | 792,947 |
| | <u>454,033,714</u> | <u>966,409,323</u> |
| Grants disbursed | (415,993,374) | (947,212,898) |
| Agency fees paid/payable | (6,888,602) | (15,801,532) |
| Surplus for the year | <u>31,151,738</u> | <u>3,394,893</u> |
| Accumulated fund as at 1 January | 6,751,976 | 3,357,083 |
| Accumulated fund as at 31 December | <u>37,903,714</u> | <u>6,751,976</u> |

29. Event occurring after balance sheet date

MPA Venture Pte. Ltd. (a wholly owned subsidiary of MPA) has made an application to the Accounting and Corporate Regulatory Authority ("ACRA") for the MPA Venture Pte. Ltd. to be struck off the register pursuant to Section 344A of the Companies Act (Cap 50) on 11 January 2021. The striking off is not expected to have any financial impact on the Authority for the current financial year ended 31 December 2020.

30. New or revised accounting standards and interpretations

Certain new accounting standards and interpretations have been published that are not mandatory for 31 December 2020 reporting periods and have not been early adopted by the Authority. These standards are not expected to have a material impact on the Authority in the current or future reporting periods and on foreseeable future transactions.

31. Authorisation of financial statements

These financial statements were authorised for issue by the Board of Members on 25 March 2021.



M P A
SINGAPORE

460 Alexandra Road
mTower #19-00
Singapore 119963
www.mpa.gov.sg