

Pilbara Ports Authority

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PILBARA PORTS
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PPA at a Glance



633.5 million tonnes (Mt)
PPA record annual throughput 2015/16

**Port of
Port Hedland**
460.4 Mt
Record annual
throughput
(2015/16)

21,122
Total shipping
movements in
2015/16

World's largest bulk export port authority

PPA accounts
for approximately
50%
of world's
seaborne
iron ore exports

Value of
WA's oil &
gas exports
(2015)
**\$17.8
billion**

PPA accounts
for approximately
70%
of Australia's
iron ore exports

PPA's key commodities

- Iron ore - (93%)
- LNG/LPG (4%)
- Salt (1%)
- Other (2%)

Ports currently under PPA's management

- Port of Port Hedland
- Port of Dampier
- Port of Ashburton (mid 2017)

PPA accounts for
8%
of world's LNG
exports



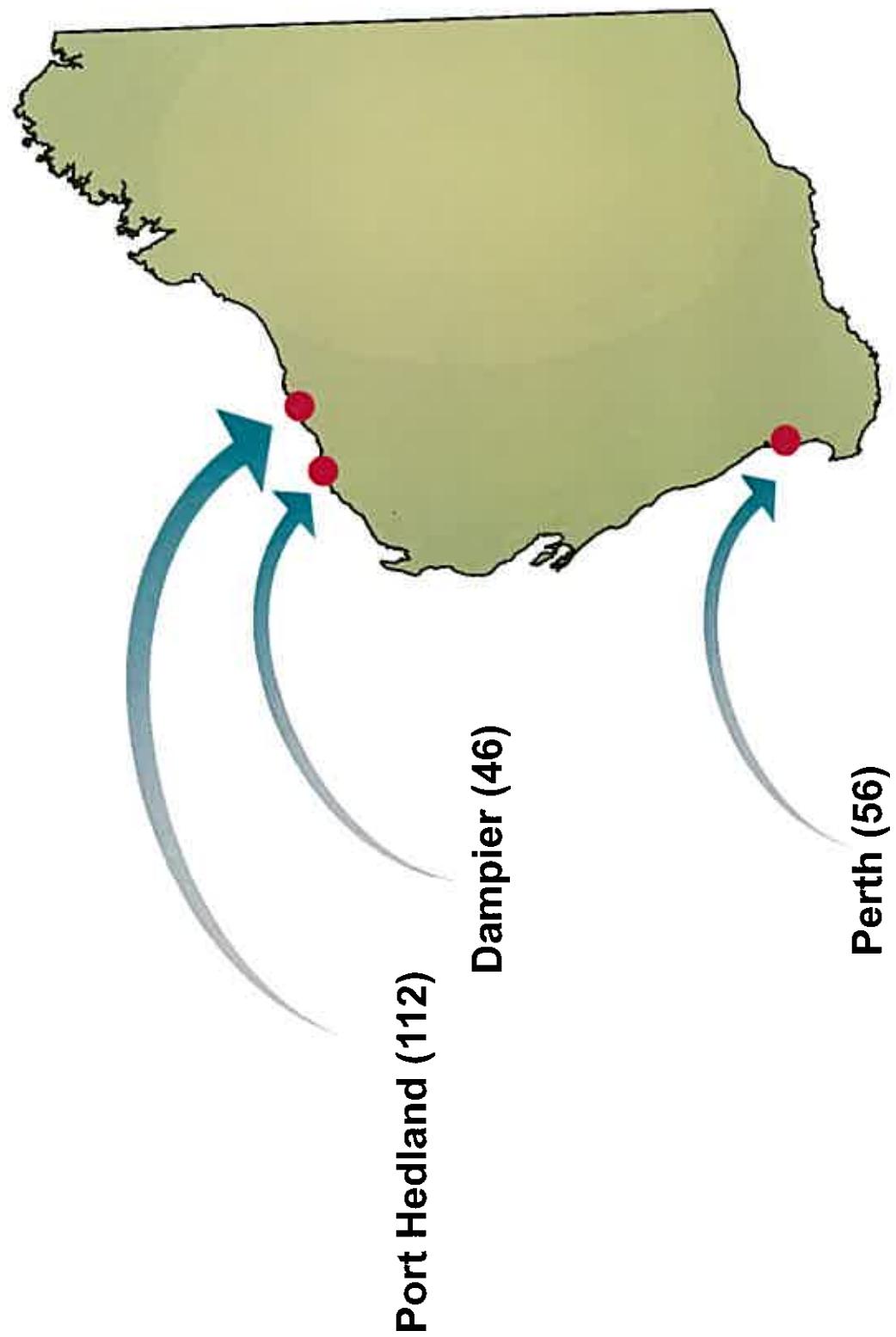
Port Locations



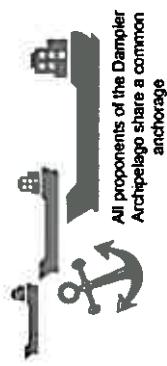
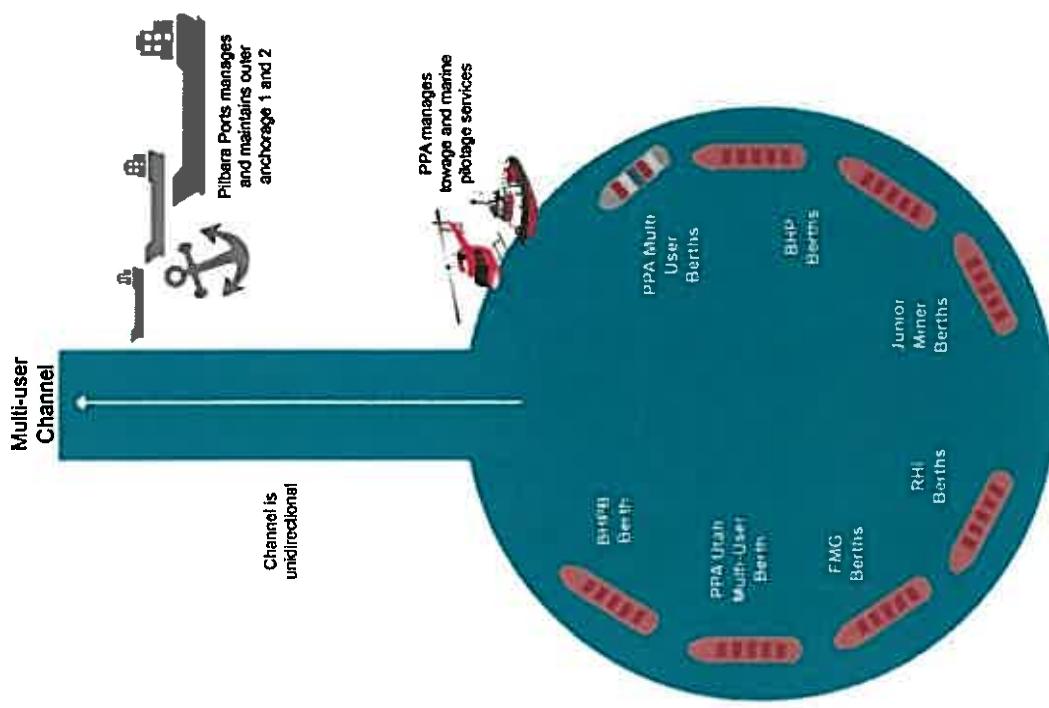
- Pilbara Ports Authority
- Proposed Port Location
- Shipping and Pilotage Port

Locations of staff

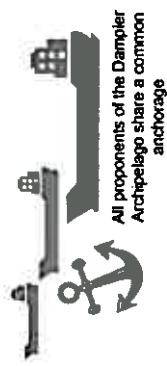
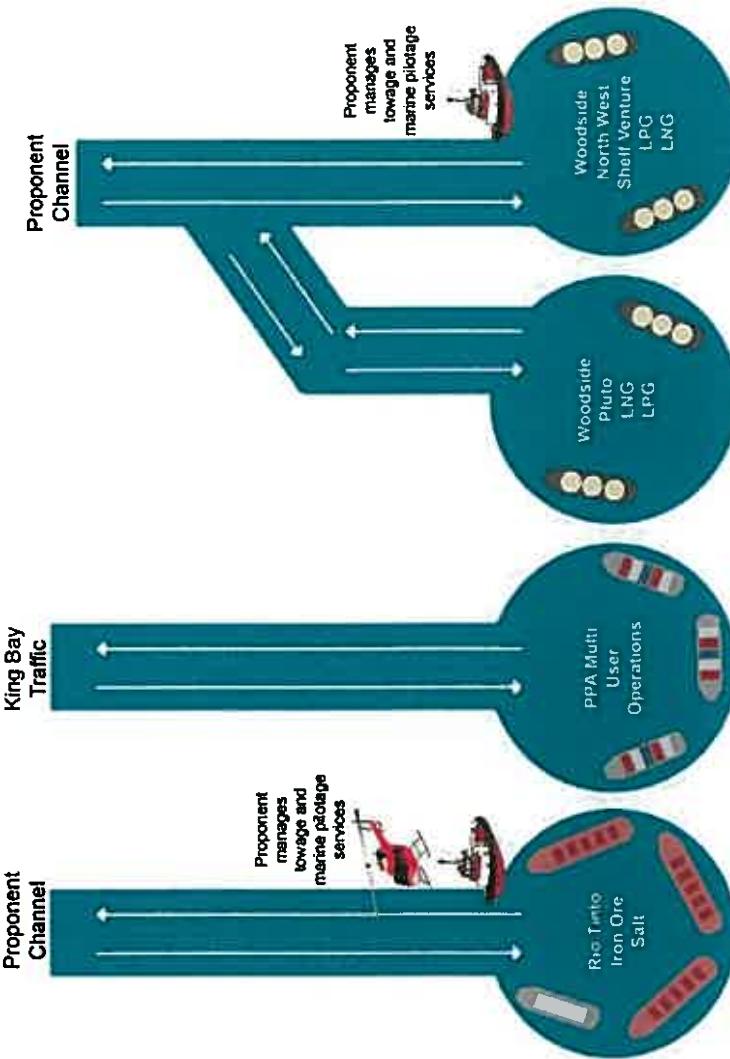
Total number of PPA staff: 214



Operating Models



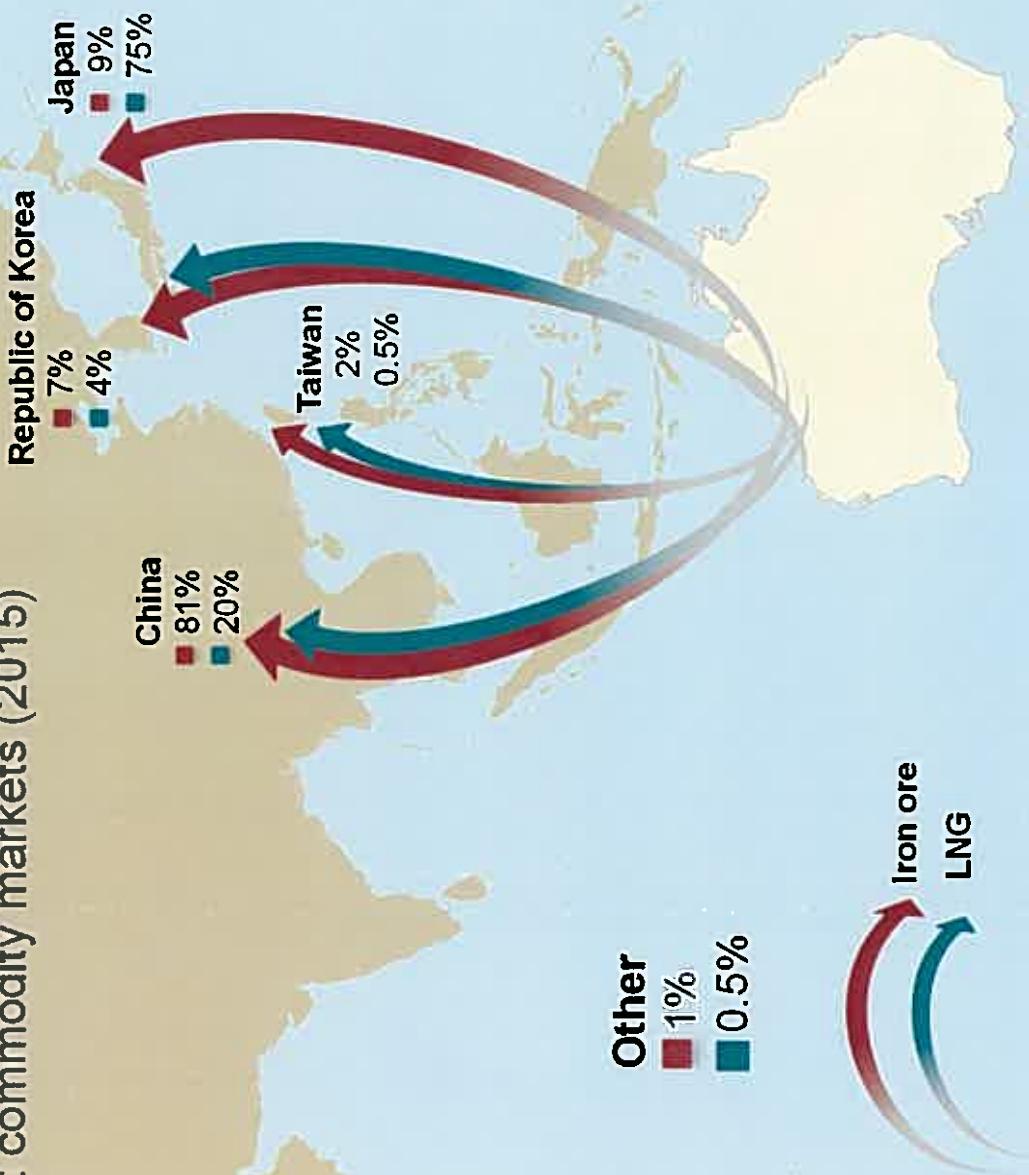
All proponents of the Dampier Archipelago share a common anchorage



All proponents of the Dampier Archipelago share a common anchorage

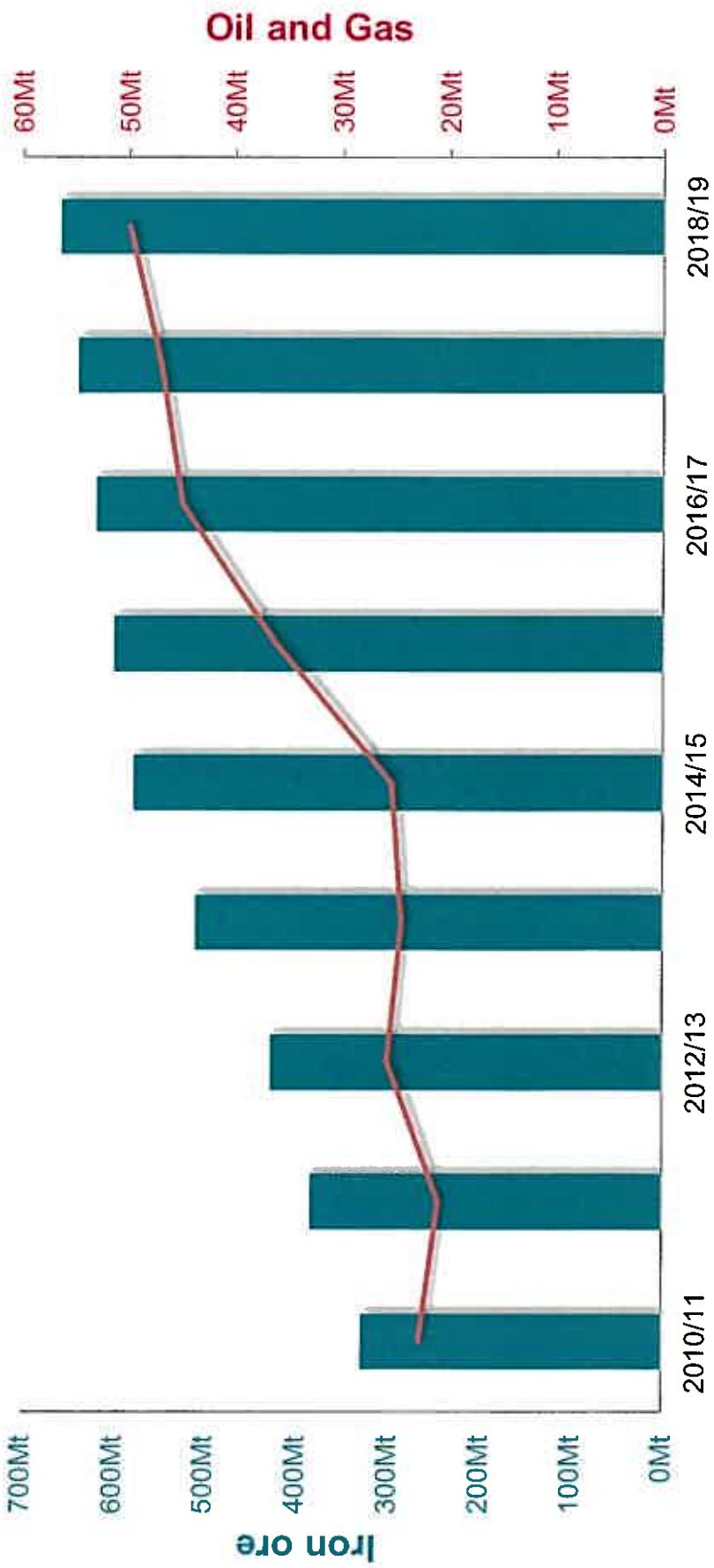
Iron ore and LNG distribution

Major export commodity markets (2015)



Increasing throughput volumes

PPA's main export commodities (Dampier, Port Hedland and Ashburton)



- Pilbara iron ore exports have had an above average growth of 11.7% over the past 10 years
- Upcoming LNG/LPG projects will contribute an extra 28.1Mt to WA capacity by 2017

Port Hedland Overview



Largest bulk export port in the world – approx.
30% of global seaborne trade

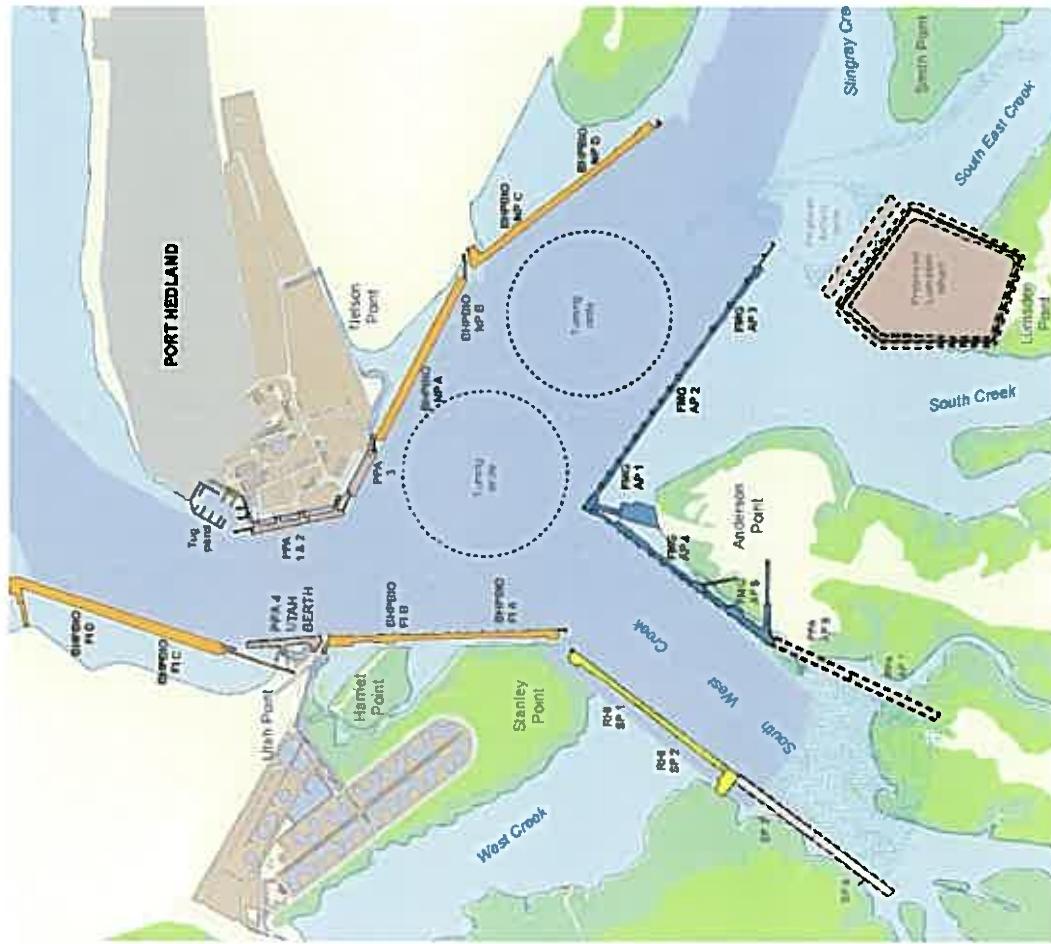
Record total throughput: 460.4Mt (2015/16 FY)
Increase of 13% from previous year

Exports: Iron ore (98%), Salt (1%), Manganese (0.50%), Other (0.50%)

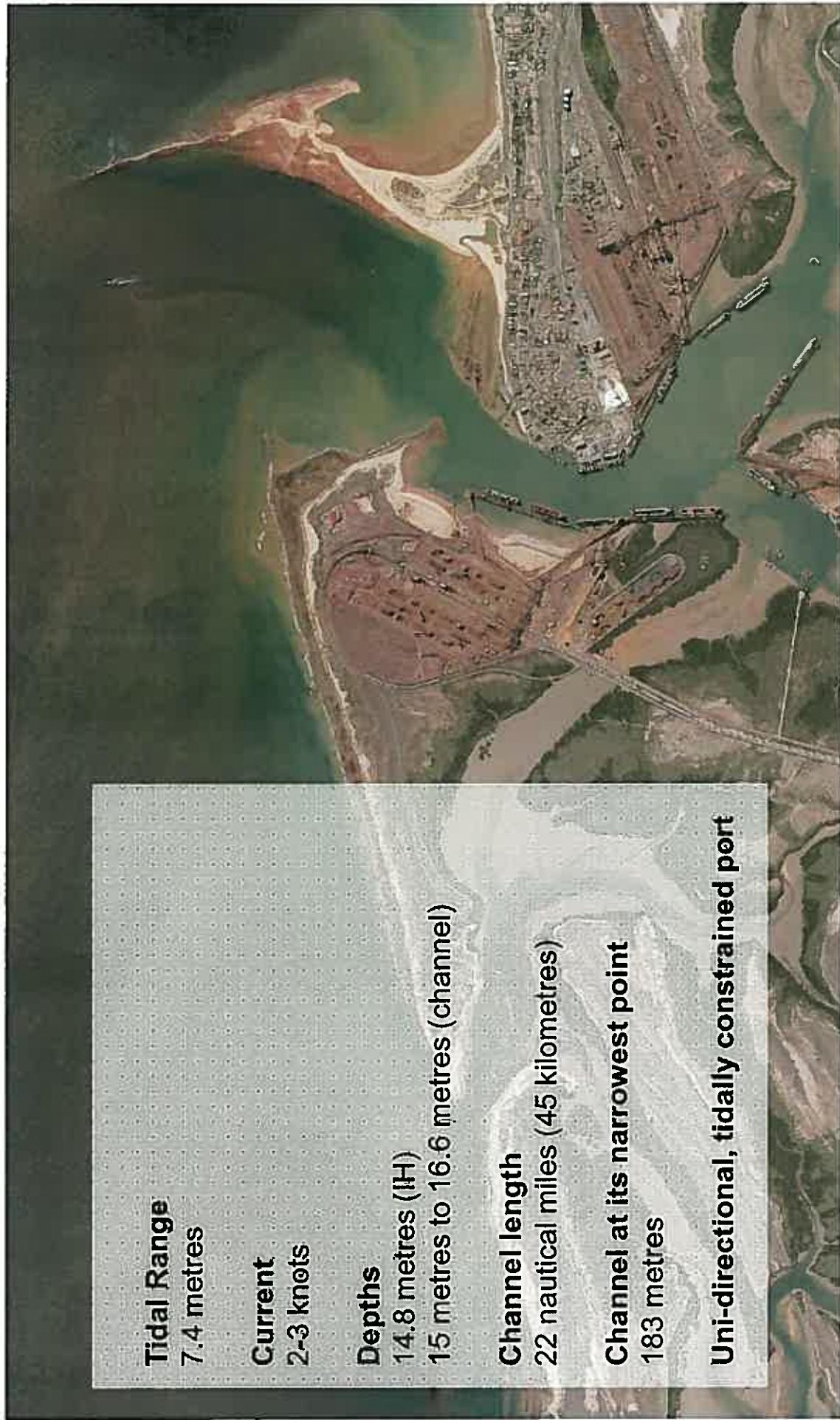
Imports: Fuel/Oils (76%), General cargo (11%), Cement (6%), Ammonium Nitrate (7%)

OPERATIONAL BERTHS (19)

BHP Billiton Iron Ore	8 berths
Fortescue Metals Group	5 berths
PPA berths (inc Utah Facility)	4 berths
Roy Hill	2 berths



Port of Port Hedland Channel

**Tidal Range**

7.4 metres

Current

2-3 knots

Depths

14.8 metres (IH)

15 metres to 16.6 metres (channel)

Channel length

22 nautical miles (45 kilometres)

Channel at its narrowest point

183 metres

Uni-directional, tidally constrained port

Million tonnes on a single tide

Port of Port Hedland



2012 Achieved **1** time

Record tonnage: 5 cape size vessels
17 April 2016: 1,022,051 tonnes

Tonnes achieved on a single tide

2013 Achieved **7** times

Record tonnage: 8 cape size vessels
28 February 2015: 1,511,977 tonnes

2014 Achieved **19** times

Two million tonnes in 24 hours: 22 June 2016
12 cape size vessels: 2,174,533 tonnes

2015 Achieved **49** times



2016 Achieved **32** times to date

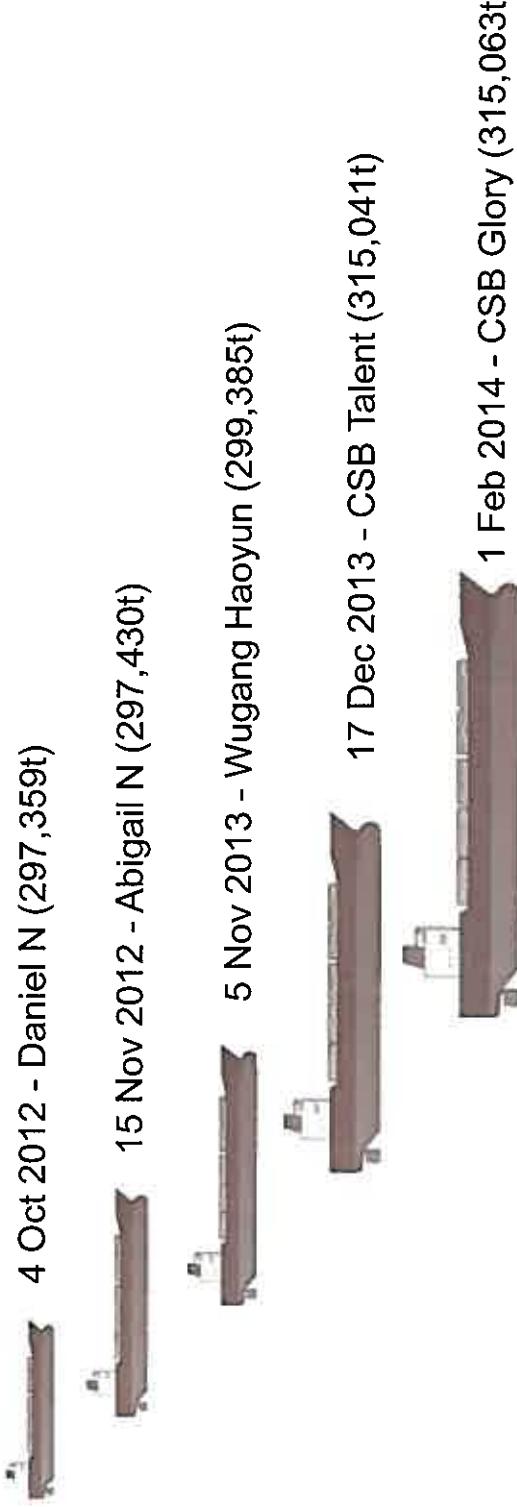
Tugs escorting bulk carrier into Port of Port Hedland

Facilitating larger vessels

Port of Port Hedland



Fleet profile moving to larger vessels = WozMax/ PH Max/ PSU Series/ N Series



Continued trend towards larger ships

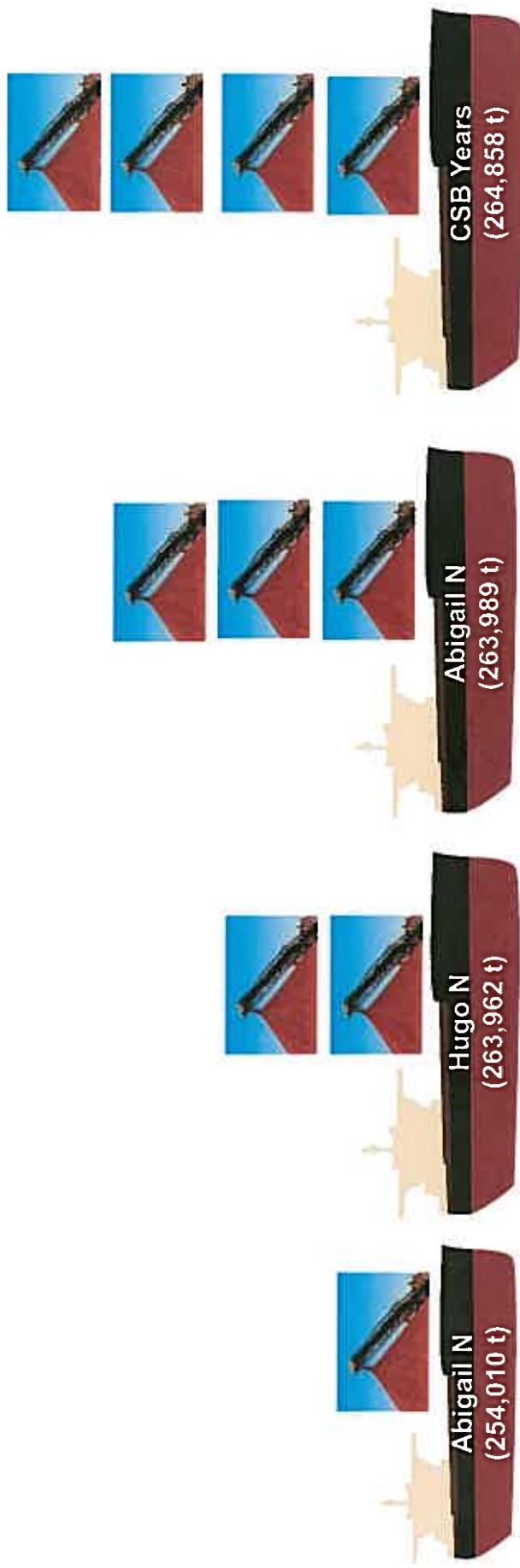
	2009/10	2014/15	2015/16
200k DWT	10% of fleet	29% of fleet	31% of fleet
250k DWT	Nil	6% of fleet	7% of fleet
Total movements	2,658	5,867	5,560

Increasing vessel sailing tonnages

Single shipment milestones



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Maximum sailing draft has increased from

19.05m (Abigail N, 15 Nov 2012) to **19.67m** (Abigail N, 24 Feb 2015)

Operational enhancements

Port of Port Hedland



Dynamic Under Keel Clearance System

- Upgraded DUKC System (Series 5)
- Minimum 90cm clearance
- DUKC is fed by live tidal gauges from channel

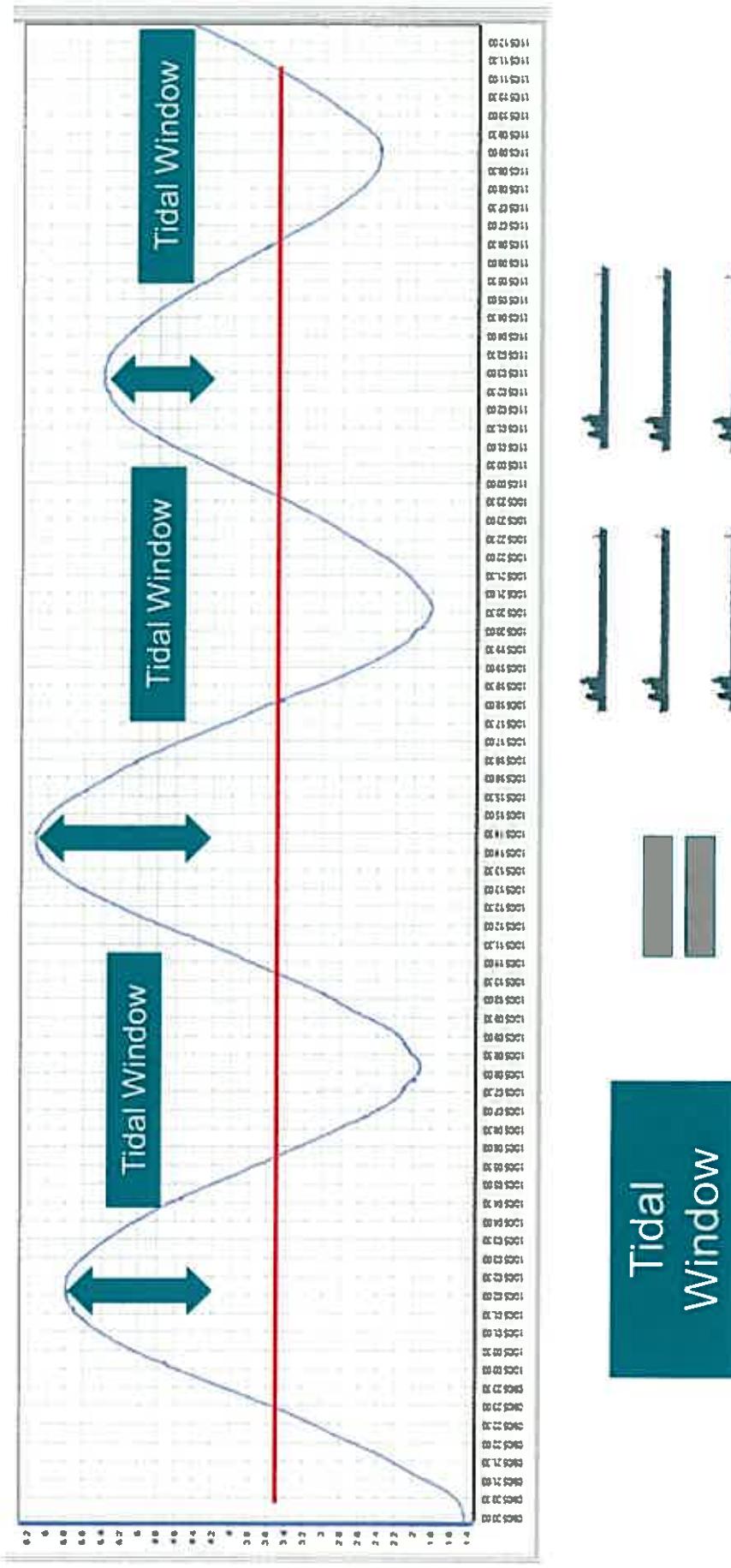
Hydrographic survey/tidal study

- Redefined *Lowest Astronomical Tide (LAT) – measured to the ellipsoid
- Combined with improved depths of 2013 maintenance dredging campaign has realised an extra draft of 71cm within channel
 - Extension of vessel sailing window for larger vessels by almost an hour, enhancing export capacity and safely managing vessel movements
 - Extended departure window has increased number of vessel departures from 6 to 8 on a tide

*Base level against which tides and navigable depth are measured

Prior to Tidal Model Project

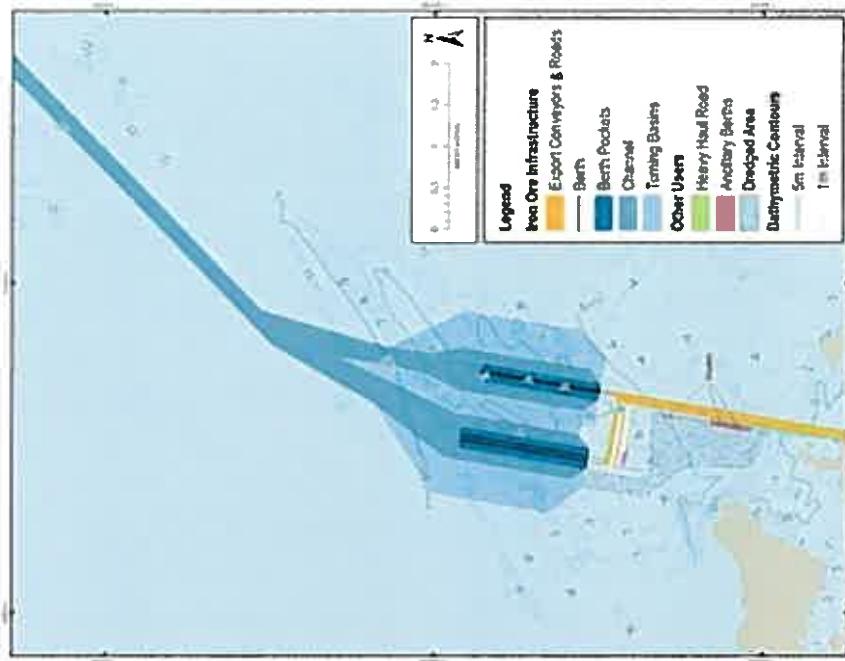
Before Dec 2013



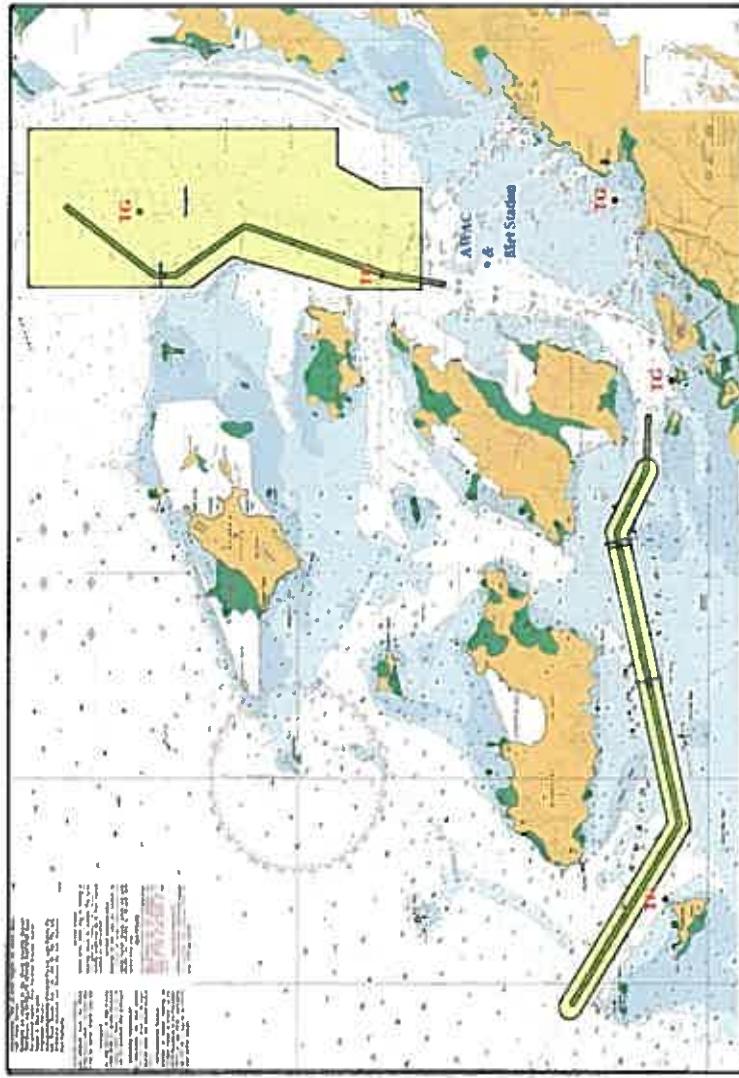
- Six vessels on a single tide
- 30 mins apart

Benefits to other ports

- Every PPA Port will have its own unique ‘Hydroid’ established
- Establishing a port’s ‘Hydroid’ prior to construction can potentially save hundreds of millions of dollars



Proposed Port of Ankettell



Port of Dampier

Premier Award Winners

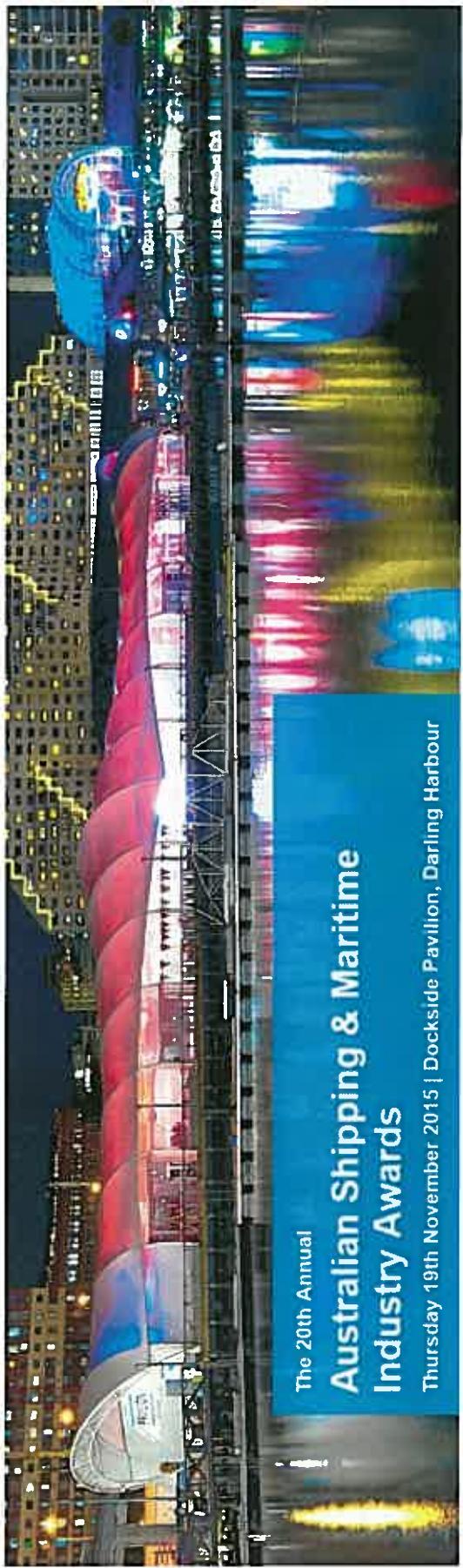
- PPA's Tidal Model Project won the 2015 WA Premier's Award - Developing the Economy Category



Australian Shipping & Maritime Awards



- PPA's Tidal Model Project also won the Lloyd's List Australian Shipping and Maritime Logistics Supply Chain Excellence Award
- PPA's Mangrove Program was highly commended in the Environmental Transport Award (PPA Mangrove Program)



Dynamic Port Capacity Model



- DPCM has identified additional capacity in the Port Hedland channel
- World-first model evaluates potential port investments and operating scenarios, maximising throughput
- The port's forecast capacity has increased from 495mtpa to **577mtpa**; an increase of **more than 16 per cent**



This will result in:

- ✓ Increase sailing ability of vessels on any given tide
- ✓ Draft efficient vessels will gain reward due to less tidal conflict
- ✓ Opportunity for more vessels on any given tide
- ✓ More efficient shipping for port users
- ✓ More royalties back to the State

Operational enhancements

Port of Port Hedland



World-class maritime simulation facility

- Partnership with HR Wallingford to operate an advanced ship navigation and maritime simulation facility in Fremantle, Western Australia
- Optimisation of marine operating procedures, and professional development and training of individual pilots, tug masters and port staff
- Vessel traffic services (VTS) simulator plus six real time ship simulation bridges
- Advanced site familiarisation and scenario based emergency and failure training



John Finch (Port Hedland Harbour Master) using ship simulation equipment

Integrated Marine Operations Centre Port of Port Hedland

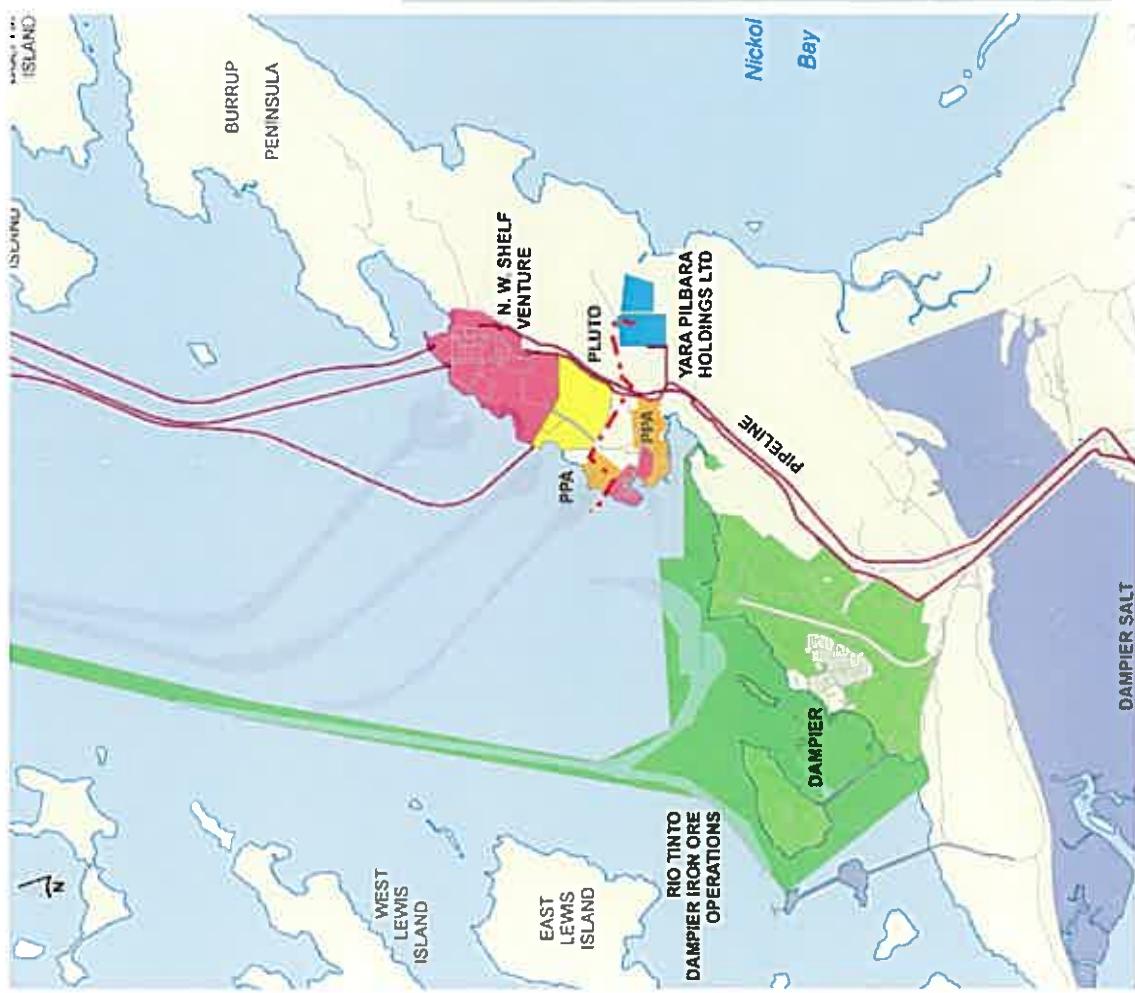


- IMOC will house the latest technology and operational systems to improve safety and efficiency of vessel movements in the port
 - ✓ Allowance for future expandability
 - ✓ World's best practice
 - ✓ Fit for purpose
 - ✓ Design life of 50+ years
 - ✓ Enhanced Channel Risk Mitigation and an improved Incident Response capability
- On 5 July 2016, Pindan Contracting Pty Ltd was announced as the successful tenderer to design and construct the IMOC
 - The IMOC is due to be completed in 2018



(Preliminary concept design of IMOC)

Dampier Overview



Total throughput: 173Mt (2015/16 FY)
Of this, 171.9 Mt was exports

Exports for 2015/16 FY: Iron ore exports (83%),
LNG (12%), Salt (2%), Other (3%)

Imports for 2015/16 FY: Petroleum/Diesel
(81%), General cargo (19%)

PPA facilities: Dampier Cargo Wharf, Bulk Liquids Berth,
Heavy Load Out facility, Alternate Load Out facility

Patrick Marine Facility: Commenced operations in June
2015

QUBE: Floating Deck Transhipment System

Rio Tinto Iron Ore: (6 berths) RTIO Dampier Salt: (1
berth)

Woodside Energy Limited: (Withnell Bay LNG 1 2 and
LPG 3/Condensate jetty) Pluto, King Bay Supply Base
and Bulk Materials Facility

Mermaid Marine Australia: Mermaid Marine Supply
Base and slipway

PPA Developments

Port of Dampier

- The new VTS facility provides port monitoring and communications services for vessels using the ports at Dampier and Ashburton
- At the Port of Ashburton, this service commenced well in advance of the expected handover date of mid-2017 from Chevron Australia
- The facility will eventually service Cape Preston and Ankettell ports in the future
- Patrick Marine Facility has been installed at the end of the Dampier Cargo Wharf, providing additional berth capacity for offshore vessels



Port of Ashburton



- Multi-user port with common use infrastructure to accommodate LNG, hydrocarbon and natural gas processing for WA's domestic gas supply
- Key features include a navigation channel and a Material Offload Facility (MOF)
- PPA will manage the port once construction is completed, expected in 2017/18
- PPA will establish its infrastructure on port-vested land, including;
 - ✓ Administration building
 - ✓ Gatehouse
 - ✓ Oil spill response equipment Storage sheds
 - ✓ Power and water facilities



(Picture courtesy of Chevron Australia Pty Ltd)

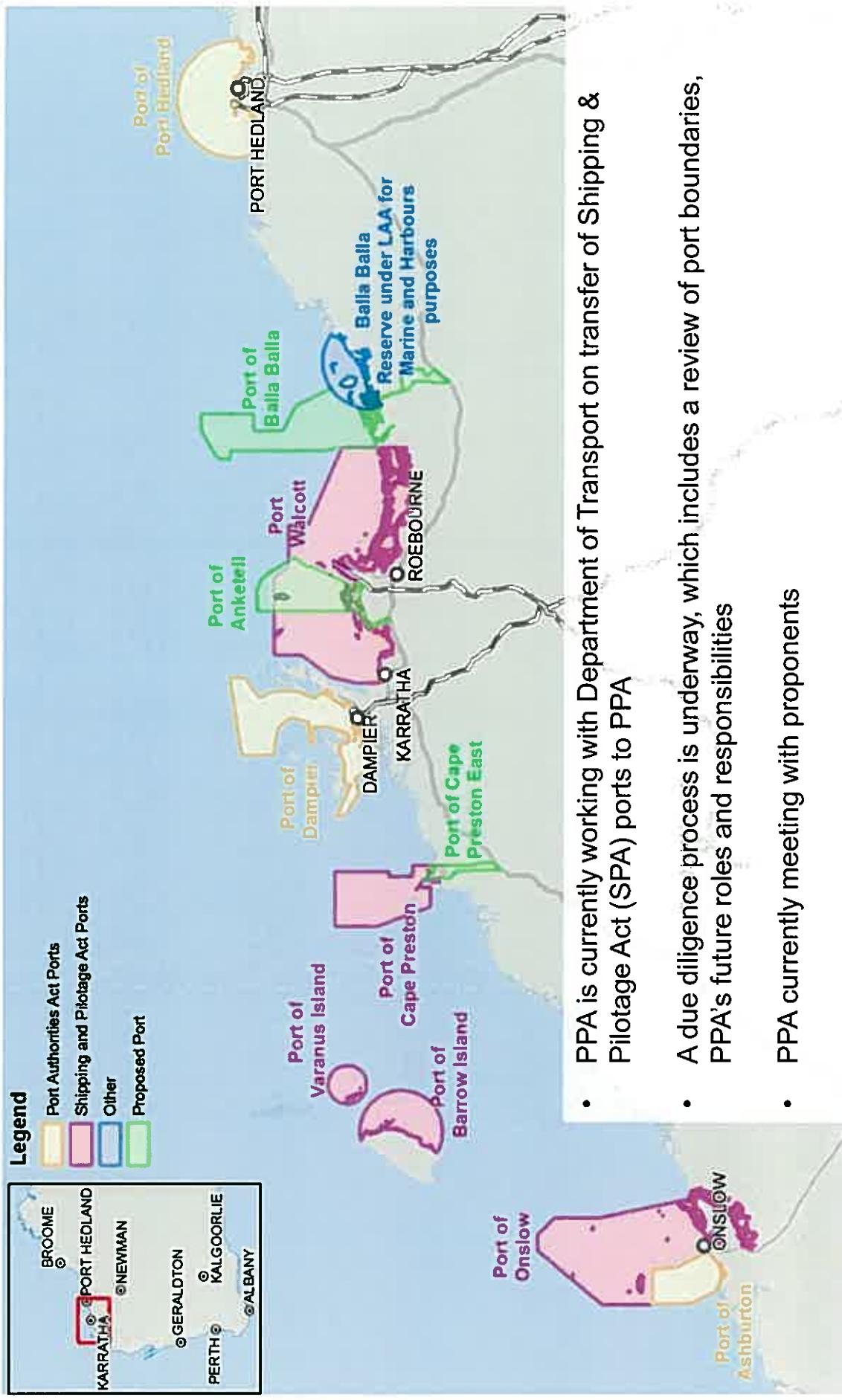
PPA- Greenfield expansion



Anketell	Balla Balla	Cape Preston East
<ul style="list-style-type: none"> Located approximately 30km east of Karratha Proposed iron ore export facility and strategic industrial area, with ultimate capacity of more than 350mtpa Provision for the export of bulk commodities and import of fuel/general cargo The facility will comprise: <ul style="list-style-type: none"> ✓ Multi-user, multi-commodity deep water port ✓ Approximately 840ha of industrial land ✓ Land and an infrastructure corridor for utilities and transport 	<ul style="list-style-type: none"> Greenfield site 100km east of Dampier, 120km SW of Port Hedland Iron ore transhipping export port constructed and operated by the foundation proponent PPA's role is to facilitate the project and ensure; <ul style="list-style-type: none"> ✓ The port will be a multi-user port ✓ Appropriate land, seabed and waters are vested to PPA ✓ Safe transhipping operations within the port area, both marine and landside 	<ul style="list-style-type: none"> Greenfield site approx. 70km SW of Karratha Developed as a multi-user port to facilitate the export of iron ore and other bulk minerals Foundation proponent secured State and Commonwealth environmental approvals to construct and operate iron ore export facility Development Applications being progressed



Tranche 2 amalgamation



Questions?

