4 Port of Melbourne – overview

4.1 Background

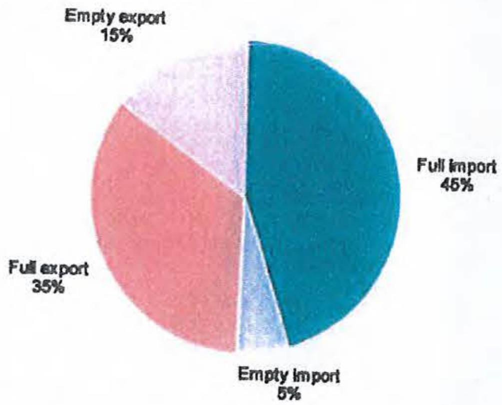
4.1.1 Trade overview

The PoM is Australia's largest maritime hub for containerised, automotive and general cargo, servicing an estimated total trade value of around $84 billion per annum Containers represent over 70% of the port's total trade and account for around 37% of the nation's total container trade (including the Bass Strait container trade to/from Tasmania) With around 3,200 ship calls to the port each year, the PoM now handles over 2.5 million TEU per annum. The PoM also hosts Australia's largest automotive terminal with over one thousand motor vehicles handled each day on average.

Table 4.1 PoM trade summary by cargo type

Trade summary by cargo type		
	FY13 throughput	**% change on FY12**
Total trade	85.6 million revenue tonnes	-1.6%
Containers	2.51 million TEU	-2.6%
New motor vehicles	4.8 million revenue tonnes (370,527 units	+3.6%
Liquid bulk	6.5 million revenue tonnes	+2.6%
Dry bulk	4.4 million revenue tonnes	+4.4%
Break bulk	4.7 million revenue tonnes	-5.2%

Figure 4.1 Split of PoM annual TEUs (FY13)



Container export trade includes miscellaneous manufactured goods, cereal grains, paperboards and fireboards, dairy products, fruit and vegetables, beverages, paper and newsprint, pulp and wastepaper, stockfeed, and meat.

Container import trade includes miscellaneous manufactured goods, furniture, electrical equipment, fruit and vegetables, paper and newsprint, clothing, machinery, metal manufactures, vehicle parts, and toys and sporting goods.

Liquid bulk trade mainly comprises crude oil imports and refined petroleum product imports and exports.

Dry bulk comprises import cement, gypsum, and sugar and export wheat, canola and barley.

Break bulk comprises timber and paper products, steel coil and slab, manufacturing and agricultural equipment and machinery, and special project cargoes such as wind turbines.

The Bass Strait Roll-on/Roll-off service calling at the PoM carry wheeled freight (trailers, new motor vehicles) and other break bulk cargoes in addition to containers.

In addition, the PoM hosts Bass Strait passenger ferries and visiting cruise-ships.

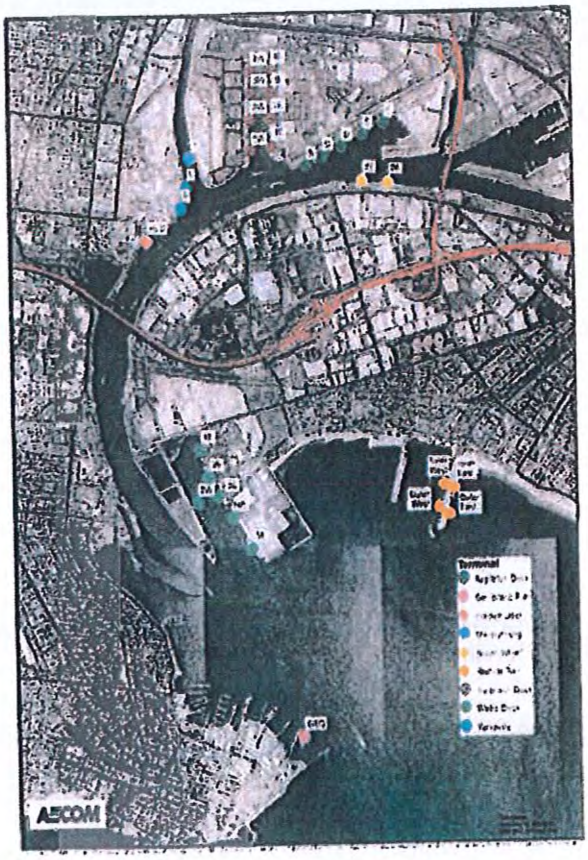
4.1.2 Port infrastructure and operations

The PoM precinct, together with most of its related infrastructure extends westwards from the Bolte Bridge CityLink river crossing to the west bank of the Maribyrnong River with large parcels of land south of the West Gate Freeway (M1) around Webb Dock which is the focus for the port's next stage of development. Overall, PoM comprises:

- 510 hectares of port land
- 100,000 hectares of port waters
- 34 commercial berths, including eight container berths at Swanson Docks East and West
- 21 km of waterline, including 7 kilometres of quayline.

The existing container terminals at Swanson Dock East and Swanson Dock West are operated by Patrick Stevedores (a unit of Asciano) and DP World respectively, each terminal comprising four berths and eight cranes. PoMC is currently evaluating tenders to operate a third container terminal at Webb Dock East.

Figure 4.2 Location of PoM terminals



4.1.3 Port Capacity Project – Webb Dock Development

PoMC has embarked on a $1.6 Billion project (inclusive of private sector investment) to develop a third international container terminal at Webb Dock East with assumed capacity of 1.4m TEU, and a consolidated automotive terminal at Webb Dock West including a pre-delivery inspection facility. Both terminals are expected to be operational by late 2016/early 2017. The Bass Strait terminal at the northern end of Webb Dock East will remain active in the short to medium term, however as discussed in section 3 there is an opportunity to relocate the Bass Strait and coastal trades from Webb Dock East in the longer term to increase international container capacity further.

[redacted]

[redacted]

[redacted]

4.3 Historical & forecast financials

4.3.1 Summary financial performance

Set out in Table 4.3 below is the summary financial results and forecasts for PoM.

Table 4.3 Summary of PoM financial results and forecasts

($m)	FY13A	FY14F	FY15F	FY16F
Charges on cargo	226	236	249	264
Channel usage charges	47	51	54	57
Rental and licence fees	47	52	50	60
Other revenue	20	23	24	25
Total Revenue	**340**	**362**	**377**	**406**
EBITDA	**259**	**266**	**287**	**306**
Operating cash flow	**283**	**264**	**260**	**305**
Capital expenditure	(57)	(154)	(471)	(263)
Cash flow (pre financing and tax)	**226**	**110**	**(211)**	**42**

Note: Earnings adjusted to exclude the port licence fee expense of $75 million per annum

4.3.2 Balance sheet summary

Table 4.4 sets out the PoM balance sheet summary as at 30 June 2013.

Table 4.4 PoM balance sheet summary (30 June 2013)

($m)	30 June 2013
Cash	50
Current Receivables and Other	22
Land	804
Other fixed assets	1,584
Future Income Tax Benefit	17
Total Assets	**2,477**
Current payables and provisions	68
Current income tax payable	9
Short term debt	45
Non-current provisions	2
Deferred tax liabilities	341
Long-term debt	349
Total Liabilities	**814**
Net assets	**1,663**

[redacted]

4.4 Productivity and opportunities for performance improvements

4.4.1 Productivity factors outside of PoMC and stevedore control

The PoM has traditionally been the strongest performing container port in Australia in terms of productivity, primarily through its position as the largest throughput port, as well as it's relatively small imbalance between imports and exports. More recently Port Botany has seen marked improvements through a range of factors, including the introduction of the Port Botany Landside Improvement Strategy (PBLIS).

Table 4.5 Comparison of productivity metrics

Jan-Jun 13	Melbourne	Brisbane	Sydney	Five-ports	Brisbane	Sydney	Five-ports
Wharfside (TEUs per hour)							
Crane rate	44.9	43.8	46.3	44.9	3%	-3%	0%
Elapsed labour rate	67.6	60.3	67.2	63.8	12%	1%	6%
Ship rate	87.7	72.8	94.3	83.8	20%	-7%	5%
Throughput bpm	185.5	104.1	171.6	140.7	78%	8%	32%
Landside							
Containers per truck	1.6	1.7	1.4	1.5	-6%	14%	7%
TEUs per truck	2.4	2.5	2.0	2.3	-4%	20%	4%
Truck Turnaround time (mins)	30.6	36.1	34.8	31.8	-15%	-12%	-4%
Average container turnaround time (mins)	19	21.1	25.6	20.7	-10%	-26%	-8%

Port throughput and in turn productivity is influenced by numerous factors, each of which may form the "weakest link" in the system and be the capacity constraint. The following list describes the key factors influencing productivity at the PoM, as well as the party (POMC as the landlord, the stevedores or external) that will have the greatest influence on each factor.

4.4.2 Productivity factors outside of PoMC and stevedore control

The following factors are generally outside of the control of PoMC or stevedores:

- Fleet spectrum – in future years, the median vessel size of the fleet calling at Melbourne is forecast to increase, driven by the "cascading" of large vessels onto the routes servicing Melbourne from the major trans-Pacific and trans-Atlantic routes. At the same time the total number of vessels is expected to increase each year. As the median vessel length increases the likelihood of quay length restrictions will also increase
- Vessel crane allocation limits – this is a physical limit to the number of cranes that can be effectively used to work any particular vessel based on the length of the vessel and the stowage pattern of containers onboard. If all containers on a vessel destined for Melbourne are stowed within a few hatches or bays then it is physically not possible to engage more than 1-2 cranes on that ship
- Average TEU exchange per vessel – the number of containers lifted off and onto each vessel expressed as a ratio of the vessel's total capacity. If a vessel is completely unloaded and then reloaded at a particular port (i.e. full transhipment) then this is expressed as 200% exchange. The

historic average TEU exchange per vessel for Melbourne over the past decade years is 0.65, which is roughly equivalent to double Melbourne's total share of Australian container demand

- Ratio of TEU to containers – this determines the actual number of lifts required for the forecast TEUs as container cranes can transfer 40-foot containers at the same rate as 20-foot containers. This proportion is driven by the demands of freight forwarders and receivers for packaging of goods in particular container types and by rail and road mass limitations. This ratio is expected to increase from the current value of 1.46 TEUs per container to 1.60 TEUs per container by 2035 – i.e. a greater proportion of 40-foot containers

4.4.3 Productivity factors within PoMC control

Generally the factors that are within the control of the PoMC involve investment in physical infrastructure. These include:

- Channel capacity – PoMC has control over the declared depth that determines maximum draught, as well as the system of 1-way and 2-way access channels that impacts shipping delays to the berths
- Quay length – the quay length that is available for berthing vessel. This factor becomes more important as the median vessel length of the fleet spectrum increases
- Quay strength – Swanson Dock cannot currently cater for twin or quad lift quay cranes due to structural limitations. Investment to increase the loading capacity would be prohibitive and in turn would require further investment by the stevedores in either new quay cranes or at minimum spreaders capable of multiple lifts
- Yard area – the area available to the tenant stevedores for storage and transfer of containers between road or rail and the quay
- Landside transport infrastructure – PoMC has the ability to invest in road and rail infrastructure within the port boundary, as well as influence VicRoads and DTPLI investment in adjacent infrastructure, however this infrastructure does not currently limit capacity

4.4.4 Productivity factors within stevedore control

The port productivity factors that are within the remit of the stevedores are generally equipment and labour related. There is a general trend globally towards high productivity automated equipment that reduces the influence of industrial relations, however automated equipment is still relatively expensive to purchase and operate so decisions to invest tends to require significant throughput volumes. The primary factors that the stevedores at the PoM have control over are:

- Number of cranes per quay – as the number of cranes on each quay is increased each vessel is more likely to receive its optimum number of cranes resulting in a more rapid exchange of containers, thus reducing the vessel time at berth (TAB) – a key consideration for shipping lines. The maximum number of cranes required on each quay is determined by the maximum crane density that can be worked against the largest ships berthed within the forecast fleet spectrum for each year
- Average Net Crane Rate – as the NCR increases containers can be exchanged more rapidly and the total TAB is reduced. The NCR for the December Quarter for 2009 was 32 lifts per hour. 35 lifts per hour is considered to be an achievable maximum average NCR for Swanson Dock
- Labour productivity – industrial disputes at the PoM have decreased markedly since the 1998 waterfront dispute however ad-hoc industrial action since (including 2011) does have the potential to markedly reduce port throughput. Shift changes are still an important area for improvement as they tend to result in spikes in truck queuing at the port gate
- Terminal equipment – [redacted] Most high productivity ports globally are trending towards smaller shuttle carriers for the transfer tasks into Automatic Stacking Crane (ASC) stacks. ASCs have the benefit of being able to store containers in much higher density stacks, with subsequent higher utilisation of available yard space.

- Truck Turnaround Times – the PoM has generally maintained relatively low average time between truck arrival at the port gate through the loading/unloading bays and back on to the public road network, however as throughput and subsequent truck demand increases the stevedores may need to work more closely with PoMC and the DTPLI to manage peak demand and provide more truck queuing and marshalling space

4.5 Constraints

The existing PoM draught and length limitations for each berth are provided below in Table 4.6

Table 4.6 Summary of limits by terminal

Terminal	Berth(s)	Trade(s)	Commodity(s)	Limits Draught	 LOA
Appleton Dock	B, C & D	Break Bulk Automotive2	General Cargo	10.1	250
	E	Break Bulk (Tas)	General Cargo	10.1	126
	F	Dry Bulk	Grain	10.8	228
Gellibrand Pier		Liquid Bulk	Crude Oil	14.0	274
Holden Dock		Liquid Bulk	Refined Petroleum Products	12.1	200
Maribyrnong	1	Liquid Bulk	Chemicals	9.4	180
South Wharf	26 and 27	Dry Bulk	Cement	10.4	215
Station Pier	Inner East	Passenger	Ferry	10.3	195
	Outer East		Cruise	10.3	240
	Inner West			8.2	105
	Outer West			10.3	305
Swanson Dock3	East 1,2,3,4	Container	International	14.0	300
	West 1,2,3,4			14.0	300
Webb Dock (Existing)	East 1	Container (RoRo)	Tasmanian/Coastal	6.4	185
	East 2			6.4	150
	East 3	Break Bulk	General Cargo	9.4	185
	East 4	Container	Tasmanian/Coastal	11.9	250
	East 5	Automotive	Automotive	11.9	250
	West 2	Automotive	Automotive	8.5	200
Webb Dock	East	Container	International	14.0	300

[2] Will relocate to Webb Dock West by 2018

[3] Post Panamax Constraint

Terminal	Berth(s)	Trade(s)	Commodity(s)	Limits Draught	LOA
(Future)[4]	West	Automotive	Automotive	14.0	300
Yarraville	5	Dry Bulk	Sugar Gypsum	8.8	180
	6		Fertiliser	9.6	190

4.5.1 Depth constraints

Most of the PoM terminals with vessel draught limits less than 14 metres can potentially be deepened to enable larger vessels, however there is unlikely to be the demand as most vessels aside from the container, some grain ships and crude oil ships are not draught limited.

The existing maximum declared depth in the PoM (15.5 metres) (equivalent to a maximum draught of approximately 14 metres) is unlikely to be increased due to several constraints:

- It is unlikely that new environmental approvals for further deepening of the Entrance Channels into Port Phillip Bay could be obtained following the 2008 Channel Deepening Project (CDP)
- The River Yarra Channel is constrained by the utilities including sewer and gas pipelines that lie south of the West Gate Bridge. While it is possible to lower these services, it would a very complex and costly exercise
- The River Yarra Channel is heavily contaminated and further dredging beyond the CDP design depth would be costly and difficult to obtain environmental approvals
- The Westernport/Altona/Geelong (WAG) ethane pipeline that runs through the Port Melbourne Channel (south of Station Pier) constrains further deepening of all berths unless it is replaced with a deeper pipeline.

4.5.2 Width constraints

Swanson Dock's capacity is limited by the "Post Panamax Constraint". Due to the width of the dock (approximately 200m), it is not possible to berth more than three post-panamax vessels (beam greater than 32.2 metres and less than 42 metres) at any one time.

Most other berths in the port are not limited by width, however even once constructed Webb Dock East will not be able to handle super post panamax vessels (beam greater than 42 meters) due to berthing load limits.

4.5.3 Length constraints

The main vessel length constraint at the PoM is the Swanson Dock Swing Basin which limits all ships that use the berths north of the West Gate Bridge to 300 metres length. As currently designed the Webb Dock Swing Basin will cater for vessels up to 300 metres, however greater lengths may be achievable through further dredging to expand the swing basin.

Aside from the swing basin constraints, all vessels entering Port Phillip Bay are limited by the difficult manoeuvre into the Bay and the tight turn into the South Channel off Portsea, however there is no "hard limit" published for this constraint.

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[4] Webb Dock redevelopment

4.5.4 Air Draught constraint

The West Gate Bridge across the lower River Yarra Channel limits the height of vessels to 50.1 metres (47.5 metres during bridge maintenance) from the waterline to the top mast. This limit will constrain some container vessels in the future, and most cruise ships.

4.5.5 Yard constraints

Container throughput through East and West Swanson Dock is limited by yard area (the space available for container storage prior to loading on to a vessel, or landside transport to the end user), operating systems and work practices. Both container stevedores have approximately 40 hectares available on either side of Swanson Dock, and operate low-density straddle carriers for the internal movement and stacking of containers. [redacted] ASC's allow for a much higher stack density and consequently higher throughput per hectare of yard.

4.6 Port of Melbourne, operator strategy & viability

The topside facilities of the container and motor vehicle terminals and the equipment needed to operate the terminals are owned and managed by the stevedores. In the case of the international container terminals, investments in the latest quay cranes can be over $10 million per crane with further investments needed for multiple sets of semi fully-automated yard equipment such as straddle-carriers, Rubber Tyred Gantries (RTGs) and ASCs. A combined fully-utilised six berth operation could require up to 20 quay-gantry cranes or around $200 million of investment plus yard equipment. Given the current and project volumes at PoM the stevedores are likely to required a period of 10-15 years to recover this investment in enhanced capacity.

4.6.1 Container stevedores

The international container operations at Swanson Dock (West and East) are run by DP World (formerly P&O Ports) and Asciano (Patrick). Both stevedores also operate terminals in the Ports of Brisbane, Botany and Fremantle. As a major global stevedore, DP World also as over 65 terminals around the world.

The stevedores typically require a minimum 500,000 TEU/year operation to be viable although examples exist where a lower throughput is operated (e.g. the Port of Adelaide container terminal which was operated by DP World at around 200,000 TEU per year and the Port of Fremantle (with two stevedores at a combined total of 670,000 TEU per year). DP World and Asciano have around a 50/50 market share at PoM, i.e. each handling in excess of 1 million TEU per year, but these market shares are dynamic based on shipping line decisions.

[redacted]

The future viability and the long-term interest of stevedores in the future PoM international container operations will be closely linked to the various strategic options for the PoM and Hastings. Some of the relevant structural options could include:

[redacted]

4.6.2 Automotive stevedores

The motor vehicles trade is currently operated by AAT (Australia Automotive Terminals), a stevedoring joint-venture which includes Asciano (Patrick).

[redacted] The need for topside terminal investment by the automotive stevedore is less than for a container stevedore due to the Roll-on/Roll-off operation of ships and wheeled movement around the terminal. However, an important difference with containers is the need for on-dock vehicle storage and pre-delivery inspection (PDI) requiring an extra foot-print if relatively expensive multi-storey type car-parking is not used when space is constrained.

As the automotive trades have lower capital and operating costs, they also have a lower volume threshold to achieve commercial viability than the minimum volumes required by container stevedores.

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[redacted]

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[redacted]

[redacted]