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PROFILE

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BLOCKCHAIN

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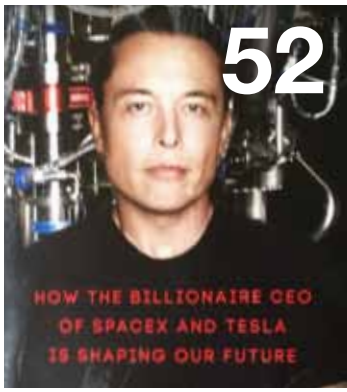

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Front Cover:
Coal ships line up at port of Newcastle

Image: Port of Newcastle

From the bridge

By ROD NAIRN AM, CEO, Shipping Australia Limited

There's never a dull moment in shipping, it's just like being at sea, you always need to keep a good lookout and be ready for the unexpected….

Consolidation of shipping lines is continuing to be big news. The latest in the liner saga is COSCO taking over OOIL (parent of OOCL) which is still subject to clearance from the Chinese and European competition regulators; I don't expect too many hurdles. The three Japanese lines are sculpting the arrangement for their "ONE" service ranking as the sixth biggest carrier when they launch in April 2018, and the 14 South Korean lines have signed a memorandum to create the Korean Shipping Partnership, coordinating their services to optimise their competitiveness, and their new offering could also start in early 2018. Interestingly, one of these, SM Line, is a new player who took advantage of cheap second- hand tonnage after the Hanjin collapse to enter the market. It seems that it's not only in the liner sector that bigger is better. BBC Chartering and Jumbo have announced a global project alliance to optimise their synergies in bids for super heavy lift construction cargos. The difference here is that this is not a consolidation, and each will continue to operate separately.

On the sideline, the Global Shippers Forum and shippers in general, have started to express concerns over the potential **concentration of market power**. But who's responsible? In my opinion this a perfect example of the adage, "be careful what you wish for" or in Biblical terms "whatever a man soweth, that shall he also reap". It was the lobbying from shipper interests in the first place that put pressure on governments to remove what they described as anachronous, anti-competitive protections from shipping conferences and consortia. These subsequent changes, in conjunction with other economic factors, certainly contributed to shipping companies pursuing growth by consolidation, in order to compensate for the loss of effectiveness of conferences and discussion agreements. It certainly seemed like 'low hanging fruit' to some governments to remove competition protections from shipping, but the unintended consequences may ultimately be to reduce competition by making it impossible for smaller carriers to remain in the market.

The fact it that this hasn't happened yet, there are still enough independent carriers to continue to provide **a very competitive global shipping environment**, and the shippers are still in the box seat. You can get an update on the status of Australia's shipping competition exemptions in Andrew Chittenden's article on page 18 but I will add, that since he penned that article, the Competition and Consumer Act amendments to provide the ACCC with the power to grant block exemptions have passed through Parliament.

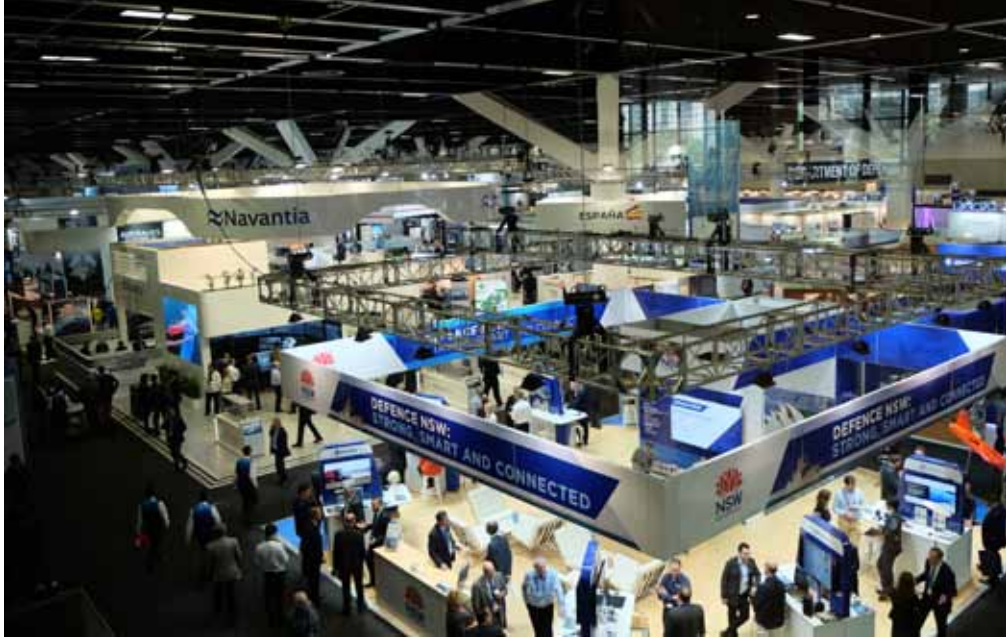
Who would have predicted the massive impact on **global shipping design** that that little central American country of Panama could impose? The new, 50 metre wide locks opened only 15 months ago and in that short time the entire design, economic structure and future of global shipping has changed. The value of old, 32 metre wide Panamax ships has submerged (and taken Rickmers, who held a fleet of these vessels, with it – though, their phoenix has risen again with a last minute buy out), but more importantly the whole philosophy of ship design has changed. The long-held paradigm of increasing cargo capacity by building for longer, deeper draught ships has been discarded and, with the limitations of beam lifted, the post-Panamax and new Panamax have substantially increased capacity with shorter, beamier and shallower ships. It all makes sense, the removal of an artificial beam limitation allows ships to be more efficient and structurally sound but no-one predicted the pace or impact of the changes. The implications for ports is massive, quay cranes need longer reach, channels need to be wider instead of deeper

and wharf strength, rather than wharf length, has become the critical factor. Add this to the cascade-down effect within consolidated global container lines, and ship demands are changing fast. You can read more about the implications in this edition's 'Viewpoint'.

The **economic climate for shipping** has continued to improve this year, and looking back it is hard to fathom that it is only 18 months since the Baltic Dry Index's rock bottom low of 290 Points, back in February 2016. Last week it peaked at 1500, that's five times that value. Product tanker rates have improved on the back of increasing global demand for diesel, petrol and particularly jet fuel. Container ship charter rates have continued to kick up, now more than 30 per cent above their lows at the start of the year. Finally, there are signs that an upturn of the heavy lift/project cargo sector may be sustained.

With that optimism there are no surprises that the outlook for ship builders is also starting to brighten, with CMA-CGM recently announcing an order for six 22,000 TEU bemouths to strengthen their trans-Pacific trade position, this will put even more pressure for bigger ships to be redeployed onto the smaller north-south routes. The economies of scale of bigger ships will allow shipping lines to make a sustainable profit, while strong competition between lines ensures that the lowest possible prices are paid by shippers and their customers, it's a win/win outcome. Those that argue otherwise, who opt for holding back progress and maintaining inefficiency in the supply chain, are effectively pleading to pay higher prices – be careful what you wish for (I think we've spoken about that before). The port of Tauranga in New Zealand is a case in point. They invested in dredging, adding quay cranes, straddle cranes and bigger tugs to accommodate 9,500 TEU ships and have reaped the benefit with a 14 per cent increase in containers; transhipments were up a massive 87 per cent. The port has captured more than half of New Zealand's international cargo volume growth over the past six years and has positioned itself as New Zealand's international hub port – watch out Australia.

One spoiler into this otherwise optimistic outlook, it seems, is Australia's climate. With the driest few months on record, **climate has played a wild card and Australia's agricultural exports** are expected to be well down on last year. Whereas demand outstripped supply for food grade containers and ships slots last season, the situation is likely to be more in balance this season. Though there does seem to be a relative increase in the percentage of grain shipped in containers versus bulk, that might help to shore up container demand.



The massed display of maritime support at Pacific 2017

You'll recall that last year's extreme demand brought some shonky practices into focus, with some shippers' double and triple-booking their cargos, artificially raising demand, then cancelling excess booking at the last minute, leaving carriers with empty slots, while other shippers were unable to book space on the vessel. This has caused some carriers to impose cancellation fees and all of them to closely monitor the performance of shippers. Unfortunately, in some cases shipping lines responded by overbooking their slots to allow for surprise cancellations and if the anticipated no-shows didn't eventuate some cargos got bumped. When behaviour goes bad, everybody loses, the best solution is for shippers and lines to act with full transparency. The reality is **that commercial factors will drive behaviour**, despite the hype over consolidation of lines, shipping remains a highly competitive industry and if you negotiate a lower rate, lines will want certainty, and you can expect higher cancellation fees for no-shows.

I was encouraged to see the Government table another **Coastal Trading Act Amendment Bill** for Parliament to debate. The reception from our members has been… well, un-excited. But while the proposed changes won't make much difference to SAL members, they will help Australian primary producers and manufacturers get their products to domestic markets and sustain Australian jobs in these sectors.

Our members will continue to **provide international shipping that sustains Australia's economy** by carrying our exports and supporting Australians' quality of life by bringing the products that Australians want to buy. Australia would benefit more from a substantial policy change that really encouraged moving long-haul domestic freight by sea, reducing road congestion, greenhouse gas emissions and unnecessary deaths from trucking accidents.

The current legislative changes are clearly a compromise, but will go some way to easing the burden of red tape. Of course, the bill has to get through the senate first. Perhaps, as there are no Australian flag ships participating in the inter-capital city container trade and most other shipping sectors (except dry bulk), it is time for Minister Chester to use his powers (under section 11 of the Act) to **exempt these uncontested sectors from the Coastal Trading Act**. Mr Albanese did this for large cruise ships when the CTA first entered into force in 2012, and since then Australian cruise ship passenger numbers have doubled. Meanwhile, the share of domestic freight carried by sea continues to decline.

The second half of the year seems to have more action than the first. Since the Autumn/Winter edition

Professor Neil Bose, principal, AMC announces AMC Sydney expansion at Darling Harbour with Peter Rathgen, vice chancellor, UTAS; Paul Gregg, chairman, AMC; Professor Brigid Heywood, deputy vice chancellor (research) UTAS and Kevin Sumption, chief executive, ANMM. The AMC training vessel Bluefin behind.

was published we have co-hosted **two informative breakfast events**, a "Safe Ports" breakfast panel event with AMTAC in Sydney, and a "Blockchain" breakfast seminar with the Commonwealth Bank, supported by Port of Melbourne, in Melbourne. Feedback from both of these events has been very positive. The blockchain breakfast, in particular, was a real wake up call to may in the industry, as this digital technology has emerged from virtual obscurity within the past few months to become recognised as a potential game changer in the industry. Read more about the event on page 26

The Pacific 2017 International Maritime Exposition put on an amazing spectacle, returning to their old venue at the new Darling Harbour Exhibition Centre. It provides an amazing array of technologies, primarily aimed at the big Navy ship-building and sustainment support aspects but also highlighting more niche aspects of maritime industries. South Australia, Northern Territory and Queenland were all showcasing their capabilities to support maritime industries, and it was good to see a New South Wales Government stand, I think, for the first time.

Also in October, we saw the **Australian Maritime College** launch their expansion into Sydney, with a study centre at the Australian National Maritime Museum in Darling Harbour. Two postgraduate degrees: Master of Engineering in Maritime Design, and MBA in Maritime and Logistics Management, will be delivered at ANMM from 2018. To kick start the programme, two short courses in Supply Chain Management and Fundamentals of Naval Architecture, will be delivered in an intensive, five-day format this November. This is a great opportunity for the Sydney-based shipping personnel to take advantage of some quality marine education offerings.]

Our **luncheon schedule** has also been busy with a New South Wales Parliament House lunch in Sydney, supported by NSW Ports and Port Authority of New South Wales, a Queensland State Committee lunch and our biennial Newcastle lunch, supported by Port of Newcastle, Newcastle Stevedores and Port Authority of New South Wales. As an additional attraction, Port of Newcastle invited SAL guests to a comprehensive harbour cruise before the lunch, which was both informative and enjoyable.

SAL's Queensland State Committee hosted the Shipping Industry Ball in Brisbane on 19 October. The event raised funds for the Mission to Seafarers and generous contributions from platinum sponsor, Port of Brisbane, gold sponsors: Svitzer, Patrick, and Chalmers Industries, and silver sponsors: Acewaste and Brisbane Marine Pilots made sure the fundraising was a success. To round out the year, the New South Wales State Committee Christmas lunch, to be held in Darling Harbour on 8 December, is already sold out, with priority being given to SAL members and associate members. Our Victorian State Committee is planning a special Christmas lunch to be held at the exclusive, West Brighton Club on 13 December, get in quick for that one!

Industry icon, **John Lines**, has announced his impending retirement in 2018. John was awarded Member of the Order of Australia in this year's Queen's Birthday honours list for his services to shipping and charities over many decades. Shipping Australia congratulates John on his honour and wishes him well for his retirement.

For our feature article this edition, Archie Bayvel returns to the **New South Wales coal fields** at a time when power generation options, power prices, the push for renewables, and the future of coal and LNG exports are all topics of hot debate. The way I read it, coal is here for the long haul, at least in the export market, but political correctness might undermine investment in cleaner coal technologies for our domestic market. Have a read and make up your own mind.

SAL guests enjoyed the Newcastle port tour

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VIEWPOINT

Blame it on the Panama Canal; ships size growth costly for Port of Melbourne

By ROD NAIRN

Maybe someone should have, but as far as I can tell, no one did!

That is… ask about the speed and magnitude of changes to ship design and sizes that would result from the simple widening of that central American waterway.

I know that Port of Melbourne is doing as much as they can to accommodate larger ships as soon as possible, and I commend them on their efforts, but the fact is that the physical limitations of the Yarra River, Swanson Dock and the Westgate Bridge just can't be overcome with the current port layout. So, while their substantial efforts will see bigger ships than the present being able to dock at Swanson, we probably won't ever see 48 metre beam ships getting up the Yarra. Blame it on the Panama Canal, but that is exactly what the major shipping lines are now asking for. Such ships will be confined to Webb Dock, which limits their choice to stevedore to a single provider, not something that shipping companies are comfortable with.

Shipping Australia has been giving this matter a lot of focus recently, since the report of Infrastructure Victoria was released and concluded that a new container port was not required until 2055. Our liner shipping members saw this element of the report as a joke, as Melbourne is the only east coast port that can't accommodate the ships that some of the major shipping companies want to bring now, to a choice of stevedores; let alone in 30 or 40 years.

It's disappointing that the new port timing estimate of Infrastructure Victoria's 'Advice on Securing Victoria's Ports Capacity' was so out of date as soon as it was written. But in short, you can blame it on the Panama Canal (or at least the widening of it), and their lack of current consultation with shipping companies.

They have overlooked the fact that the size of ships coming to Melbourne is more driven by global factors, such as: shipping line consolidation, 'cascade down' from other routes (as east/west ships sizes increase) and the ships currently held on lines' global inventories, than it is by Victoria's rate of increasing demand for import capacity (which the report heavily relied upon). There have been seven shipping company consolidations in the past two years, and this makes bigger ships even more attractive.

Fundamentally, the size of the Panama Canal has dictated ship design for the past 103 years, since it officially opened on 15 August 1914. The 33.5 metres wide locks, with a useable length of 305 metres and a depth of 12.5 metres, dictated the maximum parameters of ships until the new locks opened on 26 June 2016 and set a Post-Panamax paradigm, with a width of 54.8 metres, a length of 426 metres and 18.2 metres deep.

Container ship design has changed dramatically in the last 15 months, since the artificial 32 metre beam limitation of the old Panama Canal locks has been lifted. Ships are now larger capacity, not much longer but significantly beamier, and it seems that beam is the limiting factor. The next size that lines are looking at for the Australian trade are in the range of 8000-8500 TEU. The lengths vary from 300 metres to 335 metres, beam of 42-48 metres, draft of 14 metres and a height of 50-60 metres – very few of these vessels will get up the Yarra River. Therefore, Infrastructure Victoria's estimate that Port of Melbourne can grow to 8.5 million TEU, with 4 million TEU at Webb Dock and 4.5 million TEU at Swanson Dock, is tenuous. If the new ships can't get up the river, the 4.5 million TEU at Swanson Dock is a pipe dream.

That being said, the report makes very sound recommendations in relation to corridor protection,

urban encroachment, keeping the option open for an earlier second port development, environmental monitoring, development of a comprehensive Ports Strategy, and monitoring of indicators to confirm new port timing. But the fact is that at least two of these key indicators, *ship size, and capacity enhancements at other Australian ports*, have already been reached. Sydney can already take 10,000 TEU ships at each of its stevedores, and some terminals could take up to 12,000 TEU ships depending on draught but they are not tide limited in entering or leaving the port. The Port of Tauranga in New Zealand already accepts 9500 TEU ships on a routine basis, it seems the Kiwis don't only beat us at rugby!

The Port of Melbourne is Australia's largest container port but they won't stay that way if they don't find a solution quickly. With only one terminal able to take the larger ships, Melbourne is already the limiting factor for the size of ships coming to Australia's east coast ports and is preventing Australians benefiting from the efficiencies of larger ship operations. Another quay south of Webb Dock is an option but the landside logistics will be challenging. The risk is that shipping lines may consider by-passing Melbourne for Adelaide or Sydney, and use rail, or a smaller ship feeder service (possibly from New Zealand to reduce transhipment costs) to make the connection. This would ultimately cost the Victorian consumer, the Port of Melbourne and the State economy.

Get on with it Melbourne, and don't wait 35 years!

PAUL SCURRAH, CEO of DP World Australia

A silver-tongued fox introduces a new turn of speech on the OZ waterfront

By ARCHIE BAYVEL

If *#?!* represents an unprintable obscenity how does one indicate an unspeakable oath?

It's a challenging problem in a workplace where people normally swear a lot, particularly if you are a Big Boss accustomed to speaking your mind regardless of who is listening.

Paul Scurrah, the successful son of an old-time wharfie who'd have heard a few choice words in his time, has solved the problem throughout his DP World empire in Australia.

One simply isn't allowed to swear anywhere there; you'd get pulled up for it. The amazing thing, Paul says, is that nobody wants to swear now and all the old muggers and fuggers who used to be the worst offenders are now enthusiastic non-cussers.

"My biggest surprise came from the actual wharfies. Many of them said 'I only did it to be like the others,' he says.

"It's a habit than can be, has been, broken. Personally, I feel more articulate and that makes me more effective as a CEO.

It all began when Paul joined the company just over three years ago and asked a group of employees what changes they'd like him to make. One woman said, "Stop that man who comes here from swearing."

All her female colleagues chimed in. "Apart from anything else, it frightens me," one said.

"And today, three years later," Paul says, "it would be extraordinary to hear a swear word anywhere in our terminals or offices."

"The stevedoring industry has a rough and tumble reputation which tends to make it one-dimensional, with a culture significantly behind more sophisticated industries.

"To change that needs strong leadership and that's what I'm here for.

"I'm all about outcomes. Answers to questions such as 'Where are we today?' and 'Where are we headed?' and 'What are we good at? What are we not good at? What can we do to improve?'"

He sums it up as seeking to deliver a higher level of care in how DP World goes about its business.

"I'm very much into leadership and have experience across a lot of industries, and there are a lot of similarities.

"All deal with high cap investment,

very expensive equipment and a time-based product. Once its time is gone, it's gone!

"Their common constant is their need for strong adherence to a schedule of some kind, 100 per cent focus on delivering on target.

"We sell windows of time: Ships turn up, ships depart. That's our contract!

"At productivity level we need to perform high to meet that contract.

"That's my management philosophy and I have very clear expectations of our staff. I don't dabble in day-to-day issues of ships running late or early and suchlike.

"My work is clarifying the company's expectations and ensuring they are met."

Paul Scurrah is certainly something different and possibly a big step in the right direction for how the Australian shipping industry looks at itself. When these profiles began many CEOs were former seafarers who wouldn't have had a clue about what Scurrah talks about. He's never been to sea, never going there either. He is a professional manager.

Before taking over from Ganesh Raj at DP, Paul was chief executive of Queensland Rail, the government-owned passenger service that separated from Aurizon in 2010 before the freight rail group floated on the Australian Securities Exchange.

And before that he spent almost 20 years in customer service roles with Qantas, Ansett, American Express, Flight Centre and Tourism Queensland.

While at Aurizon he was responsible for securing 12-year contract renewals with Aurizon's biggest customer, the BHP Mitsubishi Alliance. Colleagues from that period believe that success in renegotiating the coal haulage contracts prompted job offers at other

companies.

Today Scurrah is no laughing boy but presents as a tall, good-natured, good-humoured yet quite serious man who enjoys his work.

Brought up in the Melbourne suburb of Chadstone, with an older brother and a younger sister he played footie for Richmond until he was injured. When he'd recovered, he came back and played at State League until he was 33 and hung up his boots.

Today at 49, he's a non-executive director of the Gold Coast Suns. He and his wife Nicole have two adult daughters and live in a terrace in Sydney's Surry Hills.

Paul's dad, the wharfie, died young at 50 but his mother is still going strong in Melbourne.

He likes to keep fit and he likes his workers to do the same, with his senior execs going for a medical check every year. His personal health is in the hands of one Dr Doug Killer, MD.

His working day is quite moderate compared to some of his fellow CEOs: Out of bed at 6.30-ish to grab The Financial Review and take it across the road for an early coffee. "It's the only hard-copy news I read," he says – then into the office around 7.45–8.15 where he spends half the day on internal meetings.

"I have to keep a clear head to run this business," he says. "I try not to delve into day-to-day matters but I am involved with weekly volumes, our financial performance, and safety issues.

"And I delve deeply into holding people to account and to maintaining a work atmosphere that's as positive as it can be. I aspire to influencing the company culture because that translates into good business.

"Employees from other companies remark on it and our opposition finds me hard to read. I like that because it keeps them guessing. I believe the size of a task shouldn't be a reason for not doing it.

"DP World Australia is a stand-alone company which is part of DP World's international organisation and I report to Rashid Abdullah, its Asia-Pacific head in Hong Kong.

"The latest move into landside logistics is part of a long-term strategy to move beyond the port gate, offering efficiencies to customers and other stakeholders in the supply chain.

"Our new DP World Logistics Australia brand and Botany Intermodal business is a natural extension of a local and global network stretching across DP World's 70 international container terminals.

"As a critical link in the cargo logistics chain, we're growing our Australian business in a way that aligns with our plans to develop operations that complement our stevedoring business."

All very interesting, Paul, but what next? - "We have a lot on the go because we consider ourselves a logistics company these days rather than just stevedores.

"We've recently launched two new logistics businesses, installed nine new quay cranes, a suite of new RTGs, plus 30 new straddle carriers …"

Bloody hell! Ooops, take that back Bloody hell! Goodness Gracious Me, that's an awful lot of expensive gear and shows serious commitment to improving efficiency and meeting customers' expectations.

New trade show plays host to GSF2018

Making its debut in May 2018, MEGATRANS2018 is a unique trade platform bringing together the national and international supply chain industries and the Global Shippers Forum Conference, in one large-scale setting.

In the 2014-15 period, 548 million tonnes of cargo moved across Australia wharves – an 8.6 per cent increase on the previous financial year.

That growth, detailed in the Bureau of Infrastructure, Transport and Regional Economics' report *Australian Sea Freight 2014-15*, is reinforced by the fact that the average annual growth over the five-year period from the 2009-10 financial year was 8.5 per cent.

Likewise, in 2014-15 imports by sea were 100.1 million tonnes worth $197.4 billion, the value increasing by 0.5 per cent over year.

This growth puts increasing pressure on Australia's wider supply chain – how goods and services are moved and tests the limits of traditional transport systems not just on Australia's ports, but roads and warehouses too

In the grand scheme of things, this supply chain covers all facets of Australia's industrial transport and logistics sectors, including road transport, sea, air, warehousing, infrastructure, materials and handling and rail.

As demand increases, as well as the population, increases and as mega trends such as globalisation, urbanisation, demographic change, Industry 4.0, buying behaviour and resource scarcity converge, the very idea of transport and logistics as we know it is evolving.

MEGATRANS2018 – an exciting new international trade event – will bridge the gaps between these industry segments that have previously been operating in isolation.

The show makes its debut 10 to 12 May 2018 at the Melbourne Convention and Exhibition Centre, based in the heart of the one of Australia's major logistics hubs and one of the world's most liveable cities – Melbourne.

Connecting the Australian and international supply chain, the three-day expo will bring together those who plan, implement and control the efficient and effective forward flow and storage of goods, services and related information between the point of origin and point of consumption, with a specific focus on Australia's ports and shipping industry.

A number of main sections comprise the show's 30,000 square metres of space – *Logistics & Materials Handling* / Warehousing & Storage, Road Transport, Air, Sea & Rail, and Infrastructure, with a strong emphasis on technology right throughout.

MEGATRANS2018 is proud to partner with the Victorian Government to present the trade show. The Port of Melbourne is a Supporting Sponsor of the show, with Isuzu backing the event as Platinum Sponsor and DB Schenker as Logistics Partner.

With major Australian industry and Association Partners including the Australian Logistics Council (ALC), the Australian Peak Shippers Association (APSA) and the Freight & Trade Alliance (FTA); International Cargo Handling Coordination Association (ICHCA); Australian Road Transport Suppliers Association (ARTSA); the National Transport Commission (NTC); and TCA on board, the event is already creating a buzz in industry circles.

MEGATRANS2018 will bring together a variety of international and domestic conferences, including the ARTSA Global Leaders' Summit, the Logistics & Materials Handling Mercury Awards, a Ministerial Breakfast delivered in partnership with the Victorian Government, Transport Certification Australia's (TCA) Technology Hub and the 2018 Global Shippers Forum Conference (GSF2018).

The Global Shippers Forum (GSF) is the peak body for shippers globally, working with international organisations including the International Maritime Organisation, the World Customs Organisation and the United Nations Council for Trade and Development. The GSF represents the interests of major shippers in Europe, the Americas, Asia and the Pacific, and will host its conference and AGM in Australia for the first time next year.

The APSA, the peak body for Australia's containerised exporters, will host the GSF2018 in coordination with the ICHCA and FTA and MEGATRANS2018.

The APSA successfully bid for the GSF2018 to be hosted in the world's most liveable city with assistance from the Victorian Government, Port of Melbourne and the organisers of MEGATRANS2018.

The AGM will be held on 9 May, with the conference taking place from 10 to 11 May at the Melbourne Convention and Exhibition Centre (MCEC) alongside MEGATRANS2018.

Paul Zalai, Director and Founder at the FTA, the Secretariat for the APSA, says Melbourne was the perfect location for next year's GSF event.

"Melbourne is home to Australia's busiest container port and a lot of freight operators and forwarders," he says. "We're hosting a number of tours as part of the event, including Australia's newest automated container terminal at Webb Dock, which will be a great experience."

Mr. Zalai says the GSF2018 is set to host policy makers and international trade practitioners from around the world, people whose decisions have a lasting effect on the way cargo is moved in Australia.

As the event is run in conjunction with MEGATRANS2018, which covers all facets of the supply chain, Mr. Zalai says it will attract representatives from across the sector.

"It's quite unique to have transport operators, freight forwarders, customs officials, cargo owners and policy makers, all in the one room discussing logistics and trade issues."

MEGATRANS2018 Show Director Simon Coburn explains that as the borders between industries blur, new multi-dimensional concepts have to rise to the challenge, and MEGATRANS2018 is leading the way.

He says a trade event with the same scope as MEGATRANS2018 hasn't been done before in Australia, and will be an exciting hub for industry representatives across the entire supply chain.

"We're inviting everyone to be a part of this game-changing expo format – from hands-on decision makers in the supply chain and logistics industry to CEOs, COOs, regulatory bodies, urban planners and government on all levels.

"Watch this space for more developments – MEGATRANS2018 will facilitate the topics of discussion, networking and decisions around the future of Australia's supply chain process."

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NSW exports boom while Australia left in the dark about its power supplies

By ARCHIE BAYVEL

There are two faces to the coal industry in New South Wales today. First and foremost is the big Smiley beam emanating from our exports - massive from Newcastle and substantial from Port Kembla. No worries there. Apparently. Then there is the New South Wales coal sold to the local State market – its coal-burning power stations and refineries. A very different story with a possibly dark ending ...

Geoff Crowe, CEO of the world's biggest coal port

At a packed Shipping Australia spring luncheon in Newcastle guests were thrilled by Geoff Crowe, CEO of the city's port, confirming that it was still the world's biggest and best.

Aaron Johansen, CEO of the Newcastle Coal Infrastructure Group (the port's third-terminal-dream that came true), added to the good news with an enthusiastic report on the seemingly infinite Asian demand for New South Wales coal, the world benchmark for quality.

Everyone drove home from lunch confident that all in New South Wales's garden of coal was coming up roses.

But the real news of the day was slowly working its unseen way towards the headlines. It was a bombshell letter with the thrilling title of *Advice to the Commonwealth Relating to Australia's National Electricity Market.*

Dated 4 September 2017, it was from Audrey Zibelman, hitherto unknown to 99 per cent - maybe even 99.99 per cent - of our population, and replying to a letter dated 28 June 2017 (69 days earlier) from The Right Honourable Josh Frydenberg, MP, our Minister for the Environment and Energy.

Like her response time, her letter is a slow read which probably explained why it took so long to send. Chock-full of acronyms – AEMO, NEM, ARENA, RERT, COAG, ESB, etc. – it's lucky the Right Hon Josh didn't chuck it in the bin at first sight.

But he didn't and just as well because the gist of Audrey's epistle was that New South Wales and most other States are facing the prospect of massive electricity blackouts as coal-fired power generators close

Audrey Zibelman, recently appointed CEO of Australia's National Electricity Market, the power system in Australia's eastern and south-eastern seaboard, and the Wholesale Electricity Market and power system in Western Australia. Formerly responsible for New York's electricity, gas, telephone, cable, water and steam utilities Image: Financial Review

Time to look again at putting nuclear back into a mix

Totally ignored amid the fuss and bluster of the original blackouts disclosure is what could be the answer to the whole problem. It comes from Robert Pritchard from the Energy Policy Institute in Sydney.

He says everyone is in too great a hurry to close the coal-fired power stations, with the result that the best solutions to solve the problem will not have time to be completed.

"Hydro is the best bet renewable," Robert believes. "Solar and wind will simply not be enough in the short term e.g., 50 years, and announcements of dramatic breakthroughs are nonsense. Most of them will go broke.

"The solution is the right mix of technologies. That means coal + hydro + a significant percentage of nuclear."

NUCLEAR?? OMG!!

Pritchard is unfazed and says, "The reactors will not be huge but small ones based on 60-year-old technology used in nuclear submarines. A land-based profile is already being developed by Russia, China, Korea, USA, and Argentina.

"But there's no point in raising it in this political climate because the other side, whoever they are, will simply shoot it down.

"Of the 20 countries in the OECD, Australia is the only one not nuclear.

"A system will eventually be developed for getting rid of the residues and a lot of work is being done on fusion as distinct from fission. ITER is a multinational project in France, near Aix en Provence. Australia is there as an observer. It is expected to take 10 years to develop the first fission reactor.

"But the question is: If AGL doesn't want to run its big coal-burner at Liddell and others follow suit, who does? They can't be replaced at this time by renewables."

He might as well have added: "And power prices would go through the roof."

A more conservative solution is that of Colin Barnett, a West Australian MP and former Premier. He marvels at the expense of renewables, their unreliability, rapid closure of coal-power stations, Australia's exclusion from its own torrents of east-coast gas, bans on fracking and coal seam gas and regulators' failure to foresee the present crisis.

He sees gas as the obvious solution. Its emissions are less than half that of a coal-burning generator.

"There are two obstacles," he writes in The Australian newspaper. "The first is the political influence of the coal lobby and the renewables lobby; both of which see gas as a competitor to their own interests."

And if Gladstone's currently exclusive contracts to sell its huge Curtis Island gas for export-only can't be amended, then the second obstacle is eastern Australia's 3000 kilometre distance from the offshore wells in Western Australia and the Northern Territory.

But it's a minor obstacle, he says, costing about $5 billion, which compares favourably with the national broadband's $49 billion! "Surely," he writes, "it is time for pragmatism and common sense. We should use more of our gas for Australia."

What's all that got to do with the New South Wales coal industry? If we don't know the answer to that question we should apply for a job with the Government – even they didn't know about it until the other day.

Josh Frydenberg, Minister for Energy

to make way for renewable energy sources. She should know because a) she is the managing director and CEO of the Australian Energy Market Operator and b) she has a career record of experience and success as long as your leg. So one has to pay attention.

It wouldn't really have mattered had Josh really chucked her letter because she had taken the precaution of issuing a general media release as well. And with the diligence of their breed, the reporters read and studied every word of it.

Next day the Press went wild, TV and radio not so much so as they waited to see what they could plagiarise from their press colleagues.

It emerged that while Asia toasts its homes, blast furnaces, and power stations with our coal, We The People were – and probably still are – in serious danger of our lights going out and our few remaining heavy industries running out of power. This year for some of us it has already happened.

Not because of any shortage of coal but because of a suddenly discovered shortage of power stations to convert the 15 per cent of New South Wales coal that comes our way into electricity. Hazelwood power station in Victoria closed last year and the lights went out the first time the renewable power sources had a problem. Now it looks as if the giant Liddell plant in the Hunter Valley will close in 2022, and Bayswater and Vale less than a decade later.

The crux of it all is that renewable power sources, particularly solar and wind, have no back-up if they have a breakdown or the wind stops blowing or the sky is cloudy.

Coal-fired power stations on the other hand have what they call a base load – they run all the time at a level at which if something somewhere goes wrong on the national grid they have surplus power in the system for

Loading coal at NCIG terminal, Kooragang Island

instant diversion to the emergency site.

No blackouts, or not for long anyway!

In their enthusiasm to get out of the polluting but highly profitable business of owning coal-fired powered stations – applauded at the time by the politically green and millions of people who know nothing about it – nobody appeared to have considered where the State's, Australia's back-up electricity would come from.

Renewable sources, everyone thought: Wind, hydro, natural gas, solar, bagasse, wave action, etc, etc. Perhaps even some miraculous new process that would convert coal into power without poisoning the air.

Only when the chips were down did anyone notice that with the big coal-fired plants closed or closing, there is not yet enough stand-by renewables to keep the lights on in Sydney and Melbourne, never mind in our smaller cities that rely on the national grid.

When for whatever reason the mains power falls off the grid – for five minutes or five hours – there has to be fall-back power from somewhere. And if there's no baseload and the sun ain't shining or/and the wind ain't blowing we get …

Darkness! Ask the South Australians. It already happened to them just last year.

The media panic is still remarkable as reports, suggestions and cries of blame filled the news pages and screens. But the media is accustomed to panic and were a match applied to the hot air it emits the resulting flames would scorch the problem.

No such luck for the Federal Government, however, which appears to have never given the situation much thought. Attempts to bully the MD and CEO of AGL Energy, Andy Vesey, to cancel plans to shut down Liddell power station by 2022 were calmly rebuffed. He virtually told the Government to get knotted while asking for another 90 days to think about what he had locked in years ago.

He wants to replace his current clouds of steam, carbon dioxide and smoke with more profitable renewable processes. At time of writing there is no indication that these will be up and running in time to replace today's coal-fired power station which will by then be a demolition site.

Another player in the coal-power bind is one Trevor St Baker and his New South Wales power producer, Delta Electricity. He wants to extend the life of exiting coal-fired generators, including his own at Vales Point which is scheduled to close in 2030.

An empire built on wealth from coal

Something not generally recalled is that the industrial revolution that began in Great Britain more than 300 years ago then spread to Europe and America, was financed by profits from mining the coal that fired its revolutionary machines.

Its spinning wheels, threshing looms, and roaring furnaces no longer relied on the renewables of slaves and child labour that had powered them for 1000 years. They had moved on to The Next Big Thing. And that was COAL.

We just have to work out how to manage its emissions. Scientists are looking at deep earth sequestration where CO2 emissions are buried as much as 1300 kilometres underground; they are already being used to restore pressure in tired oil and gas wells.

Trevor St Baker, of Delta, scrambling around for more coal

Image: Engineers Australia

"The technology is capable of extending and while the fuel is there we will extend its life," he says.

But, Mark Ludlow reports in The Financial Review, New South Wales generators are struggling to lock in coal supply. He quotes Mr St Baker as saying, "We are paying big prices against international customers and are scrambling around for more coal trying to make up for part of the power Hazelwood was supplying New South Wales. But it's expensive and there isn't a lot around."

Asked about that Stephen Galilee, CEO of the NSW Minerals Council and front man for the campaign to keep coal burning power stations, says the scramble for coal is par for the course worldwide. "It's factored into the global plan," he says.

But as of last year's blackouts, the global plan hadn't reached us when Hazelwood's closure was followed in turn by a cyclone and a wind generator breakdown, with the result that there was no reserve bridging power.

The back-up renewables failed to perform. Not enuff wind to turn the turbines, not enuff sunshine to galvanise the solars for 24/7, far less for 24/365! All unexpected but inevitable results!

Suddenly we had come a long way from the congratulatory world of Newcastle's coal exports. The real world on our doorsteps was in crisis. The environmentalists in their enthusiasm had forgotten or never heard of the physics and mathematics involved in creating a power grid, far less running it.

Add up, for example, the megawatts of electricity created by AGL's main coal-fired power stations in New South Wales and it comes to about 400Mw; its current output from renewables is less than 20 per cent of that. What fills the gap?

Answer: Darkness.

But leaving all that for a while – nothing much was done about it over the past five years at least, so nothing will be missed if before our lights go out we momentarily turn our attention to the good news.

That of course is the Asian hunger for our top-quality coal. Not that we see all that much of it here. But that may yet change if New South Wales and Australia is forced to build a raft of new super-environmentally friendly coal-fired plants.

If that means another x-million tonnes of coal need to be found in a hurry it will impact the mines, the ports, the bulk carriers, our entire coal economy.

Stephen Galilee, advocate for the coal burners *Image: smh.com.au*

Stephen Galilee says that could never happen and our export supplies are, so-to-speak, fireproof. At the same time he is enthusiastic about building new super high-tech thermal power stations. He'd like to see one rise from the ruins of Liddell after the demolishers have gone but realises that is a pipe-dream.

But the technology already exists. It's called High Energy, Low Emissions, HELE coal. Its cost is currently unattractive but things are moving fast and an early fix is quite possible. Or the producers are in for a taste of their own medicine in the costs area. Costs which would, of course, be passed on to We The People.

Oddly enough, and quite apart from the main issue, there are mutterings that some power generators are returning reduced emission levels that are impossible unless they had fitted the latest HELE technology.

Apparently none of them have done that! Ergo they must be burning superior top-of-the-line, usually unaffordable coal. A furphie, a lie, or just more fake news?

Only time will tell but Aaron Johansen had no hesitation assuring his lunch audience that any suggestion that our export coal is dead are wide of the mark. "The developed world of America and Europe isn't doing a lot in this space but Asia is a different story, producing a lot of new coal-fired power plants," he said.

"We're seeing between now and

Liddell power station near Muswellbrook *Image: AGL*

2019, 300 new power plants in China, 320 in India, 25 in South Korea, 17 in Japan, 60 in Vietnam.

Aaron Johansen, CEO of NCIG, the dream that came true Image: NCIG.com.au

"There is huge growth in demand for Newcastle coal. It is the world benchmark – very low in sulphur, ash, and other impurities and more efficient to burn. International Energy Agency predictions are that by 2040, 65 per cent of the world's coal-fired generation fleet will be HELE coal-fired technology.

"Again, that is good for Australia and will lead to an increased demand for our coal.

"Today 84 per cent of it goes to Japan, Korea, Taipei and China for power generation. 75 per cent of that goes to Japan, 20 per cent to Shanghai, and about 3-4 per cent vs 1 per cent a few years ago, is going to developing ASEAN nations such as Vietnam, Philippines, and Malaysia.

"India takes some of our semi-soft metallurgical coal. It is ramping up import of lower quality coal from Richards Bay, in South Africa, and Indonesia. Vale is another rival for top quality, as is Colombia but they export to Europe and don't compete with us.

"Last year was a record for Newcastle exports. Between us and Port Waratah's two terminals here – 162.8 million tonnes were shipped – 84 per cent of which was thermal and 16 per cent coking coal for steel making. Our coal sales are independent of price. For example, in 2012-16 the price was low but the demand kept coming.

"There is no competition between us and Port Waratah. Our capacity is sold for the life of the terminal. We do, however, compete with some other coal chains.

"Even Mongolia has the potential to compete far in the future. But none have the stable political environment nor established infrastructure of New South Wales.

"China, for example, produces 8 billion tpa of coal but consumes half of that domestically, and with most mines in its far north their coal is shipped to other markets.

"Australian power stations are all old technology operating at about 35 per cent efficiency. Probably only 1 per cent of our coal goes to our home market and it is mostly low quality.

"It would be hard for an investor to make a coal-fired power decision right now because decisions are being made ideologically rather than on logic.

"We should have the world's cheapest energy but we don't. It should be produced by a good pragmatic mix of all available generating systems, wind, solar, hydro, coal, etc.

"Much of the rest of the world is putting its future into nuclear power but it's debateable whether we want to do that. On the nuclear issue Asia is more pragmatic and many nuclear and coal-powered power stations are under construction there.

"India, for example, has one hell of a job just turning on its peoples' lights. It has some 300 coal-fired power plants under construction and quite a lot of nuclear too.

"India had intended to use its own coal but hasn't been able to keep up with demand. Right now they're just beginning to rise up the demand-for-power curve. They're about where China was in 2000."

On researching what Aaron says, one finds endless doomsayers writing … What can be worse than Trump's fake news tag? Ah yes, the word is "Bullshit". They say that the world of coal is coming to an end, it's running out, especially in Europe and America.

These highly sophisticated countries are years ahead of us and Asia, in alternative power plans. Stephen Galilee says that by 2040 coal's share of the world energy market will have shrunk from today's 40 per cent to 28 per cent, while its volume will have increased by 33 per cent. He says that works out at a real annual growth of 0.2 per cent.

Putting aside our super-quality coal for a moment, there is our lesser stuff which is expected to raise demand from Asia on chilly dark nights in somewhere-deserts

Storing energy deep under the sea

A German research project StEnSea reports successful completion of building a giant spherical reservoir deep underwater, allowing it to fill up – via a turbine power generator - then pumping it back out again using surplus grid power at off-peak times.

Because the submerged reservoir needs only a connecting electrical cable, the depth at which it can be employed is limited only by the depth at which the turbine can function, currently limited to 700 metres.

The deeper the sphere, the more potential energy it can store and convert back to electricity.

Advantages of deep underwater generators include:

- No land area is required,
- An electrical cable is all that's needed to span the distance from the reservoir to the surface,
- An underwater energy farm of multiple reservoirs can have unlimited storage,
- Should a reservoir collapse there would be no collateral damage.

The test was carried out in 100 metres of water at Lake Constantine, at the foot of the German Alps, and a current commercial design features a 70-metre sphere 700 metres down, to deliver 20 MWh over 4 hours.

Loaded to the plimsol line, Shinchi Maru departs Newcastle with coal for Japan

John Gorman, manager of Port Kembla Coal Terminal

Image: businessnews.com.au

or high plateaus, where millions of people not at all like us will have their lives transformed by the warmth and power of Australian coal – the best in the world.

'Way down south of Newcastle at the very much smaller Port Kembla Coal Terminal, its manager, John Gorman, is equally optimistic about his exports. With a recently modernised terminal and a capacity throughput of 17 million tonnes per annum, he is currently doing just under 10 Mtpa but rising.

His coal comes from New South Wales's western and southern coalfields, which are very much smaller than the vast Hunter Valley producers. Sixty per cent of it comes through the Blue Mountains by rail on the Illawarra line, although one shipper sends theirs down the Illawarra escarpment. The other 40 per cent of its coal arrives by road in some 420, 40-tonne truckloads a day.

Surprisingly he too has competitors – one of them being Newcastle.

He also has intrastate customers in One Steel steelworks at Whyalla. "We have a one vessel service to them," John says. "It takes one or two shipments a month ranging from 40,000 to 80,000 tonnes. BlueScope Steel just across the harbour from my office is also serviced by us.

"All the rest of our coal goes to some 60 customers in 25 countries. Our largest destinations are Japan, India and China, as well as Korea, Taiwan and Europe."

Asked what he knows about the threat to our State electricity grid he, like most of us, is not interested in the details and just wants it fixed. "I'm totally focussed on my job of running this terminal," he says.

Meanwhile power station closures continue to be the elephant in the room. Stephen Galilee believes Liddell's closure will have minimum impact if a new, state-of-the art plant is built. He agrees however that the Government is only treading water on that at the moment.

"They've had plenty of warning," he says, "and unless something is done we are looking at blackouts. But it's the Government, not anyone else, that gets kicked out if that happens so I'm pretty sure all will be solved in time."

So while Robert Pritchard and Colin Barnett [see insert on page 11] moved the debate along, at the end of the day the best opinion came from Nick Cater, executive director of the Menzies Research Centre, when he wrote in The Australian:

"The renewables sector must be made to carry the cost of its own stability instead of passing it on to mugs like us. [He means We The People!]

"Energy distributors are forced to buy-in baseload at absurd spot prices while the wind and solar kings sit around their idle generators and count their profits.

Robert Pritchard: A significant mix of nuclear *Image: smrnuclear.com.au*

"Operators of new generators should be contracted to provide power 24 hours a day. Making up for the shortfall will be entirely up to them. All we ask is that they fulfil their contracts to deliver power when it is wanted."

And so Nick nails it! As, amid the verbiage, Audrey Zibelman did many weeks ago. Just it didn't take him 69 days to pen the bleeding obvious.

Battle for public benefit over bureaucratic ideology – Part X of the CCA

By ANDREW CHITTENDEN, general magager liner services, Shipping Australia Limited

So far as International liner shipping is concerned the major outcomes from the 56 recommendations arising from the Harper Competition Policy Review were, firstly, the Federal Government's agreement to introduce a class (commonly dubbed "block") exemption power into the Competition and Consumer Act (CCA).

Such block exemption, which will supplement the existing authorisation and notification frameworks in Part VII of the CCA, will provide the Australian Competition and Consumer Commission (ACCC) the power to grant exemption from specified provisions of Part IV for certain categories of conduct that it deems unlikely to damage competition, or are likely to generate a net public benefit.

Secondly, and of immense direct importance to carriers, was the Government's decision not to readily accept the Harper Reviews recommendation that Part X be repealed and future exemptions relating to liner shipping agreements be made conditional upon the qualification of a block exemption. Instead, the Government cautiously concluded that following the introduction of a block exemption provision, the ACCC and relevant stakeholders, including SAL, should investigate options regarding how such provision could be applied to the liner shipping industry to ensure shipping routes to and from Australia continue to be reliably and competitively serviced.

Two years on and the following chronicles progress and notable events have occurred on the legislative front:

- Competition and Consumer Amendment Bill, including the introduction of a block exemption, was introduced to the House of Representatives on 30 March 2017. The third reading was agreed to on 5 September, and the Bill was introduced and read by Senate for a first time and moved to a second reading on 6 September 2017. Expectations are that the Bill will be passed by Senate during October 2017.

- On 1 May 2017, SAL took part in an exploratory meeting with representatives of the Department of Infrastructure and Regional Development, Treasury and the ACCC (collectively referred to as Treasury) during which the following points of interest were noted:

  - The introduction of block exemption powers will not mean Part X is automatically to be repealed. Any decision on the possible repeal of Part X will be a matter for separate consideration by Cabinet, under Treasury guidance.

  - It is possible a block exemption for liner shipping could operate in parallel to the current or an amended Part X, with Part X legislation taking precedence.

  - No timeline can be provided in terms of when the whole process is to be completed, noting there will be a period (undefined) during which the effectiveness of the block exemption will be assessed; including its suitability for liner shipping and the unknown aspect of whether Part X might be repealed and if so, whether a transitional period might be set down (Harper Review recommended a two-year period).

  - With there being concerns over the uncertainty that could arise from carriers needing to self-access whether their agreements qualify for the antitrust protections provided under a block exemption, the question has been raised whether carriers would be able to seek the ACCC's signoff of arrangements before they are entered into, or put into effect. Treasury advised that that was not the role of the ACCC and should carriers have doubts over their arrangements meeting the specified exempt activities under the CCA then they should seek legal advice. However, Treasury assured that given the extensive consultations that will be held with stakeholders, the parameters of a block exemption will be made very clear.

Meanwhile, there have been some significant happenings globally within the liner shipping industry, which have affected carrier's participation in voluntary discussion agreements (VDAs). Most notably, the rapid pace of consolidation recently witnessed has caused a decline in

the membership of various VDAs, so too has the decision taken in several countries, including New Zealand and Hong Kong, to withdraw exemptions presently permitting rate agreements. Such developments have prompted certain doomsayers to suggest that industry on longer values the ongoing need for VDAs and that the end is nigh for such forum.

However, such a view is completely wide of the mark and clearly neglects the important fact that most of Australia's major trading partners, such as China, Japan, South Korea, Singapore and the USA, continue to recognise that the uniqueness of the liner shipping industry and the public benefits it delivers, merit the limited anti-trust exemptions being extended to carrier agreements, including VDAs with rate setting ability, vessel sharing agreements (VSAs) and slot charter arrangements.

Clearly, Part X is by no means an international oddity, which some commentators like to make out, but even if it was, there is no shame in that provided it ultimately continues to work to the benefit of the Australian public.

In that context, who can be said to represent the Australian public and what is its view on the worth of Part X? Well, since the Minister has declared, under Part X, the Australian Peak Shippers Association (APSA) as the association representing the interests of outwards liner cargo shipping services generally, one could reasonably expect it to be recognised as having the greatest all round knowledge of the requirements of Australia's exporting community. If not APSA then who else?

So, what is APSAs position on the future of Part X? Interestingly, that has been made abundantly clear, it seeks the full retention of Part X, including the provision for rate agreements and, most importantly for shippers, the requirement for parties to registered agreements to guarantee minimum levels of service.

So there we have it, both the users and the providers of liner shipping services are united in strongly believing that Part X remains fit for purpose and does not require to be meddled with, or replaced by a block exemption regime. On that basis, one might be excused for thinking its job done, with the community view being expected to triumph over that of government instrumentalities, who for decades, driven by self-interest, have viewed Part X with open hostility. Sadly, belief in such a rational outcome might well be considered wishful thinking, or even naïve but be assured Shipping Australia Limited does not underestimate the very difficult challenge that lies ahead.

After the amendment Bill has been proclaimed, Treasury is expected to re-engage with Shipping Australia and other stakeholders, probably in the New Year, when meaningful discussions can begin in earnest.

A new direction for Australia's National Freight and Supply Chain Strategy

By SHIPPING AUSTRALIA LIMITED

The Australian freight and supply chain must undertake fundamental change. It needs to maximise the potential of existing infrastructure and focus on the safest, most environmentally and cost-effective transport modes.

This requires a re-evaluation of the business-as-usual practices of the Australian freight and logistics sector and a change from the historical 'pork barrelling', vote buying approach to government provision and utilisation of infrastructure.

It's not just Shipping Australia Limited that is saying it. Infrastructure Australia's 15-year plan (Australia Infrastructure Plan 2016) uses the word 'reform' 345 times. Surely this is a compelling argument for a paradigm shift!

The National Freight and Supply Chain Priorities Inquiry provides a unique opportunity to identify the need and to lead change.

Shipping Australia identified the following key objectives in our submission to the Inquiry:

- Priority One: Remove all barriers to shipping containers by sea
- Reduce freight cost: The cheapest capacity is latent capacity
- Bolster productive businesses and local jobs
- Use business case analyses: Strategic thinking and planning applied to multimodal supply chains
- Develop fit-for-purpose transport mode hierarchy for optimising the freight task

Our mission is to promote efficient and effective maritime trade for Australia, whilst advancing the interests of ship-owners and shipping agents. But our contribution to this Inquiry goes further than that, it aims to improve freight and supply chain efficiency and capacity, to reduce the costs of transporting goods through our major national containers, to reduce greenhouse gas emissions, to create Australian jobs and most importantly, to save lives.

Priority One: Remove all barriers for shipping containers

Australia is an international trading nation and the foundational element in the freight landscape in this country, and the lifeblood of Australia's economy is international shipping. Australia is well-serviced by international shipping and there is substantial spare capacity travelling between Australia's coastal ports but not carrying domestic cargo due to regulatory impediments. One required fundamental change is removal of the barrier to accessing coastal shipping, thus allowing domestic shippers to integrate with the international supply chain.

Listen to the prudent and authoritative advice to this effect that has already been published:

- *The Australian Government should amend coastal shipping laws to substantially reduce barriers to entry for foreign vessels* (Productivity Commission's Agriculture Review, 2016);
- *Cabotage restrictions on coastal shipping should be removed* (Competition Policy Review/The Harper Review, 2015);
- *Coastal shipping regulations are undermining the incomes and jobs of many onshore businesses and workers* (Industry Innovation and Competitiveness Agenda, 2014); and
- *More efficient coastal shipping services could help lift Australia's competitiveness and lower prices for consumers* (Australian Competition and Consumer Commission, 2014).

The weight of evidence for removing this regulatory barrier is clear, but significant reform of the coastal shipping regime has so far been thwarted by the political point-scoring.

Australia might be girt by sea but the nation's economy is not using its ocean-going infrastructure as efficiently as it could be.

Reduce freight cost: The cheapest capacity is latent capacity

In 2013, the first freight and supply chain strategy, published by New South Wales, quoted then BHP Billiton CEO, Marius Kloppers, "The cheapest capacity that you can normally find is latent capacity."

Shipping provides the most environmentally efficient, cost-efficient and safest mode of long-haul freight transport. There is excess, un-utilised capacity on international ships travelling between our capital city ports every day, this is latent capacity. If this can be used to take long-haul trucks off our interstate highways it will not only reduce road maintenance costs, it will save lives from reduced truck accidents.

When the regulatory barriers are removed, Australia's freight supply chains will need to change and become port-focused, as will the supporting infrastructure projects need to change and become port centric. Connectivity from the hinterland to the ports should be the priority for infrastructure investment.

The key - redirect infrastructure resources committed to networks parallel to the coast, to create hyper-efficient and resilient networks perpendicular to the coast.

In a well-functioning economy, the transport sector serves productive industries for the benefit of the wider community. In Australia the situation is reversed, as noted by the joint Australian and New Zealand Productivity Commissions in 2012:

- Australian cabotage can directly benefit local shipowners and maritime workers, [but] it does so at the expense of the wider community.

To put it another way, Australian primary producers, manufacturers and consumers are all paying more than they need to. Most of this additional cost goes to foreign seafarers as an additional bonus on top of their International Transport Federation agreed wages.

Bolster productive businesses and local jobs

The Productivity Commission's Trade and Assistance Review 2013–14 determined that:

- Policies that seek to direct resources and effort according to priority sectors, unavoidably risk disadvantaging other firms or sectors that may be more competitive and have better prospects in global markets.

Unfortunately, that's exactly what Australia's cabotage laws, designed to protect 1000 maritime industry jobs, do. Australian businesses that currently supply domestic markets are financially discouraged from utilising shipping. This removes an important stepping stone needed for those businesses to become exporters.

Encouraging domestic businesses to develop into exporters is a key imperative highlighted in the 2016 Australian Industry Report, by Office of the Chief Economist. The report found that, compared to non-exporters within the same industry and jurisdiction, Australian firms that export, are larger in measures of employment, value-adding and capital expenditure.

It is also worth noting the finding by the 2014 Australian Industry Report that, between 2003/04 and 2013/14, 52,000 and 92,000 jobs were lost in agriculture and manufacturing, respectively.

There is little doubt that integration of coastal shipping in the domestic supply chain will dramatically reduce transport costs. Unfortunately, these savings can only be accessed if coastal shipping regulations change, and they haven't yet been measured. However, when the international and domestic freight rates are compared, a conservative estimate would conclude a 'double digit' percentage reduction in cost. Modelling within the 2016 Australian Industry Report, demonstrates that a 5 per cent decrease in transport cost would result in cross-industry benefits of:

- $5.6 billion in reduced costs,
- $971 million of added value, and
- 6,658 full-time equivalent jobs.

Use business case analyses: Strategic thinking and planning to prioritise supply chains

The inability for Government to act on best advice and in the interests of the wider community, represents a case of regulatory failure. The beneficiaries of this failure are local shipowners and maritime workers; its advantages also extend to the assessment of Infrastructure Investment Projects (IIPs) that support the business models of road and rail freight transport sectors.

While it is mandatory for an IIP of over $100 million to have its business case scrutinised by Infrastructure Australia as an independent body, no assessment of any business case to date has examined coastal shipping as an alternative to road and rail upgrades, when calculating the greatest benefit to the Australian community and economy.

Unjustified road priority. As an example, the recent announcement of a $515 million upgrade to a section of the Bruce Highway, 50 kilometres south of Townsville, including the Haughton River Bridge, aims to ensure that road freight transport will only be disrupted in the future by the largest floods. This example is notable as it contrasts Government policy and the recommendation of the Productivity Commission's 2015 Natural Disaster Funding Inquiry: In regard to infrastructure project selection, the specific recommendation was for all governments to have in place 'stronger processes for project selection that incorporate requirements for cost–benefit analyses'.

Given that coastal shipping is available and is a mode of transport that is impervious to flooding, it is difficult to imagine that a cost–benefit comparison of the Haughton River Bridge upgrade would trump Stage 1 of the proposed Port Expansion Project for Townsville. The bridge upgrade represents a $515 million investment in a single section of the Bruce Highway, so it may remain open during intermittent days of flooding; the Townsville Port Expansion Project is a $520 million investment to widen the Port of Townsville's shipping channel, enabling the port to handle similarly sized international vessels that call at other Australian ports every day.

Unjustified rail priority. Another notable project in which the business case does not consider coastal shipping amongst the range of individual risks with the potential to impact its viability, is the multi-billion-dollar Inland Rail project, which currently doesn't even properly connect to the port of Brisbane. Plans for the Inland Rail project focus on journey time from Brisbane to Melbourne but make no reference to the potential alternative of coastal shipping. This is despite the rail industry's Freight on Rail Group identifying in 2015 that the then-proposed amendments to coastal shipping legislation would 'damage the domestic land freight industry through a loss of revenue and a reduction in the capacity of the rail freight industry to invest in infrastructure'.

These glaring omissions in the assessment of IIPs highlight why it is imperative for coastal shipping to be considered a domestic supply chain option.

Develop a fit-for-purpose transport mode hierarchy for optimising the freight task

The penny must drop. As a society, Australia cannot afford to continue to subsidise the land freight transport sector and continue to be denied access to such an abundant resource as coastal shipping. Not only does it commit taxpayers to the funding of tens of billions of dollars in infrastructure construction and maintenance annually, it denies cost savings to domestic businesses and removes the stepping stone required for them to become exporters.

The latest available data shows shipping's share of the domestic containerised freight task reduced to 4.5 per cent in 2013-14, down from 6.5 per cent in 2012. Shipping's share of the container freight task is miserly even compared to its 20 per cent share of the bulk freight task. This result highlights the underutilisation of the capacity of Australia's coastal shipping lanes, which are an abundant available resource, unhindered by the congestion, capacity limitations, construction and maintenance of road and rail.

So now is the time for a new direction for Australia's National Freight and Supply Chain Strategy. We need a strategic plan for Australia's supply chain, which prioritises and consigns all modes within a fit-for-purpose hierarchy to optimise the freight task and provide Australians with the best triple bottom line: economic, social and environmental outcomes.

Is Australia hugging or bashing the panda?

By TIM HARCOURT*

China is now central to Australia's economic prosperity. It overtook Japan as Australia's top export destination early this century and is now Australia's top partner in terms of exports, imports, tourism and education. And there are a number of "mega trends" that are likely to make China more important for Australia.

First, China is transitioning from a country of shippers to a nation of shoppers. It is no longer just about low cost manufacturing but also about a rising middle income group that will add around 850 million people to its ranks between 2009 and 2030.

Second, China is about urbanisation, too. The country was once just about "the big four": Beijing, Shanghai, Guangzhou and Shenzhen. Now it is also about second and third-tier cities such as Chengdu, Chongqing, Wuhan, Xi'an and Qingdao. In fact, in the near future, more than 80 percent of China's middle income group will be living in the second and third-tier cities. No wonder these cities are attracting many Australian architects to help build or rebuild them.

Third, China faces a fast aging population, which offers Australian healthcare companies, such as Blackmores and Australian Medical Tourism, enough scope to expand their businesses.

Fourth, Australia's relationship with China is going "from the mining boom to the dining boom". Australia knows its rocks and crops, to a certain extent, facilitated China's economic miracle in the past. Now, what matters more are Australian agricultural exports to China worth $9 billion, or 72 per cent more than to the United States.

Fifth, China matters a lot to Australia in terms of services. China is Australia's top source of tourists, who spend more than double the amount of their counterparts from the United Kingdom, and foreign students 2.4 times more than those from India.

And finally, as an airport economist I know Australia's relationship with China is constantly strengthening in fields such as education, tourism and professional services and trade. Six years ago, from Australia you could fly to only "the big four" cities in China, but today, you can fly to 11 Chinese mainland cities, including Chengdu (the panda capital), Chongqing, Wuhan and Xi'an.

All this means you don't need to be as big as Woodside or BHP Billiton to succeed in China. Australia's future is as much about Blackmores as it is about BlueScope today, with small and medium-sized enterprises also having the opportunity to get a slice of the action. According to the Australian Bureau of Statistics, 10,000 Australian SMEs export goods to China, directly or via Hong Kong, and 3,000 Australian companies have offices in China (compared to only 100 in Japan).

But despite all this, why this uncertainty over China-Australia ties? Perhaps because of Chinese foreign investment in agricultural land. Overall, China's direct investment in Australia is pretty small, and Australia doesn't owe a huge amount to China. Australia's net debt is mainly held by the UK, Belgium, the US and Japan. But you don't see too many headlines about Australia being enslaved by UK or Belgian investors.

In fact, a lot of Chinese investment is productive and creates jobs. So if China's investment is relatively small and productive, why the fuss? Partly because of the link between the Chinese Government and State-owned enterprises. In fact, China's direct investment in Australia has attracted more media attention than that by India, whose private enterprises have invested in Australia without drawing much attention (with some notable exceptions).

China has to get used to operating in a relatively unfriendly world. China is learning the rules of outward investment and issues such as intellectual property rights and other governance issues, as it ventures beyond its borders. And it will soon not only learn that the rules of cross-border investment are more complex and controversial than those of trade, but also master them.

Tim Harcourt is the JW Nevile Fellow in Economics at UNSW Business School and author of The Airport Economist

Shipping industry's major players combine to support Australian National Maritime Museum's major new Container exhibition

The major players in Australia's shipping and transport industry have joined together to support the development of an exciting new exhibition exploring the history and impact of containerization and the way the humble container has revolutionized the way we live.

Opening in late October, Container will be a free, outdoor interactive exhibition housed entirely within six 20-foot shipping containers. It will explore the fascinating history, contemporary impact and future outlook for this most ordinary of objects. These will include shipping, ports, cargo, the role of shipping in our daily lives, the origins of everyday objects and even container architecture.

The exhibition has been embraced by the shipping industry with a large number of its key organisations coming on board to provide essential support to tell this important story.

Major sponsor is NSW Ports who has played a key role in the development of the exhibition. Sponsors are ACFS Port Logistics, Maritime Container Services, DP World Australia and Smit Lamnalco. Supporters are Transport for NSW, Shipping Australia and TT Club. The Containers are supplied by Royal Wolf and Precinct Partner is Property NSW.

Peter Dexter AM, Chairman of the Australian National Maritime Museum said, "The Australian National Maritime Museum has a mandate to share significant stories, both ancient and contemporary, from Australia's maritime history and that of the shipping industry, and in particular the container, is one that we are excited to be telling in this innovative way. The response from the industry has been exceptional and we are thrilled to have so many major businesses come together to make this exhibition happen. Our sincere thanks goes to all our supporters and in particular NSW Ports who have been instrumental in this project."

Container opens at the Australian National Maritime Museum, Darling Harbour on 26 October and is FREE. It will run until late 2018 before touring locations across NSW and potentially nationally. For further information visit www.anmm.gov.au/container

Investing overseas – What's the secret?

By BERNARD GRESSER, director, Infinitas Assets Management Limited

When it comes to investing overseas, some Australian companies have had outstanding success. However, there also has been many unmitigated disasters. This article looks into what works and what doesn't work when it comes to investing overseas.

In some regards, Australian businesses are forced to expand overseas if they want to have a chance of any form of meaningful growth, as Australian GDP only makes up approximately 2per cent of global GDP (Source IMF, 2016).

Once a business has achieved a comfortable level of market share domestically, it is only natural to look overseas to export, they suggest, to bigger markets.

While every business is different, when companies are looking to take on the many challenges that come with overseas expansion, they all want to exploit at least one of two major markets. China and/or the USA. The reasoning is pretty simple. The USA and China are the world's two largest economies and their populations (320 million for the USA and 1.4 billion for China) makes Australia's population of 24 million look like a rounding error.

So what works and what doesn't?

The first rule of off-shore expansion, is you need to be doing something different to what existing market participants are doing. That means offering a new product or service, or if you are offering an existing product or service, you need to be doing it better or more cheaply than your competitors.

A great example of this is Seek. After conquering the employment classifieds market in Australia by offering a better and cheaper product than the existing players – predominantly Fairfax's Sydney Morning Herald and The Age – Seek took their offering into other markets. Their most successful is their foray in the Chinese market.

By partnering with existing Chinese companies, Seek was able to build from scratch a business called Zhaopin. Even though this is not a household name here in Australia, Zhaopin now generates over $A373million in revenue for Seek. During the financial year ending June 2017, the revenue for Seek from Zhaopin was greater than the $A356million generated from its Australian businesses. The Chinese business was a business that was started from scratch less than a decade ago that now is the jewel in

Shanghai Tower, the tallest tower in China

Hurricane Andrew (1992) from space

the Seek crown. How did they do it? By offering a superior product to a market that was embracing online employment classifieds. Keep in mind, this business was all in place and growing substantially prior to the Australian-Chinese Free Trade Agreement being announced.

So while Seek is a great example of successful off-shore expansion, there is a substantial roll call of companies that expanded so poorly that it resulted in their demise.

A shocking example of this was the expansion of Australian-based insurers into global insurance markets in the late 1990's.

The laundry list of Australian insurance companies that went global and are no longer with us is long. Reinsurance Australia and New Cap Reinsurance went bust. GIO Insurance took some hefty write-downs before initially AMP and then Suncorp absorbed them. Lastly, even though the Royal Commission into the HIH Insurance collapse assigned blame to their ill-fated purchase of FAI Insurance, the seeds were sown by their international expansion.

What all these parties did was enter the US insurance market and undercut the premiums that much larger companies were charging. This sounds great on the face of it, but when you are offering a commoditised product – insurance – and you are only competing on price, you need to ensure your business practices won't send you bust. This is where all the Australian insurers were found wanting. In some cases, all it took was for one bad hurricane season in North America to wipe out the entire capital base and to send the companies broke.

It is key to know that these collapses did not happen in a vacuum. In the case of GIO's international expansion, the US regulators alerted the Australian regulators regarding GIO's business practices. Unfortunately for all involved, nothing was done.

Key to the Australian-based insurers blowing up was a lack of on-the-ground local knowledge.

One of the greatest expansion stories that originated in Australia was based on on-the-ground knowledge. Westfield Group was founded in Australia in 1960 by Frank Lowy and John Saunders in western Sydney. 17 years later, after transforming the retail mall experience in Australia, Westfield started their US expansion, buying a shopping center in Connecticut.

One of the keys to their success was having on the ground expertise ensuring that they were never blindsided by different city, county, State or Federal laws. This allowed the broader Westfield group to grow from one shopping center in western Sydney in 1960, to having over 119 malls at the current time.

Westfield has grown to 40 malls in the USA at the time of this column, showing they have been able to export their success.

The examples of Seek in China and Westfield in the US, demonstrate that the success stories do not happen overnight, and take a lot of work working with professionals on the ground in China and the US. Ultimately, they both saw a gap in their respective markets and were able to use their expertise to expand.

The examples of several of the Australian insurers doing poorly overseas demonstrates that competing on price alone is not a sustainable business model, especially when it comes at the risk of proper risk management.

Many Australian based companies will continue to try their hand at taking on the world. On balance, most will fail. But the potential of success will ensure that the pipeline of those trying will be strong as ever, as they try to become the next Seek or Westfield.

Westfield under Freedom Tower, New York (formally the World Trade Center)

Blockchain – clearing the way ahead

By A SPECIAL CORRESPONDENT

Blockchain's potential to strip out cost, time, error and fraud, while increasing transparency, is leading some shipping companies to run trials with clients.

Captain Sunil Dhowan, SAL Victoria State Committee chairman, opens proceedings

Earlier this year, the Commonwealth Bank and Port of Melbourne sponsored a Shipping Australia business breakfast, where a panel of experts discussed how the industry is on the precipice of major advances in innovation and technology, such as blockchain. More than 150 guests packed in to learn what they could about this rapidly expanding concept.

As Brendan Bourke, CEO of Port of Melbourne, observed, "There is a very long supply chain from the customer to the ship, and the fundamental steps haven't greatly changed in years." He went on to outline how Port of Melbourne was using the latest 3D technologies to augment their hydrographic surveying program and optimise the size of ships that can use the port.

Gerard Morrison, Maersk, addresses the audience, with Sophie Gilder, CBA and Gavin Vallely, HFW Australia

Blockchain pioneers

Maersk's managing director Oceania, Gerard Morrison, explained how blockchain can replace the current process of more than 20 steps, with a three-step process.

Maersk is leading the shipping sector in this technological development and is working with IBM to examine how blockchain could replace paper documentation. The goal is to streamline the supply chain, reduce time and costs, and enable more secure global trade. Three of its clients in Europe and the US are participating in Maersk's Global Trade Digitisation pilot. A beta version will be launched soon.

The panel answers questons from the floor

Sophie Gilder, Head of Blockchain for the Global Innovation Labs at the Commonwealth Bank, is the consummate expert in this field. She expanded on how the Maersk pilot echoed the learnings from the Commonwealth Bank's blockchain experiment last year.

"Working with Brighann Cotton and Wells Fargo, we undertook the world's first global trade transaction on blockchain between two independent banks. We built an unbroken digital thread between origin and destination to capture efficiencies by digitising the process and automating actions based on data."

Gilder added that bringing together transaction parties and siloed data to securely share information, really saves time and removes uncertainty. "Having one trusted document made it easy to reach agreement. Our experiment incorporated Internet of Things sensors. These provided information in real-time about the underlying cargo, connecting operational flows with financial and contract information."

It was acknowledged that there are still risks with digital technologies but paper isn't fraud-proof either, and replacing paper with a trusted digital record lowers risk and reduces fraud. Combined with the live information, there's greater transparency and certainty.

The Commonwealth Bank has approached blockchain by forming a minimum viable ecosystem to solve a particular pain point. If people can see an immediate benefit, the business case is proved instantly. This 'do it small and do it today' methodology of having a small section working well, is worth 1,000 meetings. This approach is working well, to prove it works, get it operational and continue to improve. And it suits the shipping industry, where the key challenge is the number of participants and touch points involved.

Another challenge is that technological advancement across countries is at different levels of maturity. This necessitates a period of hybrid technology, hence the need to ensure that blockchain prototypes can 'speak' with other systems.

Maersk's biggest customers and European industry groups are now approaching governments and authorities about what needs to change, and urging them to work together on blockchain solutions.

Faster and easier

Blockchain has been described as an Internet of Value. Today, payment rails are completely separate from ownership registers. Blockchain brings together the digital asset token and the payment token. It enables seamless transaction settlement in seconds.

Questions from the audience brought out further detailed information but Gerard Morrison simplified the concept, "The blockchain does things in a far faster and easier way. The implications and the possibilities are infinite and no-one has been able to quantify the limits."

Attendees at SAL Blockchain Breakfast were captivated by the presentations

THE SCENE

Grant Gilfillan, CEO, Port Authority of New South Wales, delivers Minister Pavey's address

Hussein Chahine, Seaway; Paul Nicholson, Castellino Marine; David Salmon and Wilson Rojas, Seaway

Sydney

SAL New South Wales Parliment House Lunch on Thursday, 15 June 2017, was attended by 210 guests from the shipping industry.

The Hon Melinda Pavey MP, Minister for Roads, Maritime and Freight was unable to attend as our guest speaker and had prepared a video message and a speech, which was delivered by Grant Gilfillan, CEO, Port Authority of New South Wales. We also heard from Marika Calfas, CEO, NSW Ports.

This well-attended event was sponsored by NSW Ports and Port Authority of New South Wales.

Nic Van der Reyden, Nick Watts, Lucy Hee and Amber Albrecht, Holman Fenwick Willan

Marika Calfas, NSW Ports

Brendan Zhang and David Salmon, Seaway; Nicholas Long and Mustafa Koksur, Maersk

Wayne Alpen, LINX; Ian Smith, Australian Explosive Technology Group; Tim Ryan and Peter Rous, LINX

Ken Fitzpatrick, Asiaworld; Danella Wilmshurst, Thomas Miller Law

Brisbane

On 8 June, 90 SAL Queensland members and industry representatives met for a luncheon at the Colmslie Hotel and Conference Centre, at which Denis Gallagher was guest speaker.

Denis has a lifetime devotion to shipping, commencing as a cadet with Blue Funnel Line in 1957 and finally as a ship owner of 12 vessels in world trade. Ship's master, ANL terminal manager and pioneer of trades around Oceania, Denis is the author of the book 'Put not your trust in Princes', which faithfully records the demise of the Blue Funnel Line.

His luncheon address, 'The Sea: its people, its challenges and its opportunities', gave the audience much to reflect upon.

Steve Pelecanos, Chris Peters and Steve Tzaneros

Geoff Dalgliesh, Michael Stewart and Denis Gallagher

Denis Gallagher addresses the luncheon

Newcastle

Shipping Australia's Biennial Newcastle Luncheon was held on Friday, 25 August 2017, at the Newcastle Club. Guest speakers included Geoff Crowe, CEO, Port of Newcastle and Aaron Johansen, CEO, Newcastle Coal Infrastructure Group.

This sold-out event was attended by 130 guests, and proudly sponsored by Port of Newcastle, Port Authority of New South Wales and Newcastle Stevedores.

Geoff Crowe, Port of Newcastle

Jennifer Attard, Transport for NSW; Aaron Johansen, Newcastle Coal Infrastructure Group

Simon Gelder, Port of Newcastle; Michael Kilgariff, Australian Logistics Council

Selina Jenkins, Port Authority of New South Wales; Marcus John, Newcastle Stevedores; Grant Gilfillan, Port Authority of New South Wales

Damon Barret, Russel Merrick and Steve Philips, Qube

Alexis Cahalan and Tim Rout, Thomas Miller Law; Alison Bonsor and Matthew Wood, FP Marine

Shipping Australia hosts 'Safe Ports' breakfast seminar

By MELWYN NORONHA, general manager technical services and industry policy, Shipping Australia Limited

At one of SAL's Maritime Legal Steering Group meetings the issue of what constituted a "safe port" was raised and discussed.

Should shipping lines be aware of the risk mitigation measures that ports may have (or not have) for emergencies such as weather-related events and, are these being adequately addressed?

Acknowledged as a complex one, it warranted further discussion and as a result Shipping Australia and the Australian Maritime and Transport Arbitration Commission organised a breakfast seminar on 27 June 2017.

A panel of speakers led the discussion with short presentations on various aspects of the issue which included:

- Ship owner, broker and Master's expectation of a Safe Port;
- How a Port Authority provides and keeps its port safe;
- An Insured View of a Safe Port; and
- What constitutes a Safe Port? – A Legal Perspective

Comprising the panel were two lawyers and insurance experts, Marcus John of Thomas Miller and Angus Stuart of New Chambers. Also on-board were Asiaworld Shipping director, Ken Fitzpatrick and Sydney's Harbour Master, Philip Holliday.

With an attendance of over fifty, participants included mainly lawyers, port authority, and port and tug operator personnel.

SAL Chief Executive Rod Nairn said the morning discussion was aimed at starting a conversation on safe ports issues and should not to be confused with port security. He said concerns had been raised about what were the responsibilities of ports and what were the responsibilities and obligations of ships that visited.

Mr Fitzpatrick detailed the definition of a safe port:

"A port which during the relevant period of time the ship can reach, enter, remain at and depart from without, in the absence of some abnormal occurrence, being exposed to danger which cannot be avoided with navigation and seamanship".

He said that the most important thing out of there is the idea of "abnormal occurrence" and other factors, such as weather, played a part.

Mr Holliday detailed measures the Port Authority of New South Wales takes to ensure its ports are safe, including highly detailed bathymetric surveys, simulation practice programs and systems to mitigate risks posed by extreme weather.

The two legal minds on the panel explained what the law had to say about safe ports, and also the insurance issues that arise with the issue. Mr John said the term 'safe port' wasn't really terminology ports used. He said that when ports are exposed, they're exposed for negligence, and in terms of charter party "safe port warranties" it does not really feed into ports directly.

Mr Stuart made a detailed case study of the capesize bulker *Ocean Victory*, which ran aground on a breakwater as it was leaving Japan's Kashima Port in 2006.

It was found the incident was caused by a combination of swell and high winds. This combination, in turn, was found to be an 'abnormal occurrence', and therefore the port was still a 'safe port'.

This seminar was helpful as it assisted in bringing to fore aspects of safe ports but didn't solve all the related issues.

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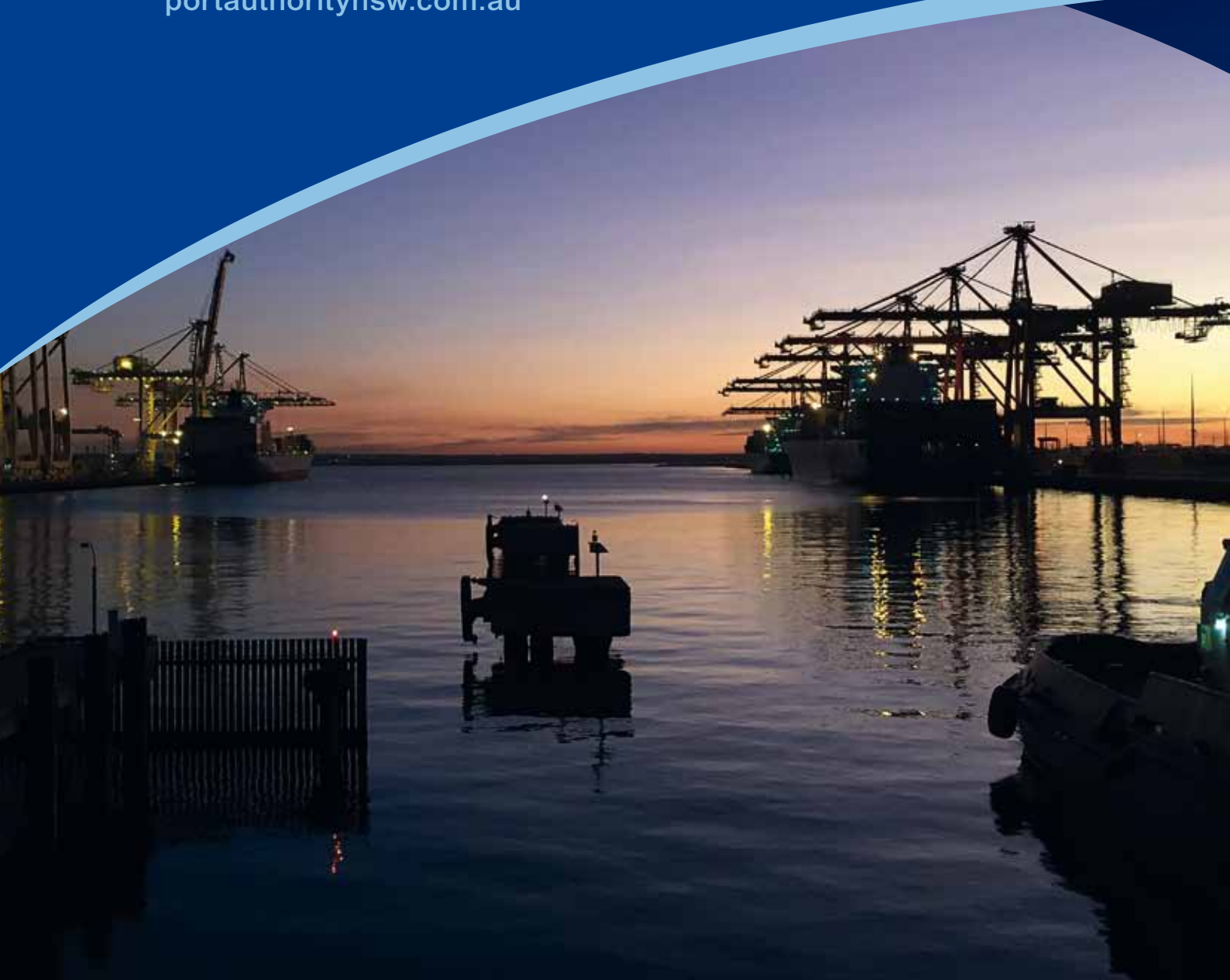


Port costs update

With consecutive record throughputs driving revenues, the port of Port Hedland has continued to extend its 2014 tariffs without increase. The Pilbara Ports Authority credits the port's growing productivity to the establishment of an Integrated Marine Operations Centre and the outcomes of the Channel Risk Optimisation Project, which have enabled the port to handle larger ships by incorporating real time tidal monitoring, at multiple channel locations, into their under-keel clearance system.

The Port of Melbourne can claim this year's only tariff reduction, which is for wharfage of export full containers by Port of Melbourne. This is down by a further 2.5 per cent after a similar reduction last year. This pricing trend is an indication the port is determined to remain the country's premier container throughput port.

These productive examples of implementing innovation and setting competitive prices to leverage the economies of scale offered by shipping are very welcomed by customers, who can share the benefits of increased efficiency and reduced costs. Measures to increase revenue which are not productivity focused, or which are based on leveraging a monopoly position, are less welcome.

It was noted in last year's summary of port price increases that rate increases for towage and pilotage were generally higher than all other port tariff increases. This trend has continued. The annual rate increases for these services provided by Svitzer and Marine Safety Queensland in Brisbane since 2013, are presented in the graph ('Port of Brisbane Towage and Pilotage Rate Increases').

With the exceptions of the Port Access Charge applied to motor vehicles and the harbour dues on refrigerated containers last year, the Port of Brisbane's rate increases have aligned with the annual (March) consumer price index (CPI) for Brisbane, for the last five years. For three of the last five years increases were slightly below CPI and two of the last five were slightly above CPI. In contrast, for four of the last five years towage and pilotage rate increases have been close to and more than double Brisbane CPI, the one exception being in 2014 when CPI was 3.2 per cent. The graph also shows that a halving in the cost of marine gasoil since 2014, has not tempered the magnitude of rate increases. For these services to normalise rate increases it appears that productivity measures of greater impact than a halving of the cost of fuel will be required, as lower fuel costs have been a factor in recent years, yet rate increases above CPI have continued.

For Svitzer (globally) one innovative measure on the horizon is the use of remotely operated tugs. In June, Svitzer and Rolls-Royce announced successful trials of this technology in Denmark. However, Svitzer have been quick to note that this will not impact on crew employment in Australia. Nevertheless, progressing towards regulatory compliance, this innovation promises to improve crew safety and the efficiency of towage operations for customers. In the short term, Engage Marine is a new entrant in Australia who have announced a unique management model, which has the potential to increase the competitive landscape for towage.

For Marine Safety Queensland, pilotage is a statutory service with rates set by State government. The reasoning for consistently raising rates by more than CPI is unclear, while efficiency measures appear to be limited to the imposition of additional charges for ship delays and service cancellations.

The largest single rate increase in this year's table is for the wharfage of imported project cargo in Port of Townsville. The reason for this increase was the consolidation of discrepancies among the rates of various break bulk cargoes. In a similar rate consolidation measure last year, Port Botany aligned the wharfage rate for transhipped containers with that of export full containers. The fact that last year's 15 per cent rate increase did not reduce the number of containers transhipped in Port Botany last year, is an indication of inflexible demand, the market power of our geographically separated ports and the cost of overland transport options.

Port of Brisbane Towage and Pilotage Rate Increases and Marine Gasoil Price

Port	Service	2017	2016	2015	2014	2013
Albany	Navigation Fee	0.5%	2.5%	2.6%	1.9%	2.9%
	Berth Hire	0.5%	2.4%	2.6%	2.0%	2.8%
	Infrastructure Fee	0%	2.5%	2.7%	2.1%	2.8%
	Pilotage	0.5%	2.5%	2.6%	2.0%	2.8%
Brisbane	Wharfage	1.6%	1.7%	2.0%	2.8%	2.3%
	Harbour Dues (Reefers)	1.6%	20%	2.0%	2.8%	2.5%
	Port Access Charge (Motor vehicles)	5.9%	6.3%	6.7%	7.7%	7.7%
	Berth Fisherman Island	1.6%	1.7%	2.0%	2.8%	2.5%
	Brisbane	1.8%	1.8%	2.4%	3.1%	2.6%
	Towage	3.5%	5.0%	3.5%	5.0%	3.5%
	Pilotage all Services	3.5%	3.5%	3.5%	3.5%	4.0%
	Vessel Utility Charge	1.6%	1.9%	2.2%	3.0%	2.5%
	Transfere Bulk Liquid App. Fee	1.6%	1.7%	2.0%	2.8%	2.5%
Darwin	Wharfage	1.1%	0%	31%	3.6%	-57%
	Berthage	1.1%	0%	16%	1.8%	5.8%
	Pilotage	1.1%	0%	0.8%	3.6%	0.0%
	Port Dues	0.8%	0%	0.8%	3.5%	5.0%
Flinders (SA Ports)	Cargo Service Charge	2.2%	1.0%	1.5%	2.9%	2.9%
	Flinders	3.3%	2.0%	3.9%	2.9%	2.9%
	(SA Ports)	3.3%	1.9%	2.7%	3.9%	3.2%
	Pilot Charges	4.1%	4.5%	5.1%	7.5%	3.8%
Fremantle	Wharfage & Berth Hire	2.5%	2.0%	2.5%	5.0%	5.0%
	Tonnage	2.5%	2.0%	2.5%	5.0%	5.0%
	Fremantle	2.5%	2.0%	2.5%	7.0%	5.0%
	Dynamic Under Keel Clearance	2.5%	2.0%	2.5%	33%	5.0%
	Port Improvement Fee	2.5%	2.0%	2.5%	5.0%	5.0%
Gladstone	Harbour Dues	1.9%	1.7%	2.5%	3.1%	4.4%
	Tonnage/Wharfage	1.9%	1.7%	2.9%	3.6%	4.8%
	Mooring Dues	3.0%	3.0%	4.0%	4.0%	6.5%
	Security Charge	1.8%	1.7%	2.5%	3.3%	4.3%
Mackay	Ship Charges	2.1%	3.0%	2.2%	3.0%	3.1%
	Cargo Charges	2.1%	4.2%	2.2%	5.8%	5.6%
	Service & Security Charges	2.0%	3.0%	2.3%	3.0%	3.8%
	Towage	11%	0%	-17%	5.0%	2.0%
Mid West Ports -Geraldton	Wharfage/Unit	3.0%	50%	5.2%	1.6%	3.0%
	Ship Charges - General	3.0%	80%	5.1%	1.9%	2.7%
		3.1%	32%	5.1%	2.5%	3.0%
	Berth Hire	3.0%	5.0%	5.1%	2.5%	10%
Newcastle	Wharfage	1.9%	4.0%	3.9%	2.6%	2.8%
	Navigation Services (90k GT)	1.6%	3.9%	24%	2.6%	2.8%
	Site Occupancy	1.7%	3.9%	3.9%	2.6%	2.8%
	Towage (average)	2.4%	11%	5.0%	5.0%	10%
Melbourne	Wharfage (Container Export)	-2.5%	-2.5%	0%	0.8%	5.2%
	Wharfage (Container Import)	2.1%	1.4%	2.7%	0.6%	5.3%
	Non Containerised/General Cargo	2.1%	1.3%	2.8%	0.7%	5.2%
	Motor Vehicles	2.3%	1.0%	2.7%	0.7%	4.9%
	Dry Bulk	1.9%	1.5%	2.6%	0.9%	4.8%
	Bulk Liquid	2.2%	1.4%	10%	10%	13%
	Channel Fees	2.1%	1.3%	2.7%	0.8%	4.9%
	Berth Hire	2.1%	1.3%	2.7%	0.7%	5.2%
	Wharf Access	2.9%	1.0%	2.0%	29%	4.1%
	Area Hire Yarraville	2.1%	1.3%	3.0%	0.8%	5.0%
	Towage	2.4%	6.8%	13%	8.0%	10%

Port Botany	Security	2.1%	1.1%	2.8%	0.8%	5.0%
	Pilotage	1.9%	1.2%	4.0%	4.0%	3.0%
	Wharfage (Container Export)	2.9%	3.1%	3.7%	11%	2.5%
	Wharfage (Container Local)	1.9%	2.0%	2.4%	15%	2.5%
	Wharfage (Container Transhipment)	1.9%	155%	2.4%	2.7%	2.5%
	Towage	2.4%	7.9%	3.5%	5.0%	3.5%
Port Hedland	Tonnage	0%	0%	0%	3.6%	5.0%
	Wharfage	0%	0%	0%	3.1%	5.0%
	Berthage	0%	0%	0%	3.0%	5.0%
	Temporary Storage	0%	0%	0%	3.2%	7.7%
Port Kembla	Wharfage (Non-container)	3.1%	2.9%	2.9%	5.6%	6.1%
	Wharfage (Container)	3.0%	3.0%	3.0%	21%	3.0%
	Site Occupancy	3.0%	3.0%	3.0%	3.0%	3.0%
	Navigation	1.7%	2.1%	2.5%	2.6%	3.0%
	Pilotage	3.5%	3.5%	4.7%	20%	2.9%
Portland	Port Tonnage	2.0%	2.9%	3.0%	4.0%	5.3%
	Wharfage (Container)	2.1%	5.7%	2.2%	3.7%	5.5%
	Berth Hire	2.9%	3.0%	3.1%	3.9%	5.3%
	Mooring	3.9%	3.9%	3.9%	4.0%	4.8%
	Pilotage	5.9%	3.9%	3.9%	4.0%	4.5%
	Towage	3.9%	3.0%	3.6%	4.4%	4.9%
Sydney	Navigation	3.7%	3.5%	4.7%	6.3%	5.8%
	Mooring	3.5%	3.5%	4.7%	9.6%	2.5%
	Site Occupancy	6.6%	2.7%	6.9%	11%	1.8%
	Pilotage	3.2%	2.7%	4.4%	9.7%	2.4%
Townsville	Cargo Charges	2.6%	2.5%	5.0%	5.5%	5.5%
	Project Cargo import	22.4%	2.5%	5.0%	5.3%	na
	Services to Ship Charges	1.0%	2.4%	0.4%	-8.5%	0%
	Towage	3.0%	3.0%	4.0%	4.2%	4.0%

What is an unsafe port?

By STUART HETHERINGTON, partner, Colin Biggers and Paisley, President Comité Maritime International

This issue usually arises in the context of charter parties, both time and voyage. For example: under the New York Produce Form the vessel is required to be employed "between safe port and/or ports …" in the various geographical locations then nominated. The "Gencon" charter refers to the chartered vessel proceeding to the loading port "or so near thereto as she may safely get" and uses the same words in relation to the discharging port, with no express safety warranty. There are conflicting authorities as to whether there is an implied warranty in such circumstances. An instructive Australian case is *Australian Wheat Board v Riordan Smith Line Limited (the "Houston City")* (1954) 91 CLR 233); which went on appeal from the High Court to the Privy Council.

The facts in that case were that the Australian Wheat Board chartered the "*Houston City*" in terms that it should proceed to one or two safe ports in Western Australia and there load a cargo of wheat in bulk. The ship was ordered to Geraldton where she proceeded to the number one grain berth in fine winter weather, which suddenly deteriorated. High winds caused the ship to range against the wharf causing damage to both the ship and the wharf. The owners alleged that the charterers were in breach of the charter in ordering the ship to an unsafe berth.

At first instance Wolff J held that the absence of the hauling-off buoy and waling-piece made it unsafe in weather which was normally to be expected during the winter months and the charterers were in breach of the charter, making the charterers liable to the shipowners for the damage sustained.

That decision was overturned on appeal in the High Court with Webb and Taylor J holding, in the majority, that there was no reason to set aside the first instance Judge's finding that the berth was unsafe. The next question was whether that made a charterer liable in damages for breach of contract. The first instance Judge had found that the charterer had warranted the safety of the berth. Their Honours in the majority did not agree with that view. Their reasons for allowing the appeal are found in the following paragraph:

"We have been unable to find any case where, in the circumstances such as the present, a charterer has been held or warrants the safety of a port nominated by him, or whether nomination of an unsafe loading port or berth pursuant to a charter party in the form of that which is before us has been held to constitute a breach of contract giving rise to damages where the master of the vessel has accepted the order and proceeded to the port and there sustained damage."

Their Honours accepted the observations of Greer LJ in the Lensen Shipping Company case (1935) 40 Com Cas 320, rather than those of Devlin J in Graces case (1950) 2KB 383, and held that "where under a charter party in the form of that which is before us an unsafe port or berth is nominated by the charterer, he does not, merely by reason of such nomination, become liable for damages sustained as a result of the Master proceeding to such unsafe port or berth."

In his dissent in the High Court, Dixon CJ identified two alternative views as to the legal consequences of the naming of an unsafe port or berth by a charterer. Having done so he went on to say:

"Of the two views I have described I think that which has the strongest support both in reason and in authority is that which interprets the restriction expressed in the words "safe port or safe wharf or berth" as imposing an obligation upon the charterer not to direct the ship to an unsafe port or wharf or berth, so that any loss caused by his doing so falls upon him."

Chief Justice Dixon's views were accepted in the Privy Council where the appeal from the High Court was allowed. The Privy Council held that the charterer's obligation under the charter party was to nominate a safe port and a safe wharf within that port; that the port nominated was unsafe at the time of nomination and remained unsafe until the damage occurred; that the Master did not act unreasonably in entering the port; and that the charterers were accordingly liable to the shipowners for the damage sustained.

An often repeated expression as to what constitutes a "safe port" is that of Sellers, LJ. in *Leeds Shipping v Societe Francaise Bunge (the "Eastern City")* (1958) 2 Lloyd's Rep 127 where his Lordship said:

"A port will not be safe unless, in the relevant period of time, the particular ship can reach it, use it and return from it without, in the absence of some ***abnormal occurrence****, being exposed to danger which cannot be avoided by good navigation and seamanship …"* (emphasis added)

In that case the Port was held to be unsafe because during winter it was exposed to southern southerly gales which could not be predicted and which were liable to cause the ship to drag her anchors in the unreliable holding ground on the restricted anchorage area.

The recent case of the "*Ocean Victory*" (2015) 1 Lloyd's Rep 381 highlights the factual and legal issues that can arise in relation to the safe port provisions in charter parties.

The bulk carrier "*Ocean Victory*" had been time chartered by the bareboat charterers, and then sub-time chartered pursuant to charter parties containing a safe port warranty by which the charterers had undertaken to trade the vessel between safe ports.

The vessel had been chartered to carry a cargo of iron ore from South Africa to Kashima in Japan where she had begun to discharge her cargo but had to stop due to strong winds and heavy rain. There was a considerable swell that affected the vessel's berth and gale force winds. The Master determined to leave the berth for open water and lost control while leaving the port and the vessel was driven back onto the breakwater wall and subsequently became a total loss.

Proceedings were commenced on behalf of the owners against the intermediate time charterer who then joined the subcharterers. The charterers both defended the matter on the basis that there had been an abnormal occurrence and that, even if the port was unsafe, the cause of the loss was the Master's navigational decision to leave the port, not the port's unsafety.

At first instance, Teare J held that there had been a breach of the safe port warranty. He rejected the "abnormal occurrence" defence and held that the combination of the two weather conditions, namely the phenomenon of swells and long waves and a very severe northerly gale, was not an abnormal occurrence, although the coincidence of the two conditions was rare; he also did not accept that the Master's navigation or decision was the cause of the casualty.

That decision was overturned on appeal. The critical question for the Court to determine was whether or not the first instance Judge had been correct to characterise the weather conditions as not being "an abnormal occurrence", which of course were the words used by Sellers LJ in the "Eastern City" quoted earlier in this article.

As part of the history of the port identified in the Court of Appeal's judgment it was noted that prior to this incident "there had been no history of incidents such as that which befell the vessel" on 24 October 2006. The judgment continued:

"Indeed the evidence demonstrated that the port safety record had been impeccable. No ship had ever broken free from her moorings at the port and there had never been an accident in the Kashima Fairway when vessels were departing, despite the facts that: it was the only way into, or out of, the port; that it was used by all ships including all Capsizes and VLCCs; and that in conditions of severe northerly gales, the Kashima Fairway could be unsafe for large vessels to navigate."

The Court of Appeal held that the Judge at first instance had adopted an incorrect approach. He had considered each of the individual component dangers that gave rise to the events in question and decided that each could not be said to be rare and both were attributes or characteristics of the port. He then compounded that error by concluding that even if the critical combination of those two events was rare, it was nonetheless a characteristic of the port and therefore not an "abnormal occurrence".

That decision has been upheld unanimously in the Supreme Court of the United Kingdom and the correctness of the approach taken in the "*Eastern City*", as elaborated in the later case of *The Evia* (No. 2) [1981] 2 Lloyds Rep 613, has been confirmed.

There was a second issue in the proceedings, which did not arise if there was no breach of the safe port undertaking, relating to the provisions for insurance in clause 12 of the BARECON 89. By a majority of three to two in the Supreme Court it was held that the BARECON demise charter excluded rights of recourse between owners and demise charterers, in favour of an insurance-funded solution.

The third issue again only arose in circumstances in which there was a breach of the safe port undertaking. On this issue, like the first issue, there was unanimity, with all judges holding that in such circumstances the charterers would not have been entitled to limit their liability and, in doing so, followed the Court of Appeal's decision in the *CMA Djakarta* in which David Steele J had upheld the shipowners' argument that the vessel cannot be both the victim and the perpetrator and that the "property" envisaged in the article of the Limitation Convention must be the property of a third party either on board the vessel, for example, the cargo, or external to the vessel.

There are some time charter party provisions which limit the charterers obligations. For example: Shelltime 4 requires charterers to "exercise due diligence to ensure that the vessel is only employed between and at safe ports" but then goes on to say that "charterers shall not be deemed to warrant the safety of any port "… except for "loss or damage caused by their failure to exercise due diligence".

In the case of the "*Saga Cob" (1992) 2 Lloyds Rep 545* the vessel was time chartered (under Shelltime 3 terms) to be employed in the Red Sea, the Gulf of Aden and East Africa, carrying clean petroleum products. The vessel called about 20 times at Massawa between January and August 1988 without any untoward consequences. There had in fact been no incidents between 31 May and 26 August.

On August 26 the vessel was attacked by armed boats of the Eritrean People's Liberation Front (EPLF).

The Court of Appeal reversed the first instance decision which had held that the port concerned "was a prospectively unsafe port on the ground that there was on that date a foreseeable risk of seaborne attack by the EPLF which, while not involving a high degree of risk, was a risk which was more than negligible". In the leading judgment in the Court of Appeal of Parker L.J., a test of failure to exercise due diligence was said to be whether "a reasonably careful charterer would on the facts known have concluded that the port was prospectively unsafe".

Parker L.J. concluded his judgment by saying:

"*… The question is whether the port is prospectively unsafe. One is considering whether the port should be regarded as unsafe by owners charterers or masters of vessels. It is accepted that this does not mean that it is unsafe unless shown to be absolutely safe. It will not, in circumstances such as the present, be regarded as unsafe unless the "political" risk is sufficient for a reasonable ship owner or master to decline to send or sail his vessel there. There is no evidence in the present case that this was so and subsequent history shows that Massawa was on August 26 1988 and for a long time thereafter not regarded as presenting any such risk.*"

How wheat has fed the world – the trajectory of Australia's wheat exports

BY DARREN ANDERSON, senior economist, Transport and Asset Sales, BIS Oxford Economics

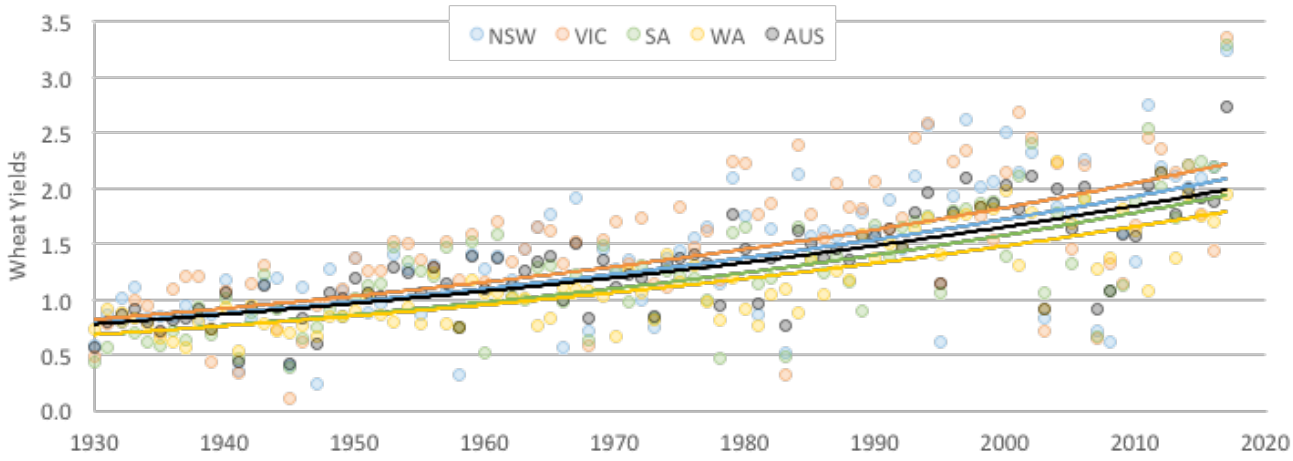
From the late 18th century, a great debate has been waged about the future of humanity and our ability to feed its growing masses. Rarely does this philosophical discussion ever spill over to the story of Australian wheat exports, but it really should, as the two are inextricably linked. We still see the remains of this debate when politicians wax lyrically about the need to green northern Australia (damming rivers and all that) to feed the world, but this rests on a selective reading of history.

In 1798, Thomas Malthus observed that since the beginning of time, mankind seemed to be in a state of continuous living on the edge, never being able to produce more food than was needed to meet what was demanded, and the world was doomed. The future, he feared, was one where the superior power of population is repressed and the actual population kept equal to the means of subsistence, by misery and vice.

> 'That population cannot increase without the means of subsistence is a proposition so evident that it needs no illustration.'
>
> *Thomas Malthus – An Essay on the Principle of Population – 1798*

When Malthus wrote, the population of the UK had just passed 10 million and wheat yields were about 20 bushels per acre (1.35 tonnes per hectare), and had actually been flat or falling over the preceding century (wars on the European continent had driven up the prices for wheat relative to the usual rotational crop, turnips, and farmers responded by expanding the area sown to wheat, despite depleting nutrients and reducing yields). Now, 219 years later, both population and wheat yields have increased more than six-fold (to 65 million and 8 tonnes per hectare respectively).

While we do not have the data to tell the same story for the entire world over the same period, we can talk about the last 50 years with some confidence. Area sown to wheat has been largely unchanged (fluctuating within a band of 200 to 240 million hectares) but production has climbed by an average of 2 per cent per annum, tracking global population over the same period. Incremental improvements in farming practices and improvements in crop breeding only explain a part of this, but much of the growth is instead linked to increases in fertiliser availability and its targeted application, which itself



isn't so much a story about the proliferation of the petrochemical industry but rather how foundation economics ties the two together.

Productivity is driven by demand

When population increases, demand for food products increase. Without an increase in supply, prices rise, all other things being equal, and the market responds by increasing the factors of production to increase supply. Machinery and equipment, labour, seeds, water, fertiliser and land are all part of this story. Each can be increased until the marginal cost times the marginal improvements in production match that of the marginal return on the harvest. As a result, we see fertiliser and rural land prices track wheat (but more generally food) prices and supply meeting demand.

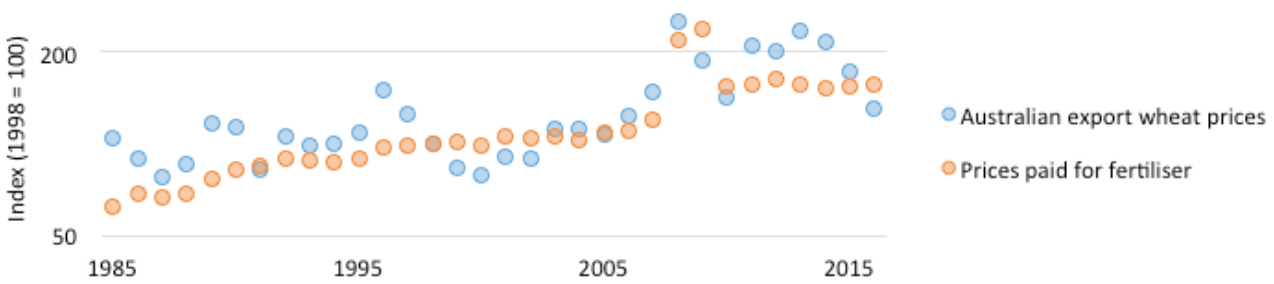
Arable land hasn't increased much since the last big waves of colonisation into Canada and Australia, in the late 1800s and early 1900s. The cost of labour skyrocketed, so the number of farmers fell. The return from irrigation tends to be better for thirst crops (fruit, rice, sugar, cotton), so wheat hasn't made much use of that. Crop rotations have not improved yield much since the widespread adaption of canola in the 1980s and 1990s. And so, it has been fertiliser and machinery and equipment that have been the most responsive, both of which have directly improved yields. We are able to see this reflected in the way in which prices for fertiliser have tended to grow in line with prices for wheat.

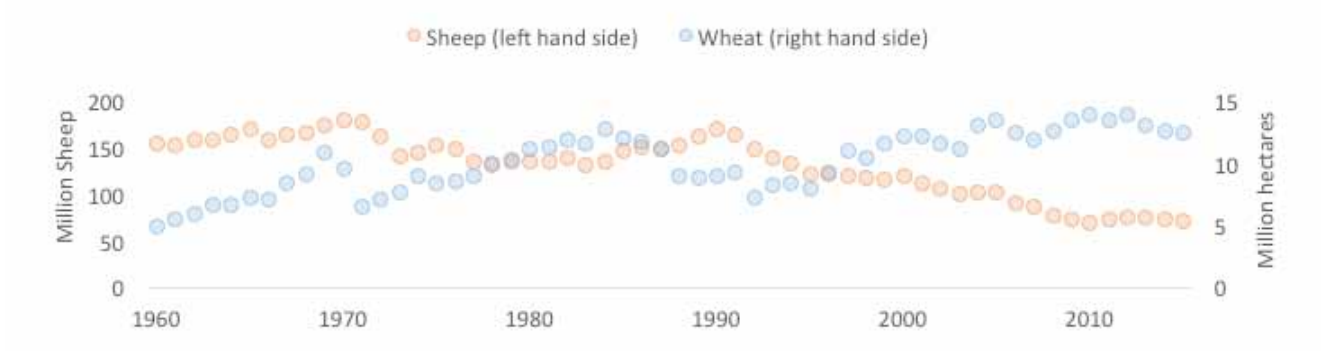
Sheep and wheat map, 1920

Australia's productivity profile

But here in Australia, there is no escaping the fact that it is a generally dry country, with highly variable rain patterns. We see this through not only highly variable yields, but also lower yields than in other major exporting countries. For most of the past century, yields have ticked up by an average of 1.1 per cent per annum.

Nevertheless, Australia has managed to increase wheat production, by





shifting away from sheep (numbers are now down almost 60 per cent from its 1971 peak) into the broad acre crops, into wheat, an easy transition to make in the sheep-wheat belts.

So what we are left with, is Australia's primary agricultural export (wheat) growing at about two per cent per annum (weather corrected) for the past 50 years, matching the underlying demand for the grain as population increases. However, this is unlikely to continue for the next half-century, as further declines in sheep are not able to replicate the increase in land available for cereal production.

Furthermore, the rate of population growth globally is slowing (current UN projections are about 1 per cent per annum for the next 50 years), and this in turn will slow the underlying requirements (barring a shift to or away from another food crop) for wheat itself. As a result, continued yield improvements of 1 per cent per annum for the next decade are all that is needed for Australia to maintain its share of the global export market (it has been holding at about 10 per cent since the 1960s), and accordingly, we would expect global demand for fertiliser (and likely imports into Australia) to move at similar rates.

The outlook for exports

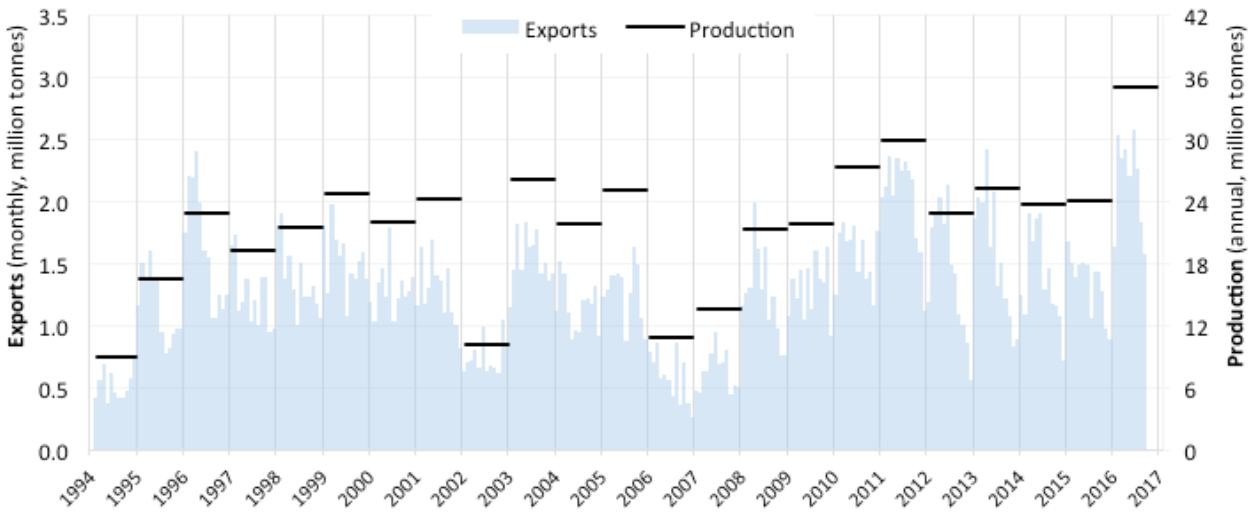
Within Australia, growth for the past several decades have been roughly balanced between exports and domestic consumption (human, industrial, seeds and livestock), and there is no evidence to suggest that we should see a dramatic shift in this over the coming decades. However, domestic consumption has tended to be smooth (at least compared to production), and changes in stocks reflect market prices (and the global supply and demand balance), which has left exports exposed to the greatest volatility.

Furthermore, the share of wheat exported by container has increased over the last decade from about 10 per cent in the early 2000s to as high as 20 per cent now, and container exports have been inherently less volatile than total exports on a month-to-month and year-to-year basis. This has meant that the bulk wheat export industry is experiencing unprecedented levels of volatility.

In 2017, record monthly exports were experienced at eight different ports (making up 91 per cent of exports). Peaks at the bulk ports (Fremantle, Adelaide, Port Kembla, Newcastle) were about four times the average for the decade, as opposed to two to three times the average for the container ports. But averages don't tell the whole story, while the highs are higher, the lows are lower. The September 2017 projection by ABARES was for a below average 2018 harvest, but further poor weather since then will likely result in a further downgrade. Bulk exporters will feel the brunt of this.

One good piece of news for bulk exporters is that the market share for containerised exports is unlikely to increase markedly again, as there is a significant shortage of food-grade 20-foot containers available, particularly in South Australia and Western Australia. Despite a structural imbalance where Australia imports more full boxes than it exports, these are overwhelmingly in the 40-foot container market, which are only very rarely used for grain exports. Current outlooks do not see any change in these dynamics.

Looking forward as the transport infrastructure from farm to customer prepares to meet the future task, planners would do well to recall the market forces that have allowed Australian wheat to feed the world, and how those forces will continue to influence the industry for decades to come.



Around the world in 300 days - 50 years on they'll do it all again!

By MARK SINCLAIR*

In March 1968, the Sunday Times Golden Globe Race was announced – a race for the first to sail solo non-stop around the world. Next year, to commemorate the 50th anniversary, they will do it all again – with the same limitations in technology that existed in 1968, and one little, 34 foot, orange *Coconut* will fly the Australian flag.

Back in 1968 there was no entry fee, virtually no rules nor qualification requirements because most of those who become entrants were already well on the way with their planning to attempt this challenge anyway. By offering a trophy for the first person to sail solo non-stop around the world via the five great capes and another UK£5000 for the fastest time, the paper created an instant race and a great story to increase circulation.

Nine colourful characters with varying sailing skills headed off at various times in a strange collection of yachts. There was only one finisher – Robin Knox-Johnston and his 9.75 metre traditional ketch rigged double-ended yacht *Suhaili*, who at the start was considered the most unlikely boat and given no chance. The rest either sank, retired or committed suicide. French entrant Bernard Moitessier famously continued sailing his sturdy yacht *Joshua* rounded Cape Horn, then continued on for a second circuit of the Southern Ocean ending up in Tahiti to "save my soul" as he put it, rather than head back to civilization, a possible winner and certain fame. In a strange twist the most infamous, Donald Crowhurst who falsified his position reports, floated around the Atlantic and eventually committed suicide, has become the most celebrated with two feature movies describing his deception being released later this year.

To commemorate the 50th anniversary of Sir Robin Knox-Johnston's victory in the original Sunday Times Golden Globe solo non-stop round the world Race back in 1968 – 1969, the race will be rerun in 2018. On 14 June 2018 it is planned the skippers will join hundreds of other yachts in Falmouth Harbour for a sail-past salute to Sir Robin. Other historic yachts joining the commemoration include Sir Francis Chichester's famous *Gipsy Moth IV*, Sir Alec Rose's *Lively Lady*, a replica of Sir Chay Blyth's original Golden Globe race yacht *Dytiscus III* and *Joshua*, which Frenchman Bernard Moitessier sailed in the original Sunday Times Race. The Golden Globe yachts and historic fleet will then take part in a charity race from Falmouth to Les Sables d'Olonne in France, the home of the famous Vendee Globe yacht race. This race, the SITraN (Sheffield Institute for Translational Neuroscience) Challenge, will raise funds and improve awareness of this organisation. SITraN is the nominated charity for the GGR and is one of the world leading centres for research

Sir Robin Knox-Johnston gives the author a few tips

Coconut testing storm sails

into Motor Neurone, Alzheimer's and Parkinson's Disease. From basic neuroscience research to novel therapies and clinical trials, their aim is to improve the lives of patients with neurodegenerative disorders and their families worldwide. These diseases are affecting more and more people.

Like the original Sunday Times event, the 2018 Golden Globe Race is very simple. Depart Les Sables d'Olonne on 1 July 2018 and sail solo, non-stop around the world, via the five Great Capes and return to Les Sables d'Olonne. Entrants are limited to use the same type of yachts and equipment that were available to Robin in that first race. That means sailing without modern technology or benefit of satellite based navigation aids. To create a level playing field, competitors must sail in GRP production boats between 32 feet and 36 feet overall (9.75 – 10.97 metres), designed prior to 1988 and having a full-length keel with rudder attached to their trailing edge, similar in concept to Robin's 32 foot vessel *Suhaili*'. The approved list of designs includes: *Westsail 32, Tradewind 35, Saga 34, Saltram 36, Vancouver 32 & 34, OE 32, Eric (sistership to Suhaili), Aries 32, Baba 35, Biscay 36, Bowman 36, Cape Dory 36, Nicholson 32 MKX-XI, Rustler 36, Endurance 35, Gaia 36, Hans Christian 33T, Tashiba 36, Cabo Rico 34, Hinckley Pilot 35, Lello 34 and Gale Force 34.*

The following equipment is not allowed: GPS, radar, AIS, chart plotters and electronic charts, electronic wind instruments, electric auto pilots, electronic log, mobile phone, iPhone, iPod, Kindle or any computer based device, CD players, electronic watches/clocks, video cameras and electronic digital cameras, satellite equipment of any kind, digital binoculars, pocket scientific calculators, water maker, carbon fibre, spectra, Kevlar, vectron, any high-tech materials, rod rigging etc.

The current list of entrants has dwindled to 25; there is now no waitlist and new applicants can join the race, if they are quick. There are now two women in the race: Susie Goodall (UK) and Izabel Pimentel (Brazil). There are currently two Australian entries. Kevin Farebrother is sailing in a Tradewind 35, *Blue Heels*, and recently sailed her from Sydney to Perth (north about). Kevin has summited Mount Everest on three occasions. The other is the author, Mark Sinclair, who is preparing *Coconut*, a Lello 34, at RSAYS.

The Lello 34 was designed in South Africa by Brian Lello; it is thought this occurred in approximately 1966 in preparation for the first Cape to Rio Race in 1971. It is a strong, seaworthy design, with a narrow beam of 2.9 metres, a traditional long keel and a draft of 1.9 metres. Originally named *Windy Lou, Coconut* was built in Durban, South Africa in 1981. Documentation that came with *Coconut* indicates she circumnavigated the globe in the late 1980s, including cruising in the Mediterranean, crossing the North Atlantic and transiting the Panama Canal, cruising the Pacific Islands, including French Polynesia and Fiji, and returning to South Africa. More recently, she sailed south towards Kerguelen Island and visited Madagascar. There is also a video on YouTube which shows *Coconut* sailing in the Roaring 40s from Amsterdam Island to Albany in 2011. I was impressed and purchased her for the race.

July this year marked the first anniversary of purchasing *Coconut* for the 2018 Golden Globe Race. In this 12 month period, a major refit was conducted. This included four months where *Coconut* was out of the water for work on the hull and mast. *Coconut* was re-launched in early December and preparations have continued and systems have been tested on a number of day-sails in Gulf St Vincent.

Major structural work includes inserting hanging knees in the saloon to strengthen the hull to deck join, strengthening the bulkhead at the forward end of the main saloon and

Navigation by sextant is the only option

improving watertight integrity with a watertight door, and removing the anchor and chain and inserting floatation in the chain locker forward of the collision bulkhead. The hull has been strengthened amidships and new chainplates inserted. A new ocean rated forward hatch is installed, which can be dogged down or opened from either side. New polycarbonate windows are inserted in the main cabin and in the rebuilt doghouse.

The mast was lowered and all fittings removed. Four metre long side sections from an old mast were cut out and riveted between the deck and the lower spreaders for added lateral strength. A new masthead fitting is manufactured and welded in. The mast has been upgraded to two spreaders, and new spreaders and spreader attachments manufactured. New shroud attachments, outlets and sheathes for halyards and a new gooseneck are designed and built. New headsail furlers and sheet tracks are installed for the jib and staysail. Sections of aluminium were purchased to build a new boom and two new spinnaker poles. New sails are also constructed: light and heavy mainsail and storm trysail, yankee, No. 1 genoa and No. 2/3 headsail, No. 4 staysail (x2) and storm jib; a new asymmetrical kite is made and a second-hand full spinnaker purchased.

Watertight door between main saloon and forward compartment

The mast steps for going aloft are strengthened with a strut – the previous ones were not strong enough and bent under my weight. A specially designed sail bag is constructed for the storm trysail for rapid deployment up its separate track on the mast. All halyards now lead back to the new doghouse to minimise time spent on the foredeck, which will improve safety. A new pulpit, pushpit and solid guardrails, at a height of 80 centimetres, are fitted. Heavy sampson posts and fairleads from which to tow warps in the event of heavy seas are manufactured and are fitted to the quarters. An emergency rudder is manufactured to operate over the transom without impacting the Aries wind wave; the rudder blade deploys from the horizontal to the vertical position from within a cassette and then locks down into place, which enables it to be quickly fitted in a seaway. Companionway coaming is designed to provide additional protection from seas flooding the cockpit making their way down below.

The engine, an original Farymann 22 HP diesel, is retained. The race rules limit the amount of fuel that can be carried to 150 litres, so the engine is there for emergency only. The original engine manuals look like ancient manuscripts and have only just stood the test of time. The existing fuel tank is removed from forward of the main bulkhead as it obstructed the new watertight door and a new fuel tank has been fabricated to fit at the bottom of the quarter berth. The injectors are refurbished, the cylinder rings and valve guides replaced, and the valves and cylinder head refurbished.

Old wiring was removed and *Coconut* is rewired with new batteries sited above the waterline. This includes cabin lighting, selectable white by day and red by night to preserve night vision; navigation lights and foredeck lighting have also been installed. An Echomax Active XS dual band radar target enhancer is fitted to the backstay bridle and a bracket is fitted to the front of the mast to mount an Echomax EM230 passive radar reflector and light to illuminate the foredeck. New tricolour, anchor and windex illumination lights are fitted at the masthead and the mast was rewired. The VHF has been set to work with an aerial at the top of the mast and a secondary aerial on the pushpit for redundancy, selectable down below by changeover switch. An HF transceiver has been installed with a backstay antenna and, if the mast is lost, an emergency whip aerial can be screwed into the deck-fitting in the stern. An active HF receiver antenna is mounted on the pushpit for the receiver in the cabin. Engine gauges are installed and three electric bilge pumps are fitted, two in the main cabin and one up forward behind the watertight door. Flexible solar panels are fixed to the doghouse and cabin top to deliver up to a total of 360W of power; it is not intended to carry a wind generator as these may be less reliable in a race of this type. Portable communications equipment has also been obtained including VHF and air band transceivers.

As a retro race all navigation will be by traditional means. A Walker Trailing log has been generously loaned by Garry Fielder from the Grab Hopper Dredge, *Andrew Wilson*. A Radio Direction Finder (RDF) is refurbished. Time keeping will be provided by a 1904 Waltham 8-day chronometer and 1946 Hamilton deck watch. Sextant mirrors have been resilvered. I still need to resurrect my 35 millimetre camera and film, find a Super8 camera for video and learn how to use it, and resurrect a cassette player from the shed. I finally have a use for those original Beatles cassettes in the shed, even if the sound quality may have deteriorated over the years!

By July this year, work progressed to the stage where it was timely for a more thorough shakedown sail to evaluate readiness. After a long period of settled weather in South Australia, which extended to the end of June, the weather became more boisterous. This presented a problem; if I was to run down the coast to Portland or King Island, it could be very difficult to get back to Adelaide to continue preparations. I adopted a more conservative plan to head down Gulf St Vincent and west through Investigator Strait, then southwest into the Southern Ocean, a run to the east passing approximately 50 nautical miles south of Kangaroo

Island, then head back up to Victor Harbor and through Backstairs Passage, sail up to Edithburgh and then back across to Adelaide. By adopting this plan, I would be able to keep *Coconut* close to Adelaide to continue preparations for the race. During a week at sea, I covered about 700 nautical miles in one large lap of Kangaroo Island.

To make the test as thorough as possible, the shakedown was conducted under similar rules to the Golden Globe Race: I sailed without GPS, digital watch, calculator, electronic autopilot or any other equipment other than safety equipment allowed under the rules. I did make one exception and took my iPhone to take photos and video and upload these to *Coconut*'s Facebook page to share the experience. I headed out with my sextant, chronometer, magnetic compass, Walker trailing log, paper charts, parallel ruler, Nautical Almanac and Norries Tables. This was to be a shakedown cruise for me as much as for *Coconut*.

During the shakedown, I found a number of things worked really well. The doghouse and companionway coaming provided a secure and sheltered seating position behind the dodger. Running the halyards back to the cockpit enabled me to reef and un-reef the mainsail on all points of sailing without going forward. The No. 3 headsail and staysail are a great combination in strong winds. I also tested the emergency rudder, deploying it off Edithburgh and sailing across Gulf St Vincent to Adelaide Outer Harbor, and I also practiced towing warps while running downwind with the storm jib sheeted amidships. Despite it being the middle of winter with low sun angles, the solar panels kept all the batteries fully charged. The Echomax radar transponder also worked really well alerting me when large shipping was in the vicinity.

There were many lessons learned. Dedicated storage in the main saloon was inadequate and the lee cloths were not high enough. Storage in the forward cabin was not secure, and in heavy weather items fell against the back of the watertight door preventing it from opening. In the cockpit, the double main sheets were often fouled and the staysail sheets fouled the life raft when coming about. The headsail pre-feeder was inadequate and I ripped sails when hoisting. A bolt fell out of the leg of the self-steering and, although it was fitted with a recovery line, I did not carry spare bolts. The captive nuts on the emergency rudder were not secure enough and I did not have spares. The engine remained difficult to start in cold weather and the scaling on the power monitoring system was incorrect.

Sea trials essential to identify weaknesses

Since returning from the shakedown, a number of improvements have been made: Additional shelving is now installed on the port side. Dedicated storage for the chronometer and deck watch has been fitted. Additional canvas bags have been installed in the cockpit to secure the main sheets. Additional grab rails have been fitted on the doghouse and on the foredeck. Locking nuts have been fitted to the headsail tracks. Diagonal webbing has been rigged across the life raft to prevent the staysail sheets from fouling. Pad eyes have been fitted to the deck to better secure the lazarette. Positive retainers have been fitted to the floorboards and catches fitted on all lockers. The captive nuts on the emergency rudder have been strengthened, and spare bolts with tee pieces welded to the heads have been manufactured. The No. 2 headsail has been repaired, additional pre-feeders fitted and the luff of the storm jib extended to prevent halyard wrap between the head of the sail and the top of the furler. A spare staysail is made, which can also substitute as a No. 4 headsail, and a short spinnaker pole manufactured to boom out the staysail when running. The bunk cushions are being replaced, lee cloths extended and canvas hold-all bags installed in the forward cabin. The solar-charging monitoring system has been recalibrated and now appears to read correctly. Positive retainers are also being fitted to the timber hatch over the engine so it remains in place. More warps will be carried to tow astern in heavy weather and two small car tyres to act as drogues.

The 2018 Golden Globe Race starts on 1 July, which is now just 9 months away. How do you participate in an around the world yacht race which starts in Europe with an Australian registered yacht? With the help of Shipping Australia's member lines of course. Even boats have to be moved by ship!

The current plan is to transport *Coconut* to London by sea and onto Plymouth by road. *Coconut* will be slipped at Royal South Australia Yacht Squadron in early November for preparation for transportation.

**Mark Sinclair is a former Royal Australian Navy Commander and a hydrographer. He has ocean sailing experience both solo and crewed, and extensive sea-time in large and small vessels. Mark is currently the hydrographic services director, Asia-Pacific, Fugro.*

The future is now - The world's first remotely operated commercial vessel

By A SPECIAL CORRESPONDENT

There are many small, remote controlled and even autonomous vessels now being used for scientific data gathering and the IMO is studying what regulatory changes are required to allow unmanned cargo ships to become a reality. But earlier this year, Rolls-Royce and Svitzer teamed up to successfully demonstrate the world's first remotely operated commercial vessel. The companies have also signed an agreement to continue their cooperation to test remote and autonomous operations for vessels which will include: autonomous navigation, situational awareness, communications and a remote control centre.

In Copenhagen harbour, Denmark one of Svitzer´s tugs, the 28 metre long Svitzer Hermod, safely conducted a number of remotely controlled manoeuvres. From the quayside in Copenhagen harbour the vessel's captain, stationed at the vessel's remote base at Svitzer headquarters, berthed the vessel alongside the quay, undocked,

The Svitzer tug Hermod was specially modified for remote control operation

turned 3600, and piloted it to the Svitzer HQ, before berthing again. To ensure safety in the event of a system failure, a fully qualified captain and crew remained on board throughout the demonstration, they were not needed.

The Svitzer Hermod, a Robert Allan ship design, was built in Turkey at the Sanmar yard in 2016. It is equipped with a Rolls-Royce Dynamic Positioning System, which is the key link to the remote-controlled system. The vessel is also equipped with a pair of MTU 16V4000 M63 diesel engines from Rolls-Royce, each rated 2000 kW at 1800 rpm.

The vessel also features a range of sensors which combine different data inputs using advanced software to give the captain an enhanced understanding of the vessel and its surroundings. The data is transmitted reliably and securely to a Remote Operating Centre from where the Captain controls the vessel.

The Remote Operating Centre was designed to redefine the way in which vessels are controlled. Instead of copying existing wheelhouse design the ROC used input from experienced captains to place the different system components in the optimum place to give the master confidence and control. The aim is to create a future-proof standard for the control of vessels remotely.

To oversight safety and certification a representative of Lloyd's Register was part of the development team. Lloyds Register has already produced their Cyber-Enabled Ships ShipRight Procedure guidance for how marine autonomous operations can be conducted which supported the task of monitoring the safe implementation of remote technologies in a practical marine context.

This successful demonstration is clearly another step towards the eventual introduction of fully autonomous commercial and cargo vessels.

Multiple display screens at Svitzer's Remote Operating Centre give the tug master confidence and control Images: rolls-royceplc

Green shipping focus continues at IMO

By MELWYN NORONHA, general manager, technical services and industry policy, Shipping Australia Limited

The July session of IMO's Marine Environment Protection Committee (MEPC 71) was a significant one, as it reached agreement on key issues relating to the marine environment.

Ballast Water Convention

The International Maritime Organization Ballast Water Management Convention entered into force on 8 September 2017.

The shipping industry will collectively need to spend around US$100 billion in order to install the new ballast water treatment systems that will be required by law.

In October 2016, following a major industry campaign over several years, the IMO Marine Environment Protection Committee finally adopted revised and more robust type-approval standards to be included in, what will soon become, a mandatory Code for Approval of Ballast Water Management Systems – the previous 'G8' Guidelines having been found by shipowners to be inadequate in a number of key areas. IMO has recommended that administrations apply these revised standards as soon as possible. However, they will not become mandatory for new system approvals until 28 October 2018, and only systems being installed after October 2020 will be required to have been approved in accordance with the new code.

At MEPC 71 a decision was made to adjust the implementation dates of the Convention. This was a compromise, with ships constructed after 8 September 2017 required to comply on delivery, while existing ships in general must comply by their first International Oil Pollution Prevention renewal survey, after 8 September 2019. Whilst the long-awaited agreement will have global impact, it provides certainty to the maritime community regarding the mandatory compliance dates for treatment of ballast water discharge.

Shipowners, equipment manufacturers and governments are called upon to co-operate to ensure that proper implementation of this significant new regulatory regime will deliver maximum environment benefit.

Shipping companies are advised that they should make it clear to equipment manufacturers they will only consider fitting treatment systems which have been certified in accordance with the revised IMO type-approval standards adopted in 2016, even though this is not yet a mandatory requirement.

The Biosecurity Amendment (Ballast Water and Other Measures) Act 2017 brings Australia into line with the International Convention for the Control and Management of Ships' Ballast Water and Sediments. More information can be found at www.agriculture.gov.au/ballast.

The road to reaching agreement on implementation has been a long and arduous process, and the shipping industry's intensive efforts to explain its implementation challenges to regulators will hopefully now have the clarity needed to get on with the job.

Further progress on greenhouse gas reduction strategy

Countermeasures against the greenhouse gas emissions from international shipping have been deliberated at IMO, and so far, the Energy Efficiency Design Index (EEDI) and the Ship Energy Efficiency

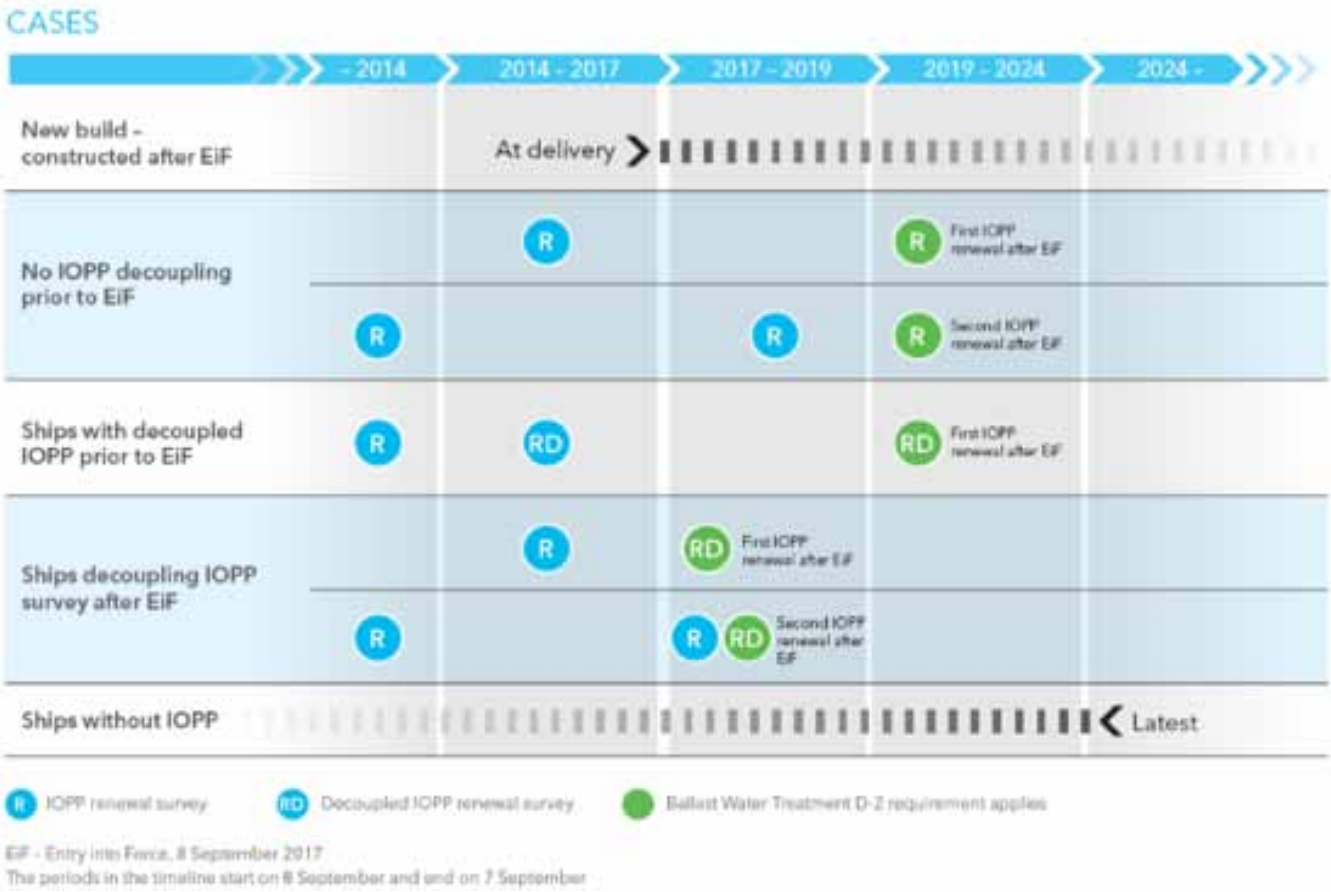


Image: DNV GL

Management Plan (SEEMP) have been implemented. At MEPC 70, amendments to MARPOL Annex VI, to include the data collection system for fuel consumption of ships, were adopted as a further measure to improve ship energy efficiency.

The Paris Agreement, adopted in December 2015 at the 21st Conference of the Parties of the UNFCCC (COP 21), set an ambitious target to limit the increase in the global average temperature to less than 2°C above pre-industrial levels. Though shipping was not specifically targeted, the shipping industry and the IMO have addressed the reduction of emissions from international shipping as an urgent matter. At MEPC 70, the roadmap for developing a comprehensive IMO strategy on reduction of greenhouse gas emissions from ships was approved. In accordance with this road map, initial IMO strategy for reduction of greenhouse gas emissions needs to be in place by MEPC 72, to be held in April 2018.

At IMO's MEPC 71 meeting a draft outline of the structure of the initial strategy was developed. The initial strategy will be composed of the following contents:

- emission scenarios from international shipping;
- level of ambition on reduction of GHG emissions;
- short, mid and long-term further measures with possible timelines; and
- periodic review of the strategy

As a work plan for the development of the strategy, intersessional meetings will be held in this autumn and in next spring to finalise the strategy at MEPC 72.

The shipping industry is leading the push and though no detailed decisions have yet been made at IMO, the industry's specific proposals have been well received by many governments among both developed and developing nations.

There is generally willingness on all sides to move forward with these at the next IMO intersessional strategy working group in October. The IMO has made a good start on the development of a CO2 reduction strategy which it is confident will match the ambition of the Paris Agreement on climate change.

Sulphur content of fuel

At MEPC 70, it was agreed to implement the global 0.5 per cent sulphur limit from 2020. At MEPC 71 in July concerns on the global availability of low sulphur fuel lead to additional measures to promote an appropriate implementation of the global 0.5 per cent sulphur were considered. It was agreed that the consideration on this matter will be continued at the Sub-Committee on Pollution Prevention and Response, and the completion of this work item should be in 2019. In the meantime, sectors of the shipping industry are already looking towards cleaner fuel solutions with LNG being considered to power car carriers and container vessels.

Australian National Maritime Museum opens the **BOX**!

'CONTAINER – the box that changed the world' is an exciting new temporaryand travelling exhibition at the Australian National Maritime Museum. Housed entirely within specially modified 20-foot shipping containers, the exhibition quite literally takes visitors 'inside the box' to explore the economic, geographic, technical, environmental, social and cultural history and impact of containerisation.

An enthusiastic crowd gathers for the opening

Discover how the humble box changed our world in this unique, free, outdoor exhibition.

35 million containers, carrying 99 per cent of all goods, are at sea.

Six containers, each taking one aspect of the container revolution as its theme, are placed around the Australian National Maritime Museum's Pyrmont and Darling Harbour site, creating a series of inviting new spaces as walk-in exhibition modules and giant showcases.

Open from 26 October 2017 - this unique, free exhibition will run for twelve months at the museum before the containers continue their voyage around regional New South Wales.

Minister Pavey officially opens the exhibition

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A peep into the mind of someone who dreams about what doesn't exist then makes it happen?

By ASHLEE VANCE
ELON MUSK, How the billionaire CEO of Spacex and Tesla is shaping our future.
392 pages. Virgin House. $24.99

The very name "Elon Musk" has a slightly eerie, off-the-planet ring to it. More than a hint of ER and possibly Kryptonite too.

This book is the story of his life so far, a life firmly rooted on the reality of our Earth, yet at the same time so visionary that he and a handful of others like him have created a whole new class of human society that leaves the baby boomers and the X-Generation for dead.

They are The Millennials. They are the keepers of the codes – the noughts and crosses-like strings of characters that enable computers to do in a millisecond what might otherwise take a millennium.

This is the story of these strange men and a few women whose brains are currently stalking the world with ideas of the unthinkable and have the knowledge to bring them to reality.

Right now Elon Musk is probably their leader or at least the best known. A gawky South African geek who moved to the USA and has become his new country's most successful industrialist.

He's the man behind the Tesla electric cars and the driver of SpaceX, the world's first privately-owned space-rocket manufacturer and operator, plus a trail-blazer in developing solar power with his Solar City company.

This is the biography of a man who has been so far-out since he was a child that one of its attractions is telling what he does next. It is not, however, one of these accounts likely to make you think "I could do that".

It is not inspirational for the aspirational simply because, unless you already have or are about to acquire a double doctorate in mathematics, physics, or similar, Musk's kind of career path is already out of reach. A personal self-made fortune of more that $1billion while still in one's 20s also helps. He was the major shareholder in PayPal when it sold.

His story is however a very good read and should open our eyes to new ways of thinking, new levels of ambition. The first step to thinking like a millennial is to know that such creatures exist.

Meanwhile his SpaceX rockets are earning big money by flying resupply missions to the Space Station and servicing satellites in orbit, and his beautiful all-electric Model-S sedans have already rocked the US car market. There are a very few cruising around Australia as yet but expect one to find you soon.

What about family? Yet another part of the Elon Musk story that takes the breath away. He has five young sons –triplets and twins – by IVF with his former wife. He has custody of them four days a week and a typical weekend sees them all – boys, nannies, staff - pack into his jet around 8pm Friday, reach a friend's campsite and erect tents in the dark.

Saturday and Sunday morning is spent hiking; back to Los Angeles that afternoon then alone to New York ready for work on Monday morning.

Musk remarried then split from her too; after which he said, "I need to find a girlfriend. How much time does a woman want a week? Maybe ten hours? I don't know."

Shortly after that he remarried his first wife and Wife No 2 remarked, "Elon does what he wants and he's relentless about that. It's Elon's world and the rest of us live in it."

What has made him so special? His ability to close his awareness to everything bar what's on his mind at any one time is one thing, his intellect is another, and it can't do any harm that he is able to say unchallenged that, "For images and numbers I can process their interrelationships and algorithmic relationships. Acceleration, momentum, kinetic energy – how these will be affected by objects comes through very visually to me."

Everything is rocket science to Elon and he handles it while running a group of massive industries, camping with five sons, and looking for a new mate.

As a boy in South Africa he read everything in his local library and when it refused to buy new books for him he started on The Encyclopaedia Britannica. "That was so helpful," he says. "You don't know what you don't know." ***– ARCHIE BAYVEL***

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