Submission No 14

INQUIRY INTO IMPACT OF PORT OF NEWCASTLE SALE ARRANGEMENTS ON PUBLIC WORKS EXPENDITURE IN NEW SOUTH WALES

Organisation: Port of Newcastle

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11 January 2019

Hon. Robert Brown MLC
Chairman
Legislative Council Public Works Committee
NSW Parliament House
Macquarie Street
SYDNEY NSW 2000

Dear Mr Brown

SUBMISSION: INQUIRY INTO THE IMPACT OF PORT OF NEWCASTLE SALE ARRANGEMENTS ON PUBLIC WORKS EXPENDITURE IN NEW SOUTH WALES

I take this opportunity to provide to the Committee Inquiry Port of Newcastle's submission.

Our proposal
Our proposal is that Port of Newcastle develop a container terminal that enables cost-effective economic growth in New South Wales, and a cost-effective answer to some of the road and rail congestion problems in Sydney.

New South Wales has around one-third of Australia's population and is expected to exceed 11 million by 2050, up from the current 7.8 million. Yet there is only one container port in NSW - Port Botany. It is encircled by a city, 90% of its containers first move by road to the West of the city and the throughput of the port will likely double to around 5 million TEUs in 2050. Investment of over $27 billion has been committed to port-related road and rail infrastructure in and around Sydney, to reduce the freight bottlenecks.

Currently, around one-third of inbound and outbound containers at Port Botany originate in or are destined for the 'Port of Newcastle Catchment', which extends to the Far West and north to the Queensland border.

Port of Newcastle has the port, the deep-water channel, the land and the road and rail connections for a container terminal that will take-up this container-demand and service regional NSW.

We suggest that a Port of Newcastle container terminal be evaluated on two levels:

1. it's ability to take the transport burden off Sydney; and

2. its accretive benefit to the entire NSW economy, with reference to utilisation of existing infrastructure, trade access, transport logistics efficiency, job-creation and the support of price-equalisation in regional NSW. Deloitte Access Economics estimates that ports competition (ending Botany's monopoly on containers) would add 2.5% to port productivity growth rates and, introducing NSW port competition would add $111 million per year to GSP.[1]

[1] Deloitte Access Economics, 'NSW Container and Port Policy: Port of Newcastle' 2018. Page 71

We propose a 1.7 million TEU container terminal at Port of Newcastle, allowing the NSW government to utilise existing infrastructure, unlock capacity and develop assets that promote economic growth.

In our full submission we give a demand-driven argument for a container terminal at the Port of Newcastle on the basis of a network-benefit to all of NSW. It includes:

- economic growth and demand-drivers in regional NSW;
- lower freight charges for NSW producers and consumers;
- reduction of road/rail congestion at Port Botany and intra-Sydney;
- alternative source of containers for growing demand north of Sydney;
- elimination of Sydney double-handling for NSW's imports;
- diversification and enhanced trade connectivity in regional NSW.

We believe there is significant potential for Port of Newcastle to drive business diversification, trade, and jobs-growth in regional NSW.

The Economic Benefits

On 11 December 2018 Port of Newcastle released our most recent economic study by AlphaBeta Economics on the economic benefits of a container terminal at Newcastle. The AlphaBeta Report is attached for the Committee to consider along with the summary presentation outlining key findings by Jim Minifie – Principal AlphaBeta.

The report – *Global Gateway for NSW: the economic impact of a container terminal at the Port of Newcastle* – shows that a world-class container terminal at Newcastle would create 4,600 jobs, boost the state economy by $6 billion and slash land transport costs across the state by $2.8 billion. Exports from the Hunter region and northern NSW will increase by $1 billion by 2050 as a result.

The report found that by introducing container competition all NSW businesses will reap a benefit of $1.2 billion by 2050.

Sydney could slash 20 million truck-kilometres from its roads and reduce the combined cost of congestion and pollution by $25 million each year. Reducing urban congestion translates into overall cheaper freight cost for regional importers and exporters, many of which can look forward to savings of more than $500 per standard shipping container with their freight travelling through Newcastle rather than Port Botany or Port of Brisbane.

The AlphaBeta report compared Newcastle with Port Botany and Port of Brisbane in terms of container transport costs and found that the savings using Newcastle ranged from $193 to $583 per TEU (twenty-foot container).

Deloitte Access Economics found that *"NSW is currently facing increasingly intense challenges in managing port related freight. These challenges are fundamentally driven by growing population and economic activity but are made acute by the fact that the majority of NSW port freight currently moves through the congested population centre of Sydney, by the current limitations of freight network infrastructure and the difficulty in efficiently expanding the freight network. This problem is present for both road and rail transport of port freight with each mode facing unique challenges (toll increases and a growing passenger rail task squeezing out freight rail, for example). As the freight task grows, this problem is only going to become more challenging."*[2]

International Shipping Trends

I recently highlighted in a speech to the Hunter Business Chamber that world shipping companies are moving to very large vessels – those handling up to 18,000 TEU – that substantially reduce the

[2] NSW Container and Port Policy: Port of Newcastle, pg iv Deloitte Access Economics, March 2018

cost per container. All major shipping lines are building these very large container vessels, with the deliberate intent of making these vessels the new workhorse of global container shipping trade.

The future of World trade is large vessels – and the countries trading with them will enjoy a significant reduction in their supply chain costs.

A recent United Nations report on Trade and Development estimates that shipping carries 80 per cent of the world's trade.[3] In Australia, 97 per cent of our trade travels by sea; making us the fifth-largest shipping task in the world.

The surge in container volumes means the long-term trends emerging that will affect Australia's future prosperity are:

- A move to larger container vessels, and
- The need for port infrastructure that can handle these vessels.

Australia's east coast ports are unable to efficiently accommodate these large vessels, which are twice the size of the maximum the capital cities can handle. In effect our container ports have been built inside bottlenecks.

In Sydney, the commitment to new transport infrastructure to support Port Botany's growth, is around $11 billion in direct support – more than $27 billion in broader transport upgrades.

The spending is mostly on roads as rail is a high cost and inefficient prospect at Botany. The longest train able to service Port Botany is 640 metres – but truly efficient port trains are 1.2 km and the best are up to 1.8 km long.

As the global trade system scales-up, our east coast container ports are stranded assets reliant on trucks which will continue increase container volumes on Sydney roads.

Port Botany's container trade will double by 2040. In a city such as Sydney, the traffic congestion is already famous – where will all the extra trucks go?

Australia must be part of the global trade network – Port of Newcastle's container terminal is the best opportunity to ensure Australia and NSW are not left behind as the fundamental nature of global shipping changes.

The Hunter Region has a larger economy than Tasmania or the Northern Territory, and NSW north of Sydney is growing strongly, on the back of industries such as coal, wine, and agricultural exports – as well as advanced manufacturing, food processing, defence industry and high-tech services.

Port of Newcastle is regional Australia's global gateway and already has the deep channel and the road and rail landside capacity to manage these super-sized container ships.

Our development plan is costed at approximately $1.8 billion in private investment involving 11 quay cranes.

Our best-in-class stevedoring operation will feature:

- Automated quay cranes;
- Driverless straddle cranes;
- Automated gantry cranes to load trains;
- All operations electric – no diesel, no noise pollution;
- 24/7 operation;

[3] Review of Maritime Transport 2018, United Nations Conference on Trade and Development, 23 October 2018

- Intermodal, warehousing and distribution centres within the precinct, and connected to main freight routes, and
- Automated logistics management platforms.

There is strong interest in this opportunity from a number of globally-significant port operators, as well as from the community, which recognises the need to transition our economy and make Australia more globally-competitive.

The regional NSW economy is diversifying and the freight savings from a Newcastle Container Terminal would be enjoyed across many industries, from agriculture and food processing to advanced manufacturing and mining services.

Conclusion
Port of Newcastle appreciates this opportunity to inform the Committee of the economic benefits for NSW, and more widely for Australia, of a container terminal at Newcastle.

Attached are the following documents for the Committee's information:

1. Port of Newcastle's Submission to the Inquiry;
2. Deloitte Access Economics: *NSW Container and Ports Policy – Port of Newcastle*;
3. AlphaBeta Strategy Economics report: *Global Gateway for NSW: the economic impact of a container terminal at the Port of Newcastle*;
4. AlphaBeta presentation outlining key findings by Jim Minifie – Principal AlphaBeta;
5. Case Studies – *Port of Newcastle Container Terminal*, prepared by Hunter Research Foundation Centre at the University of Newcastle (December 2018);
6. Port Master Plan 2040; and
7. Speech to the Hunter Business Chamber Infrastructure Lunch, 30 November 2018: *'Future Proof: Port of Newcastle Container Terminal'*

As concluded in our submission, we believe a 1.7 million TEU container terminal at Port of Newcastle is compelling – we hope you agree.

Should the Committee require further information in relation to this submission please contact me on

Yours sincerely

Craig Carmody
Chief Executive Officer

Port of Newcastle Operations Pty Ltd

Submission

New South Wales Legislative Council

Public Works Committee

January 2019

Submission to the New South Wales Public Works Committee

From Port of Newcastle: we submit that the NSW Government lift its limitations on container port operations in New South Wales, and Port of Newcastle be permitted to build a 1.7-million TEU[1] container terminal in its port precinct. This will render much of current and planned transport infrastructure investment in 'decongesting' metropolitan Sydney redundant and unnecessary, freeing up public resources and contributing to the development of an optimal freight and ports system in New South Wales.

Introduction

New South Wales is reaching a tipping point in its container freight task. The designated container port for NSW - Port Botany - operates inside Sydney's Metropolitan area, Australia's most populous. Port Botany facilitates container volumes of 2.4 million per year which will more than double to 5 million TEU by 2050 and reaching capacity ceiling some time between 2030 and 2040[2]. The container freight task must be facilitated in a city which will grow from the current 5 million people to 7.75 million by 2050[3]. Infrastructure Australia has forecast a 400 per cent increase in truck movements at Port Botany by 2029/30 if the rail share is not increased[4], and Port Botany has failed to lift its rail mode-share above 20 per cent largely because of the limitations on rail infrastructure-size in the Port precinct and the Sydney rail network. Sydney's population and traffic congestion challenges are such that the NSW Premier, Gladys Berejiklian, recently called for a halving of Australia's migration numbers to ease the burden on Sydney[5]; the NSW Opposition Leader, Luke Foley, said "Sydney is groaning under the weight of congestion.[6]"

Port Botany's container volumes are growing by around 5 per cent per year but Sydney lacks an 'orbital road' network of motorways that can efficiently move the containers from Port Botany and avoid adding to congestion on local roads. The rail infrastructure around Port Botany is not adequate for the growing container trade: the Port can't accept the most efficient 1500 metre container trains - it's limited to 640m trains, with some stevedoring operations at the Port limited to around half of that. Deloitte Access Economics estimates that more than 90 per cent of Port Botany containers move around the Sydney Metro area on the road[7]. The congestion is worsened by Sydney's road tolls - Deloitte

[1] TEU = twenty-foot equivalent unit, one container

[2] Deloitte Access Economics, 'New South Wales Container and Port Policy: Port of Newcastle', 2018 p. vi

[3] Deloitte Access Economics p. xii

[4] Infrastructure Australia 2014-2015 Assessment

[5] ABC News, October 10, 2018. http://www.abc.net.au/news/2018-10-10/nsw-premier-calls-for-immigration-rethink/10358696

[6] ABC News, October 10, 2018. http://www.abc.net.au/news/2018-10-10/nsw-premier-calls-for-immigration-rethink/10358696

[7] Deloitte Access Economics p. xiv

estimates that one TEU truck journey from Port Botany to Western Sydney costs between $60 and $80[8]. This amounts to over $16 million a year in toll costs, or $314 million in net present value terms.

Sydney's growing congestion problem is exacerbated by the NSW Government's decision from 2012 to effectively limit the primary container trade to Port Botany by limiting the container volumes that other NSW ports can move. Port Kembla has been designated as the container 'overflow' for Port Botany and in the Greater Sydney Region Plan 2018, Port Kembla's upgrade in container handling capacity is budgeted at $1 billion[9], but not counting the ancillary landside transport upgrades.

Designating Port Kembla as the overflow port to Botany will likely be inadequate. By 2050, one-third of NSW's total container trade will come from or go to the **Port of Newcastle Catchment** area **(**defined by Deloitte Access Economics as the Hunter, Western NSW, Central Western NSW, Mid-North Coast, Central Coast and Northern NSW). That container trade will equal around 1.1 million TEU in 2050, while Port Kembla's catchment of Southern NSW will only produce and receive 450,900 TEU in 2050[10]. In simple geographic and economic terms, the Port Botany overflow port should be to the north of Sydney, at Port of Newcastle.

The Port of Newcastle currently has a development consent to build a 350,000 TEU container terminal at PoN, which dates from 2001[11]. Port of Newcastle can begin building a container port to this approval, considerably greater than its currently allowed volume-limit of 30,000 TEU. However, PoN calculates that the current break-even for a modern container port lies somewhere between 350,000 and 500,000 TEU[12]. The PoN Container Terminal needs greater-than break-even volumes to allow for an economic return on the investment in infrastructure, including a commitment to automated stevedoring.

The Port of Newcastle also gained approval from the NSW Government in 2012 to move ahead with the Mayfield Precinct Concept Plan - a development proposal for a 1.2 million TEU container terminal on the 90 hectare site. This approval of the concept marks the penultimate step before final consent is given. In other words, the NSW Government has already agreed that there is a strong case for a container terminal at Newcastle - up to 1.2 million TEU - however we argue for a 2 million TEU container terminal and the lifting of

[8] Deloitte Access Economics p. 26
[9] Deloitte Access Economics p. 57
[10] Deloitte Access Economics p. xii

[11] NSW Minister for Urban Affairs & Planning, April 6, 2001. 'Integrated State Significant Development Determination of Development Application - No. 293-08-00'

[12] Newcastle Herald, August 1, 2018. 'Port of Newcastle's New Chief Pushing for a Container Terminal.'

limitations on NSW container operations so we can move forward.

The Government's non-competition policy for container ports in NSW not only denies trade infrastructure to growth areas such as Hunter Region and North and Northwest NSW, but it is also expensive: the NSW Government has committed more than $27 billion to transport infrastructure spending in and around Sydney, which is intended to allow the freight task to move more efficiently and with less negative impact on Sydney's road and rail traffic. Unfortunately, some of the government's investments are unlikely to work as intended:

- **Sydney Gateway:** the $800 million project will link the domestic and international airport terminals to the yet-to-be constructed Orbital Road system called WestConnex. This "Gateway To Nowhere" stops around 3 kilometres short of Port Botany which means the main traffic congestion around Port Botany - container trucks on Foreshore Road and entering/exiting the Port precinct's Penrhyn Road - will continue to grow.
- **Port Botany Rail Line**: the $200 million project to duplicate the rail line into Port Botany is planned by the NSW Government but it has not been taken-up by the responsible entity, the ARTC. At any rate it does not lengthen the trains above 640 metres, to the more efficient length of 1500 metres planned for Port of Newcastle Container Terminal.
- **Port Kembla 'overflow':** the decision by the NSW Government to designate Port Kembla as the 'overflow' container port for Port Botany, requires significant investment in the port, and in the roads and rail to connect Port Kembla to the NSW freight network.
- **Maldon-Dumbarton Rail Line upgrade:** the $800 million upgrade is intended to make Port Kembla suitable for the international container trade, however the plan does not indicate that trains of more than 640 metres will be able to operate into Port Kembla.

Port Kembla:
In the 2003 Port Growth Plan, Port of Newcastle was listed as the container 'overflow' port for Port Botany - the port that would be developed as a container port when Botany reached capacity. However, in 2012, the Port of Newcastle Leasing Agreement process followed the Government's new freight policy: that Port Botany was the state's primary container port until it reaches capacity at which point Port Kembla will take Botany's capacity-overflow. Port Kembla will undergo significant investment to make it ready for this overflow task:

* Outer Harbour works	$700 million
* Maldon-Dombarton Railway upgrade	$800 million
* M1 Princes Motorway upgrades	$80 million
* Southern Sydney Freight Line upgrade	$80 million[13]

[13] Deloitte Access Economics p. xvii

This does not include the Appin Road upgrade connecting Sydney to the Illawarra, or the $2.2 billion earmarked for intermodal terminals and rail/road connections in southwest and western Sydney that will eventually allow Port Kembla to connect with the Port Botany rail corridors.

Problems with non-competition:
The current planning environment is aimed at heading-off future traffic congestion problems in Sydney and preserving the non-competition Port Botany container policy, rather than optimising NSW's freight performance.

The cost to NSW of retaining one container port for Australia's economically largest state, is measurable. Deloitte Access Economics - using a Lycopodium Infrastructure report on NSW freight costs - calculates that landside transport costs for freight in the PoN Catchment could be reduced by around $60 million a year, a NPV of around $1.1 billion over the period to 2050. When externalities are added, lack of container port competition in NSW could generate around $1.3 billion in additional landside transport costs in NSW over the period to 2050.[14] Neglecting the growth of regional NSW and Port of Newcastle's role in it, has real-world economic consequences. EconSearch, in an economic impact statement for Port of Newcastle, stated, "For every dollar spent in the Port of Newcastle a flow on benefit for the local, state and national economies of between $0.84 and $1.32 is generated. For every million dollars of output generated by the Port of Newcastle, 5.2 jobs are created[15]."

Yet most of the planned investments support Port Botany and capacity enhancement between Port Botany and Western Sydney[16], while Port Kembla's future can only be underwritten by investments that make it suitable for container ships and to connect it to the NSW freight network.

Infrastructure Australia says the cost of road congestion to the area of Wollongong-Sydney-Newcastle will increase from $5.6 billion in 2011 to 14.8 billion in 2031 if not addressed. The WestConnex project - potentially $45 billion in total budget[17] - is supposed to create an Orbital Road arterial system through and around Sydney, but its 'Sydney Gateway' component is not a gateway to Port Botany. Moreover, AI's analysis of WestConnex says it does not do enough, "about ensuring connectivity to the airport and port,"[18] or do enough work on induced demand. The subsequently amended WestConnex, which adds Sydney Gateway, *reduces* the benefit of the project by around 25%[19]."

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[14] Deloitte Access Economics p. xx
[15] EconSearch, 'Economic Impact of the Port of Newcastle 2016/17'[15], as quoted in Port of Newcastle, submission to The Freight and Ports Plan, p. 6.
[16] Deloitte Access Economics p. xv - xvi
[17] Clover Moore, Lord Mayor of Sydney, press release 2017, https://www.clovermoore.com.au/westconnex-real-cost
[18] Infrastructure Australia, Project Business Case Evaluation, April 2016. 'WestConnex'.
[19] IA 2016.

Induced demand describes the situation where building bigger and better roads simply increases the demand.

Infrastructure Australia has undertaken an audit of the business case behind WestConnex and found the traffic situation in Sydney is not expected to improve. “The Audit noted that a number of corridors in Sydney’s inner west are severely congested now, and that this will continue to worsen into the future.[20]”

As analysed by Deloitte Access Economics and Lycopodium Infrastructure, the current planning by NSW Government omits the Port of Newcastle and the role it can play in reducing freight volumes through Sydney, enhancing the regional NSW economy and acting as a growth-engine for the fast-growing Hunter region.

Port of Newcastle - the alternative:
While the NSW and federal governments spend tens of billions of dollars to make Sydney’s landside transport adequate for Port Botany’s status as the only container port in NSW, an obvious lower-cost solution - a container terminal at Port of Newcastle - is overlooked[21]. It should not be overlooked because:

- More than one quarter of Port Botany’s inbound containers are bound for the **‘Port of Newcastle Catchment’.[22]**
- The costs of sending containers by rail from north-western NSW are around 30% greater to Port Botany than to Port of Newcastle.[23]
- More than a third of Port Botany’s export containers come from the Port of Newcastle Catchment.[24]
- PoN Container Terminal would take 500,000 containers per year off Sydney’s roads and rail network[25]
- A PoN Container Terminal would act as a growth-engine for regional NSW’s growth by significantly reducing the cost of container freight to regional NSW[26].
- The Hunter Region will have population growth second-only to Greater Sydney to 2036 and it should be noted that the Hunter Region had a greater economic output than Tasmania, ACT or Northern Territory in 2017 - it is not erroneous for the Hunter Region to have its own container port, or for regional NSW to enjoy its economic benefits.
- Port of Newcastle already has significant rail connections into Sydney and regional NSW, that operate under-capacity. There are marginal

[20] IA 2016.
[21] Deloitte Access Economics, ‘Executive Summary’.
[22] Deloitte Access Economics p. xiii
[23] Lycopodium Infrastructure pty ltd., ‘Port of Newcastle Container Transport Economics Study Update’ p. 1.3
[24] Deloitte Access Economics p. xiii
[25] Deloitte Access Economics p. v
[26] Lycopodium Infrastructure pty ltd., ‘Port of Newcastle Container Transport Economics Study Update’ 2018, p. 9.15 - 9.30

costs associated with making PoN 'container-ready'.

- Port of Newcastle increases NSW freight productivity because its planned Container Terminal can accept 1500m trains to the berth, with future capacity to accept 1800m trains.
- Port of Newcastle has significant landside road infrastructure which connects to M1 to Sydney, New England Highway (north west) and Pacific Highway (north).
- PoN has the land availability on its Mayfield precinct which will accept 1500m trains onto the berth with future capacity to accept 1800m trains.
- PoN has significant, globally-recognised expertise in Transport Management Systems (TMS) through its membership of HVCCC. This gives PoN the ability to reach worlds-best port productivity, which aids businesses, households and the regional and national economies.

The Case for Port of Newcastle Container Terminal

We plan to build a 1.7-million TEU per year container terminal at Port of Newcastle that services the **'Port of Newcastle Catchment'** defined by Deloitte Access Economics as the Hunter, Western NSW, Central Western NSW, Mid-North Coast, Central Coast and Northern NSW. **The Port of Newcastle Container Terminal will be privately-funded** (with some input from Government) and will operate inside current Port boundaries. The Newcastle Container Terminal (NCT) is aligned with current NSW government infrastructure and economic policy and it leverages available land, existing deep-water channel, and existing road and rail infrastructure.

Port of Newcastle

Ninety-eight per cent of Australia's trade is conducted through sea ports, so problems with capacity, efficiency, productivity and costs are amplified through the supply chain if the problems are allowed to grow at our ports.

In a report for Port of Newcastle, Lycopodium Infrastructure found that exporters in NSW's Central West and North West would spend 32% less on their rail transport costs to Port of Newcastle container terminal compared to Botany, and 18% less on road costs to Newcastle compared to Botany.[27] We consider such efficiencies would encourage investment in regional industries and regional jobs-growth and would align with the NSW Government's goal of creating diversified and resilient regional economies by leveraging existing and planned infrastructure.

Comparisons

The comparative freight calculations were made by Lycopodium for the landside container logistics cost for rail and road movements to the ports:

[27] Lycopodium Infrastructure pty ltd., 'Port of Newcastle Container Transport Economics Study Update' 2018, p. 9.15 - 9.30

- Newcastle
- Brisbane
- Botany
- Port Kembla

The calculation of costs of containerised exports from the regional areas where there is a tangible benefit:

- Moree
- Narrabri
- Tamworth
- Dubbo

The Port Plan

Port of Newcastle is a diverse sea port with operations in:

- Bulk Liquids
- General Cargo
- Bulk
- Project Cargo

It is the world's largest coal export port - 160 million tonnes in 2017 - and has significant operations in wheat export and in bulk fuels. In the past 10 years we have seen the expansion of the fuel terminal and storage/distribution activities; the expansion of the wheat terminal and the building of new coal-loading infrastructure at Kooragang Island. We are planning to build a cruise terminal.

The building of a container terminal at the vacant Mayfield site is part of the PoN plan to accommodate the future growth of the Hunter Region, to respond to the expected doubling of Australia's freight task in the next 20 years and to ensure that regional NSW has efficient and affordable access to national and international markets.

The PoN container terminal proposal consists of the following:

- 80 hectare site
- hardstand to support Rail/Road interface behind berth operation
- rail and road connectivity
- supporting quay-line and berth interface infrastructure
- multiple 900m rail sidings on the berth interface

The public infrastructure at NCT will include cutting-edge stevedoring systems, including automation, machine learning, robotics and digital logistics management systems that integrate with rail and road transport operators. We are committed to benchmarking our productivity to the world's best ports, a concern flagged by the ACCC in its 2017 report into stevedoring at Australia's container ports: "In 2016-17, capital productivity decreased by 1.7 per cent to 29.2 containers per hour, labour productivity decreased by 1.1 per cent to 46.5

containers per hour, while multifactor productivity was flat at 55.6 containers per hour. Australian quayside productivity levels continue to lag levels achieved in comparable countries[28]."

Our grasp of the 'hard' and 'soft' aspects of port infrastructure allow us to pursue what the World Economic Forum refers to as 'The Fourth Industrial Revolution' - the "fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.[29]" Our plan for the NCT uses the best and most modern in port infrastructure, stevedoring facilities and logistics management systems, to drive industry-best productivity from the NCT and drive competition in prices and services across the Australian port supply chain network.

Within the NSW Government's Metropolitan planning for the Greater Newcastle area, the Mayfield Port Precinct has been identified to support the growth and diversification of port import and export operations including handling of containers. This is associated with the development of the adjoining land as the Mayfield Freight and Logistics Precinct for freight, logistics, intermodal and warehousing to complement the Port's export role[30]:

Master Plan

Port of Newcastle will shortly release its 'Port Master Plan 2040' which outlines the key strategic development opportunities for the Port and the broader region. In addition to the Newcastle Container Terminal, PoN's diversification strategy includes the development of the Newcastle Bulk Terminal in Walsh Point, working towards a specialised Automotive and Ro-Ro hub, supporting the Maritime Precinct in Carrington and the construction of the Newcastle Cruise Terminal, as well as supporting the continuation and growth of major bulk trades such as coal, fuel, fertiliser, wheat and mineral concentrates.[31]

Market

The existing demand in regional NSW for a container terminal at Port of Newcastle (PoN) would see an initial throughput of around 200,000 TEUs of container trade per year. Deloitte Access Economics has modeled the total current *available* containerised freight in the PoN catchment at 500,000 TEUs per year.[32] In any event, these estimates are economically sufficient to establish latent demand and initiate the container terminal. The nameplate capacity of our container port - 2 million TEUs per annum - allows the container trade to grow

[28] ACCC, 2017. 'Container Stevedoring Monitoring Report 2016-17', p. x
[29] World Economic Forum, 'The Fourth Industrial Revolution,' https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond
[30] Greater Newcastle Metropolitan Plan 2018
[31] Port of Newcastle, 2018. 'Port Master Plan 2040: Our Strategic Development Opportunities to 2040'
[32] Deloitte Access Economics p. 24

with population, business activity and customer preference for our cost and efficiency proposition.

The PoN container terminal plan is **demand-driven** and it represents a long-term response to the changing demographics and evolving business environment of the NSW region north of Sydney. It also creates a low-cost solution to the capacity-constraints produced in and around Port Botany and a low-cost/high efficiency alternative to Port Kembla as the overflow container port for Port Botany. If the Port of Newcastle container terminal is to progress, the NSW Government will have to alter its competition policy to allow Port of Newcastle to build a container-freight alternative for regional NSW.[33]

The State of Trade

NSW's freight task is divided into three economic zones: Greater Sydney, Southern NSW, and the PoN Catchment. The dividing line for the two regional NSW economies is a westerly line from Sydney through Parkes[34]..[35]

Imports

Just over 61% of containerised imports remain in Sydney. The Port of Newcastle Catchment, accounts for around 27% of containerised imports with the southern part of NSW taking 12% of containerised imports.[36]

Exports

New South Wales exported around 186 million tonnes of freight in 2014-15, of which approximately 6.9 million tonnes was containerised. Sydney accounted for around 43% of containerised export tonnage while the Port of Newcastle Catchment accounted for 38% of all containerised exports.[37]

As the containerised trade grows (doubling by 2050), and all of NSW's incoming and outgoing container freight has to be transported through Sydney, extra costs must be paid by regional NSW importers and exporters - the extra rates cover the costs of their freight going through Western Sydney intermodal centres and being trans-shipped onto shuttle rail services into Port Botany. This, in comparison to the direct rail access onto PoN container terminal.

Deloitte Access Economics calls a Port of Newcastle container terminal an "untapped solution in managing freight challenges in NSW"[38], and one that could reduce landside freight costs by $1.3 billion in the long-term and increase port productivity by 2.5% pa over 6-7 years. Requiring PoN Catchment's

[33] Deloitte Access Economics p. 22

[35] Deloitte Access Economics p. 44
[36] Deloitte Access Economics p. ix
[37] Deloitte Access Economics p. x
[38] Deloitte Access Economics, 'New South Wales Container and Port Policy: Port of Newcastle', 2018

container trade to pass through Botany also adds to congestion in Sydney's freight network, and creates environmental impacts since more than 90% of the container freight through Sydney is carried on trucks. Also, if future overflow of container freight at Port Botany has to move through Port Kembla, it further adds to transport costs for regional NSW businesses - especially those in the north - and provides only marginal relief to Sydney's congestion because containers would still pass through Western Sydney.[39]

What is the demand for container services at Port of Newcastle?

Potential Volumes - PoN Container Terminal

- the immediate landside savings would justify the transfer of approximately 112,000 TEU per annum of export containers to PoN (100,000 rail; 12,000 road);
- containers sourced from around Parkes could be transferred to PoN, potentially in excess of 60,000 TEU;
- Additional export containers might be economically transferable from Botany to PoN but may depend on industrial and freight facilities relocating from the Western suburbs of Sydney where the bulk of containers make their primary move;
- Further growth in exports is possible with transfer from road to rail, eg. replacing Moree to Brisbane by road with Moree to Newcastle by rail;
- the trend for some bulk exports to be containerised means competitive container freight and handling costs at PoN would support this trend;
- with balanced exchange volumes, shipping lines could include Newcastle in the East Coast schedule;
- Deloitte notes that 27% of imported containerised goods are estimated to end up in the Port of Newcastle Catchment which would amount to over 300,000 TEU;[40]
- The import of containers and containerised goods will require appropriate facilities in the Hunter or environs to unpack and distribute the contents. In the early years of operation there will be an opportunity to move containers into the Central Coast;
- Considering the above, the potential initial volume with balanced ship exchange would be **224,000 TEU per annum**, and up to **350,00 TEU per annum** if the Central West via Parkes volumes can be attracted to Newcastle.[41]

In its report to Port of Newcastle, Lycopodium Infrastructure says, "It is important to note that apart from the proposed container port development, transport to the Port of Newcastle from the identified catchment does not require additional investment. The rail and road networks to the Port of

[39] Deloitte Access Economics p. xix
[40] Deloitte report on NSW Container and Port Policy March 2018
[41] Lycopodium p. 10.35-36

Newcastle have been significantly upgraded over many years, particularly the Hunter Valley Rail Network. From a landside transport logistics cost basis, there is a compelling argument to consider container capacity at the Port of Newcastle as it offers a lower cost solution for the export industries it will be able to service." [42]

Regional Demography

Regional New South Wales makes-up 40% of the New South Wales population and while much is made of Sydney's forecast growth, regional NSW will be growing too. ABS figures show that while Greater Sydney's population grows at 1.1% per annum to 2039-40, the NSW population grows at 0.8%. When the Greater Sydney population grows at 0.9% per annum to 2049-50, the NSW population is growing at 0.7%.[43]

The total NSW population is projected to rise from 7.8 million in 2016-17 to about 11.1 million in 2049-50 - an addition of 3.3 million people. The Hunter Region has around 9% of NSW's population and is expected to be home to more than 1 million people within 30 years44. The Hunter is a significant economy in its own right. It had a Gross Regional Product of $48.351 billion in 2017, greater than the Gross State Product of Tasmania, Australian Capital Territory or Northern Territory[45]. It is sufficiently large to have its own container port. NSW regional industries include tourism, wine, equine, horticulture, forestry, cattle, wheat, wool, fruit and vegetables, transport and logistics, construction, services, and a range of manufacturing that includes advanced manufacturing, defence industries and maritime, mining and heavy engineering. Regional NSW is one of the world's premier exporters of high-grade thermal and coking coal and regional NSW has large coal-seam gas reserves.

The largest city in regional NSW is Newcastle; the Newcastle Metropolitan area is Australia's seventh-largest urban area with a population of around 675,000. It is NSW's dominant regional city, with a large airport, an expanding university, a highly-regarded health sciences research organisation (HMRI) and a flourishing defence industry precinct at Williamtown that is home to some of the world's largest defence contractors.

Newcastle - Global Gateway

In its 2018 report, 'NSW Container and Port Policy: Port of Newcastle', Deloitte Access Economics defined the region north of Sydney as the 'Port of Newcastle Catchment'. This region is essentially the area to Sydney's West and North, all

[42] Lycopodium Infrastructure, 2018. "Port of Newcastle Container Transport Economics Study Update", p. 11.42
[43] Deloitte Access Economics p. xii
[44] Regional Development Australia web site, 'The Hunter Region' http://rdahunter.org.au/hunter-region/hunter-region
[45] Australian Bureau of Statistics, Australian National Accounts: State Accounts, 2016-17 http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5220.02016-17?OpenDocument

the way to the Queensland border[46]. The Catchment region is so created because the transport systems of Western and Northern NSW 'funnel' southwards and eastwards to the lower Hunter Valley and Newcastle, rather than to Sydney. Along with the Port, the Greater Newcastle area is NSW's Global Gateway for transport logistics and energy.

- **Williamtown Airport:** a significant airport which will commence international flights in November;
- **North Coast railway:** originates in Maitland; services the Mid-North Coast to Coffs Harbour and Brisbane, passengers and freight;
- **Hunter Valley Rail Network:** connects Newcastle and Narrabri and to Inland Rail;
- **Main North-South Line:** connects Newcastle and Sydney via the Sydney Metro Network;
- **Pacific Highway:** originates at Raymond Terrace and connects to Tweed Heads;
- **M1:** originates at Hexham and connects to Sydney;
- **M1 extension to Raymond Terrace:** will connect Sydney to Pacific Highway with new freeway over Hunter River;
- **Hunter Expressway**: connects M1 and Newcastle to New England Highway;
- **Golden Highway**: connects New England Hwy to Dubbo at Singleton;
- **Bucketts/Thunderbolts Way**: connects Pacific Hwy to Tamworth north of Raymond Terrace;
- **ARTC Hunter Valley Coal Rail Network:** takes coal trains from around NSW to PoN;
- **Hunter Valley Coal Chain Co-ordinator (HVCCC):** manages the scheduling of trains from 35 coal mines to 1400 ships each year;
- **Planned - Dubbo-Gulgong railway upgrade (completing the Muswellbrook-Dubbo freight link)**
- **Planned - Lower Hunter Freight Rail Corridor**
- **Planned - Newcastle links to the Inland Rail at two points: Narromine (via Dubbo) and Narrabri (via Gunnedah & Werris Creek)**

Greater Newcastle is also an energy hub for regional NSW:

- **World's Largest Coal Port**
- **Newcastle Fuel Terminals** at Port of Newcastle (servicing Greater Hunter, Western & Northern NSW)
- **AGL Gas Storage Facility, Tomago** (compresses and freezes gas into LNG at Tomago plant)
- **AGL's Tomago Power Station** (replaces the soon-to-be retired Liddell coal-fired power station with gas turbines)

[46] Deloitte Access Economics, 'NSW Container and Port Policy: Port of Newcastle' 2018. P. x

- **Bayswater, Eraring, Liddell, Vale Point power stations** (coal-fired turbines producing 9700 megawatts of power)

Productivity

Our plan will leverage technology and advanced digital platforms to make the PoN Container Terminal the most efficient in the world, both in the technology and systems used in our own precinct operations, and also in landside scheduling and logistics management. We will use lessons learned in our membership of the global benchmark-setting HVCCC to leverage a digitally-managed transport-logistics system across road, rail, sea and air, managing demand and supply signals from the PoN container terminal.

Our container terminal plan aligns with:
* NSW Government's Greater Newcastle Metropolitan Plan 2036[47]
* our 'Newcastle Container Terminal' planning[48]
* TfNSW Strategic Action Program 1: Network Efficiency
* TfNSW Strategic Action Program 2: Network Capacity
* TfNSW Strategic Action Program 3: Network Sustainability.

We acknowledge the macroeconomic work by the Australian Logistics Council which shows that for every 1% efficiency increase in the logistics sector, national GDP is boosted by $2 billion[49]. This must be taken alongside Ports Australia's forecasts that container movements in Australia will increase by 165% by 2031, considerably out-running population growth.

As a Global Gateway we understand the influential role that major sea ports play in supply chain economics and we are committed to using technology and best-practice to drive improvements in landside logistics management and our own container terminal performance. The World Economic Forum's work on infrastructure/digital informs the Port of Newcastle vision of the high-productivity 'smart port'. Because of our existing logistics management systems - as part of HVCCC - we realistically anticipate being able to push landside logistics efficiencies throughout the entire freight network of regional NSW, resulting in lower prices, greater reliability and improved speed-to-market. Our improvements will drive price- and service-competition in other ports such as Port Botany, especially as our port supply chain becomes accustomed to the digital platforms that we use for scheduling.

[47] NSW Department of Planning and Environment, 2018. 'Greater Newcastle Metropolitan Plan 2036' http://www.planning.nsw.gov.au/Plans-for-your-area/Greater-Newcastle-metropolitan-planning
[48] Port of Newcastle, 2018. 'Newcastle Container Terminal', https://www.portofnewcastle.com.au/Projects-and-Development/Newcastle-Container-Terminal.aspx
[49] Australian Logistics Council & ACIL Allen, 2014, 'The Economic Significance of the Australian Logistics Industry'.

While the plan for Port of Newcastle's container terminal can be supported with quantitative data, we are receptive to modern metropolitan planning which puts large infrastructure - such as ports and container terminals - at the centre of 'catalyst areas' where economic growth, higher learning, industrial innovation and high-paying jobs can coalesce. We are currently one of the Greater Newcastle Metropolitan Planning partners and we are committed to creating both quantitative and qualitative outcomes for the broader community.

We plan to build a Global Gateway that includes a worlds-best container terminal that connects Regional NSW with Newcastle and the World.

Regional NSW has been the focus of a number of NSW Government planning and policy documents, producing priorities that include:

- Regional development must focus on 'engine industries' that represent a specialisation for the region so it can play to its comparative advantage;
- Attempts to implant industries won't be encouraged by NSW Government
- Industry-enabling investments (including infrastructure) will be considered on a cost-benefit basis;
- Fostering skills and encouraging greater participation in the workforce is a policy priority.

Regional and infrastructure planning has been comprehensive but has not articulated the potential role for the Port of Newcastle in managing regional NSW's increasing freight task for a growing and spread-out population. Road and rail projects in support of port freight are outlined in the *NSW Freight and Ports Plan 2018-2023*, the *2015-2024 Sydney Metropolitan Freight Strategy*, and the *Infrastructure Priority List*. There are also port-specific projects within regional development plans, including *The Hunter Regional Plan*, a plan by NSW Government to 2036 which positions the Port of Newcastle and Newcastle Airport as a Global Gateway, through improved interregional links and infrastructure for freight movements;[50] and the *Greater Newcastle Metropolitan Plan 2036* which references the significant developments planned at Port of Newcastle, including the Mayfield Freight and Logistics Precinct. However, according to Transport for NSW, Port Botany will remain the key container port in NSW; Port Kembla will be the primary port for motor vehicle imports and Port of Newcastle will need to support forecasted growth in coal exports[51] . When Botany hits container capacity in the 2040s, Port Kembla will become the 'overflow' container port.

The current planning direction is expensive. Deloitte Access Economics estimates there is around $27.6 billion in planned investment to support port freight in NSW, with upcoming investments to directly support current port

[50] Deloitte p. xviii
[51] Transport for NSW, 2013, p. 111

freight in excess of $3 billion.[52]

The Arguments for a container terminal:

1. **Freight Task:** Studies such as the NSW Freight and Port Strategy provide estimates of the predicted increase in the total freight task across NSW over coming decades, which suggest increase in freight volumes through the Port of Newcastle at approximately 3-7% annual compound growth[53];
2. **Lower Freight Costs:** Lycopodium Infrastructure found that exporters in NSW's Central West and North West would spend 32% less on their rail transport costs to Port of Newcastle container terminal compared to Botany, and 18% less on road costs to Newcastle compared to Botany.[54] Even a city as far south as Parkes was considered 'contestable' for PoN given the ability of Newcastle Port to handle longer trains than currently envisaged for Botany[55];
3. **Rail Mode-Share:** Consistent with the NSW Government's priority that existing transport infrastructure be optimised, PoN is currently connected into the most advanced rail-management system in Australia. According to TfNSW's Freight Plan, Port of Newcastle already transacts the two most rail-intensive freight tasks in New South Wales: coal and agriculture. Of the eight freight-types listed by TfNSW, those most shifted by rail - coal (87%) and agriculture (46%)[56] - are the freight tasks predominantly transacted at Port of Newcastle;
4. **Cycle times:** Cycle time is a key factor in the calculation of freight costs, particularly for rail. Delays in cycle time through congested ports and staging terminals such as Enfield Yard and Cooks River in Sydney, add significantly to the cost of transport[57];
5. **Travel/dwell times:** The additional travel and dwell time for freight transported through the Sydney Metropolitan rail network to Port Botany from the North West and Western regions leads to an increase in costs in excess of the cost of transport direct to the Port of Newcastle[58];
6. **Direct freight comparison:** The additional cost of transporting containers to Port Botany compared to the cost of direct transport to the Port of Newcastle, is calculated to be as much as 30% higher;[59]
7. **Train Length:** the greatest transport efficiencies are delivered by long trains, equal to or greater than 900m. The trains at the PoN Container

[52] Deloitte Access Economics, 'New South Wales Container and Port Policy: Port of Newcastle', 2018. p. vi
[53] Lycopodium p. 1.6
[54] Lycopodium Infrastructure pty ltd., 'Port of Newcastle Container Transport Economics Study Update' 2018, p 9.15 - 9.30
[55] Lycopodium p. 1.6
[56] TfNSW, 'Freight and Ports Plan 2018-2023', 2018. P. 22
[57] Lycopodium p. 1.3
[58] Lycopodium p. 1.3
[59] Lycopodium p. 1.3

Terminal will be up to 1800m - Port Botany on-berth trains are limited to 640m but most are 340m;

8. **Rail Infrastructure:** the Inland Rail will not materially change the connections by rail to either Botany or Newcastle, although the Parkes to Narromine section which has just been approved for construction could favourably alter the economics of container movements to Newcastle from Parkes and southern regions[60];
9. **Pressure off Sydney**: The relief on the Port Botany Rail line, created through the development of a container terminal at Port of Newcastle, is likely to improve reliability and journey time for short distance shuttle services into Port Botany from intermodal terminals in Sydney. These benefits extend also to services from the South, which terminate at Port Botany[61];
10. **Productivity Dividend:** As Ports Australia CEO Mike Gallacher has stated: "Congestion costs the economy $16 billion a year - a holistic approach to freight can reduce congestion much more effectively than a $1 billion Band-Aid on road bottlenecks."[62]
11. **Freight Task Efficiency:** Lycopodium notes that the natural efficiency advantage at Port of Newcastle include its geography and lack of network constraints compared to Port Botany, Port Kembla and Brisbane. In particular, PoN container terminal can offer access for 1500m trains [increasing to 1800m] and PoN has no limit on B-double trucks[63]; the longest sidings at Botany are 640m but most are 340m. This increases handling times and costs and reduces the volume-cost advantages of rail[64];
12. **Rail infrastructure:** The supply chain through to the Port of Newcastle has already undergone significant upgrade resulting in excess capacity;
13. **Demand:** Port of Newcastle calculates an immediate demand for container export services through a PoN Container Terminal from the Hunter, North West and Western areas of NSW, of 224,000 TEU on the clearly contestable freight from the North and Hunter regions, and up to 350,000 TEU based on the Central West via Parkes being contestable[65];
14. **Costs to customers:** Botany operates 640m trains, used as 'shuttles' from the Western Sydney intermodals and staging yards. Port of Newcastle's quay line and hardstand plans allow for 1500m trains - increasing to 1800m - which boosts freight productivity and lowers cost per tonne and cost per TEU[66]. Lycopodium found that a 900m container train from Narrabri to Botany (via an intermodal before being reduced to 640m) would cost the customer $47 per tonne while a 1500m train from

[60] Lycopodium p. 1.3
[61] Lycopodium p. 1.6
[62] Mike Gallacher, CEO Ports Australia
[63] Lycopodium p. 1.6
[64] Lycopodium p. 1.6
[65] Lycopodium p. 1.7
[66] Lycopodium p. 9.15 - 9.25

Narrabri to Newcastle direct would cost the producer $23 per tonne[67]. Being able to ship goods for half the price of the incumbent provider is a considerable benefit to regional NSW;

15. **Terminal Handling:** there are reduced terminal handling charges as trains travel direct to the Port of Newcastle through the highly efficient ARTC Hunter Valley rail network[68];
16. **Limits on Port Kembla:** train lengths and payload sizes are restricted for trains into Port Kembla. General rail freight originating from the Central West of NSW travelling to Port Kembla generally transits via the Moss Vale to Unanderra rail line which is restricted to a maximum train length of 640m[69];
17. **Natural Catchment:** the main container-railed freight to Port Botany is from Forbes, Dubbo, Wee Waa, Narrabri, Narromine etc.[70]. Botany's rail throughput is based on long-haul transport from key catchment regions for the Port of Newcastle;
18. **Congestion:** Sydney's cost of traffic congestion will rise from $16.1 billion in 2015 to approximately $12.6 billion by 2030, according to Bureau of Infrastructure, Transport & Regional Economics (BITRE)[71];
19. **Competition:** Deloitte Access Economics estimates that ports competition (ending Botany's monopoly on containers) would add 2.5% to port productivity growth rates and, introducing NSW port competition would add $111 million per year to GSP[72];

Smart Port - Smart Options:

Finally, we note that many planning documents are focusing on utilising existing infrastructure, making more of current networks and using non-physical assets - smart people and technology - to get better performance out of physical assets. The rail-management project work at Port Botany, for instance, has concluded that better landside management of rail infrastructure yields productivity and mode-share benefits greater than simply building more rail infrastructure[73]. Port of Newcastle concurs with this posture - it is a strategy we have been pursuing for many years:

- **Landside Logistics:** PoN is a member of the Hunter Valley Coal Chain Coordinator along with Pacific National Internet, QRNational, Australian Rail Track Corporation (ARTC), Rail Corporation New South Wales

[67] Lycopodium p. 9.18
[68] Lycopodium p. 9.26
[69] Lycopodium p. 9.26
[70] Lycopodium p. 10.31-32
[71] BITRE, Information Sheet 74, 'Traffic and Congestion Cost Trends for Australian Capital Cities'. https://bitre.gov.au/publications/2015/files/is_074.pdf
[72] Deloitte Access Economics, 'NSW Container and Port Policy: Port of Newcastle' 2018. P. 71
[73] 'Simulation and Analysis of Container Freight Operations Port Botany' Research Paper Daniel Guimarans from the Amsterdam University of Applied Sciences and NICTA Optimisation Research Group and Daniel Harabor, also from NICTA Optimisation Research Group, together with Pascal Van Hentenryck from University of Michigan

(RailCorp) and Port Waratah Coal Services. The HVCCC is a world leader in rail scheduling and logistics management and allows us to drive two-week scheduling windows, a 5-day sort-and-load performance at PoN, for 35 mines and 1400 sailings each year. This system will be implemented on PoN's container operations to create the most efficient container-freight system in the world, right here in Regional NSW;

- **Smart Systems:** The Hunter Valley Rail Network and HVCCC are leaders in developing and implementing efficient scheduling algorithms and procedures. Lycopodium has assessed Newcastle Port container operation as being capable of utilisation levels approaching 90%;
- **Smart People:** through our membership of HVCCC we have seen the benefits in attracting the smartest engineers, mathematicians and IT professionals to build and run the logistics systems that make our coal supply chain the world's most efficient. One such person - Dr Alex Mendes from the University of Newcastle - helps build the digital platforms on which HVCCC rides.[74] His work for HVCCC includes a genetic algorithm focusing on the train speed in each network section, creating high-quality scheduling decisions in less than 4 minutes[75];
- **Smart Connections:** we have relationships with University of Newcastle, we have a planning agreement with Newcastle Airport and we have close planning ties to the defence industry at Williamtown, given their need for international and internal freight options. We have strong commercial and planning arrangements with the large energy companies (gas, petroleum, coal) and we have planning and development contingencies in place for such as time when coal seam gas extraction is once again supported by the NSW Government.
- **Smart Ports:** the WEF's 'Fourth Industrial Revolution' concept brings together hard public infrastructure, digital and management value-adding to the infrastructure, and the biological sphere[76] - the environment, the communities, the workplaces. Our planning is aligned with this goal and we have the components in place to make it a reality for the people of the Hunter Region and regional NSW.

Conclusion:

We submit that is time for Regional NSW to be allowed a significant container port - its own Global Gateway. As mentioned, the Hunter Region alone has a

[74] University of Newcastle, 'Artificial Intelligence', 2015. Story on Dr Alex Mendes. https://www.newcastle.edu.au/highlights/our-researchers/engineering-built-environment/electrical-engineering/artificial-intelligence

[75] A. Mendes, M. Jackson, M. Rocha de Paula and O. Rojas, 'Iterative train scheduling in networks with tree topologies: a case study for the Hunter Valley Coal Chain' *School of Electrical Engineering and Computing, The University of Newcastle, NSW & Hunter Valley Coal Chain Coordinator, Broadmeadow, NSW.* https://mssanz.org.au/modsim2017/J5/mendes.pdf

[76] WEF, 'The Fourth Industrial Revolution'.

bigger economy than Tasmania, ACT or NT. It is growing and with population growth is coming new industries and new jobs that will require inter-regional and international freight connections to facilitate their success. The fact that we can build a 1.7-million TEU container terminal at low cost, on existing land, is only part of the proposition: we can also build this terminal to accept the most efficient form of land transport (1800 metre trains), we can connect this terminal to four major rail networks (Main North-South Line, Hunter Valley Rail Network, North Coast, Inland Rail), we connect to the major trucking routes (Pacific Highway, M1 and New England Highway) and we have the worlds-best rail logistics management platforms, given our membership of the HVCCC.

We propose that a 2 million TEU container terminal at Port of Newcastle can resolve several issues: it can service the growing population of Hunter Region; it can service the growing containerised trade from Regional NSW north of Sydney; it can take pressure off Port Botany's well-documented landside congestion problems; it can save costs for importers and exporters, and therefore make it more affordable for regional households and businesses; and it can create a network-effect across regional NSW, driving economic growth, skills and jobs and a diversity of business types.

We believe a 1.7 million TEU container terminal at Port of Newcastle is compelling - we hope you agree.