Unlocking Vessel Efficiency: How DUKC® can Drive Fuel & Emission Reductions

Brendan Curtis

Chief Commercial Officer

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Port Optimization & Risk Management

DUKC® BERTHALERT PORTWEATHER TRANSITANALYST ODIN

Expertise

- Port & Pilotage Operations
- Ship Dynamics
- Naval Architecture
- Environmental Modelling & Processes
- Environmental Forecast Assimilation
- Real-time Data Processing
- Cloud Computing & SaaS
- Machine Learning & AI
- Big Data & Analytics
- Sensors & IoT

Services

- Full scale ship motion measurements
- Dynamic Mooring Analysis
- Channel Design & Dredge Optimisation
- Ship Manoeuvring Simulations
- Dynamic Port Capacity Modelling
- iHeave2

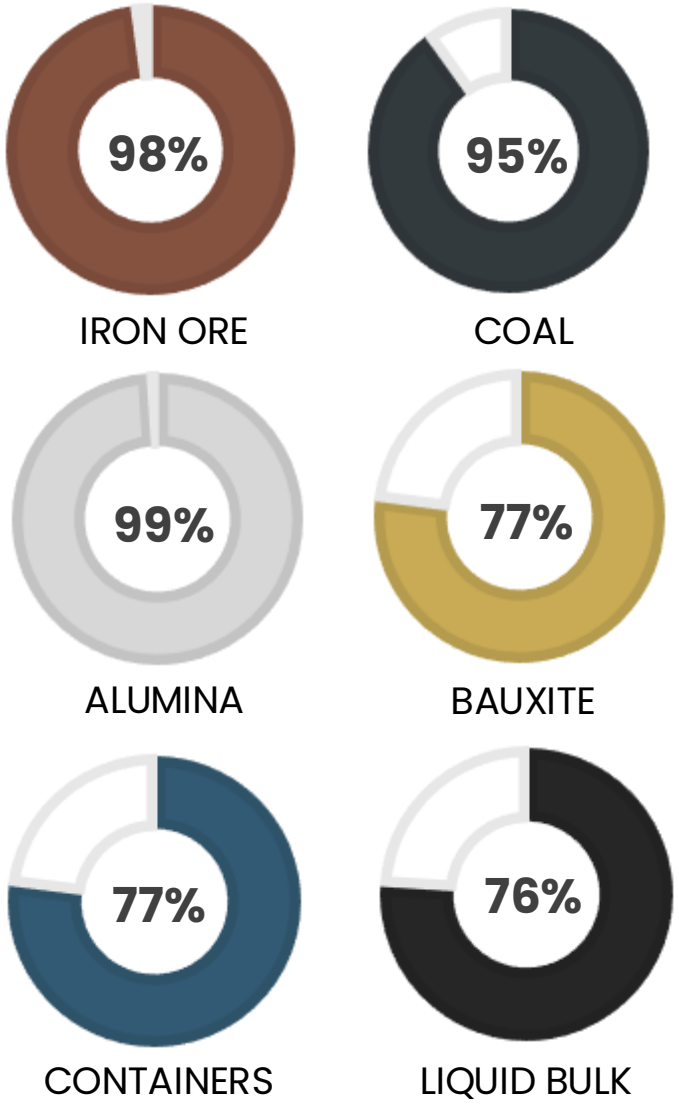
OMC in Numbers

Each year, DUKC® manages more than:

10 million TEUs

1.2 billion tonnes of dry & liquid bulk cargo

15,800 transits



% of volume shipped through Australian Ports using DUKC®

Dynamic UKC

Calculating UKC is done the same way today as it always has been for the vast majority of ports.

Dynamic UKC

DUKC® modernizes this process by utilizing advances in technology and the digitalization of the maritime industry. DUKC® integrates:

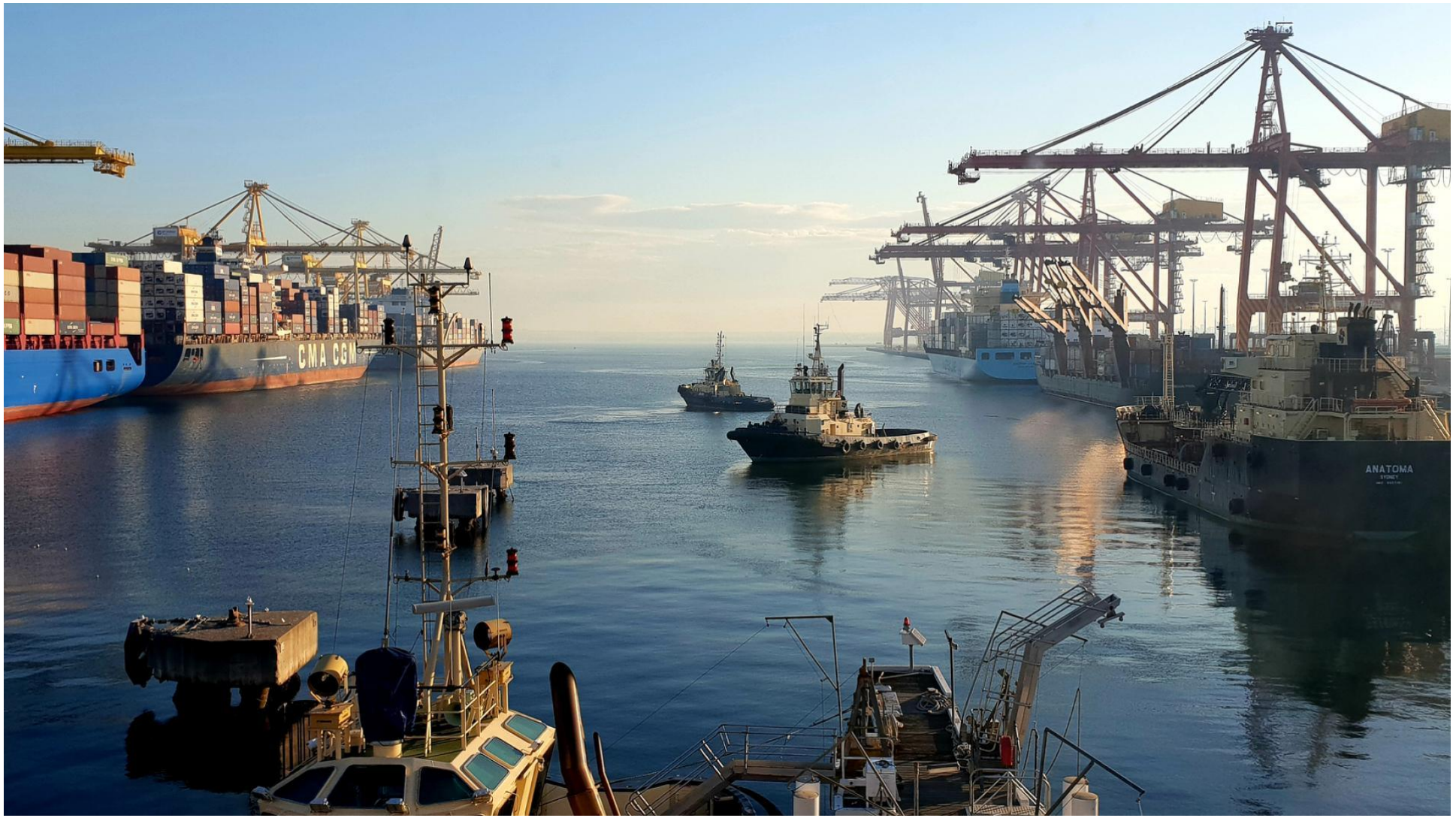
- Digital twin of the port
- High resolution bathymetric data
- AI enhanced environmental forecasting
- Real-time environmental and vessel data feeds
- Advanced hydrodynamic models to determine vessel motions

Dynamic UKC

DUKC® delivers:

- Larger, deeper vessels
- Increased cargos
- Wider sailing windows
- Reduced delays
- Enhanced safety
- GHG emissions reductions

Case Study: Botany



Botany Records

STI Kingsway

Deepest tanker into Kurnell

July 2021

MSC Asya

Deepest container ship in Australia

October 2021

STI Condotti

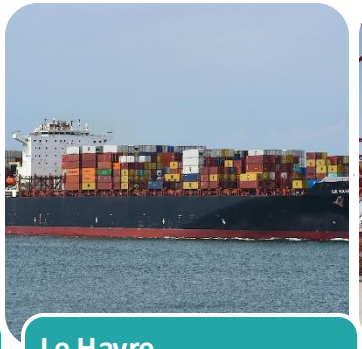
Deepest tanker into Botany

October 2021

MSC Tokyo

Deepest container ship in Australia

February 2022



Le Havre

Largest displacement vessel at Botany

February 2022

CMA CGM Estelle

Record for most containers into Australia

October 2022

CMA CGM Pelleas

Record LOA for Port Botany

September 2023

DUKC® Post Implementation Review

Average increase in sailing drafts:

0.67m

DUKC® increased the draft for all transits, with

60% achieving more than 0.50m

INCREASE IN DRAFT

=

INCREASE IN SAILING WINDOWS

Channel accessibility increased by:

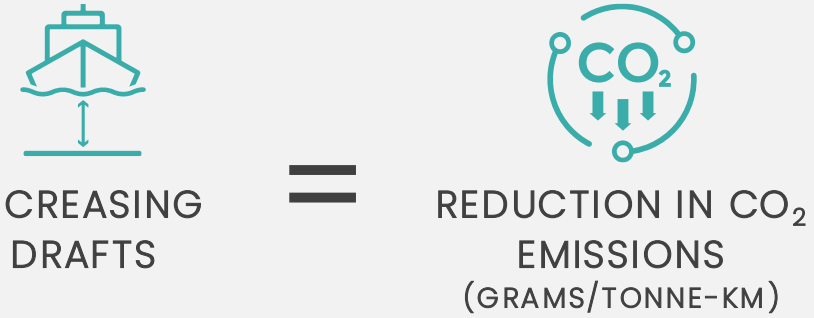
6 hours

on **spring** tide, and more than

10 hours

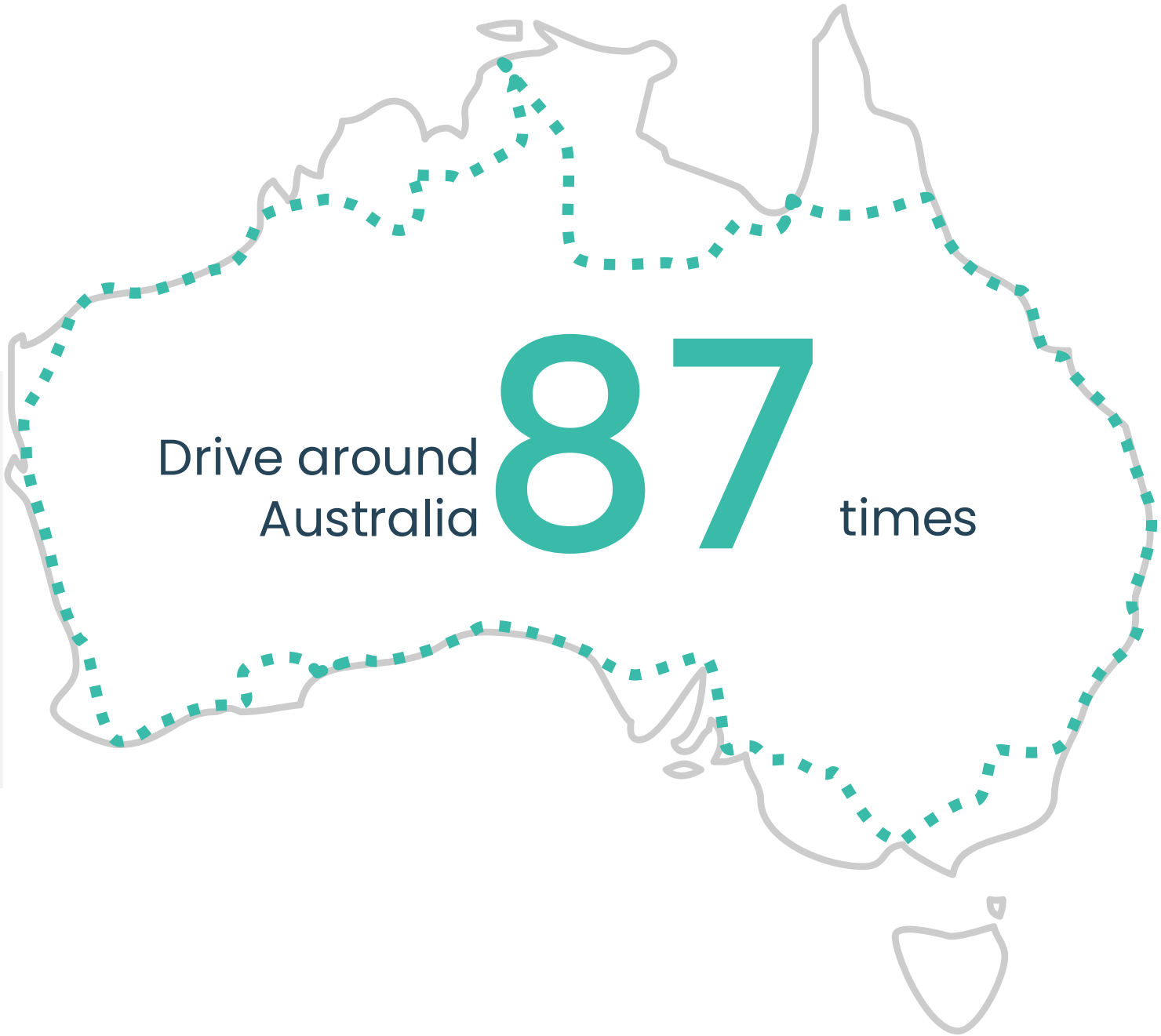
during **neap** tides

DUKC®: Technology Driving Sustainability



Case Study

- OMC partnered with a terminal operator
- DUKC® analysis used to inform optimal arrival drafts
- Facilitated **6% to 7% reduction in emissions (g/tonne-km)**


Drive around
Australia
87
times


Using DUKC®, the CO_2 emission reduction for a single voyage from Middle East to Botany is equivalent to driving around Australia 87 times.

DUKC® Case Studies

Saqr Port (UAE)

Average increase in draft **0.74m**

>100,000 tonnes CO_2 emissions avoided

Abbot Point (Australia)

Average increase in draft **1.08m**

~140,000 tonnes CO_2 emissions avoided

Increased port throughput by **4.4%**

Port of Fremantle (Australia)

Average increase in draft **0.41m**

5% reduction in CO_2 emissions for inbound tankers

Questions?

Brendan Curtis

Chief Commercial Officer

b.curtis@omcinternational.com
https://omcinternational.com/