

IN THE MATTER of the Resource Management Act 1991 and the
Local Government (Auckland Transitional
Provisions) Act 2010

AND
IN THE MATTER of the Proposed Auckland Unitary Plan

**STATEMENT OF EVIDENCE OF ALISTAIR GRAEME KIRK FOR PORTS OF
AUCKLAND LIMITED IN RELATION TO TOPIC 005 - RPS ISSUES**

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Contents

1. INTRODUCTION.....	1
2. PORTS OF AUCKLAND LIMITED.....	3
3. CURRENT OPERATIONS AND TRENDS.....	5
4. OPTIMISATION OF CURRENT AND CONSENTED FOOTPRINT.....	14
5. MULTI-CARGO	26
6. INLAND PORT DEVELOPMENT.....	33
7. ALTERNATIVES TO DEVELOPING AUCKLAND PORT.....	35
8. OVERALL CONCLUSION	49

EXECUTIVE SUMMARY

- A. The Port of Auckland and some other significant infrastructure has been recognised in various parts of the Proposed Auckland Unitary Plan's ("**PAUP**") notified Regional Policy Statement ("**RPS**"). However, POAL does not consider that the notified RPS, nor other parts of the PAUP, sufficiently provide for the ongoing use, development and expansion of significant infrastructure, including the Port of Auckland.

Ports of Auckland Limited

- B. The City of Auckland was established in 1840, primarily because its Harbour offered an excellent location for a Port with ample hinterland to establish a city. The City and the Port of Auckland have grown together for nearly 175 years since then. Reclamation initially intended to improve the utility of the Port has progressively been absorbed into the City as the Port has grown and extended into the Harbour.
- C. The Port, as well as being an essential connection to the outside world, and a lifeline utility, generates significant economic benefit for Auckland region and New Zealand.
- D. Under the legislation that formed POAL, it is required to operate as a "successful business". In order to be a "successful business", POAL has to deliver a commercially successful return on its assets. This drives decision-making aimed at making the most of its existing assets, which is a good resource management outcome.
- E. For this reason, POAL takes the need to extract more from its existing footprint and facilities extremely seriously. It is continually seeking to find ways to improve asset utilisation, utilise infrastructure more efficiently, extract more capacity from its infrastructure, and delay capital investment in expensive new infrastructure as long as is feasible.

- F. POAL will always seek to accommodate growth without further investment in its infrastructure where it is possible to do so. POAL continues to invest in the best international advice to ensure that it is achieving the highest levels of asset utilisation possible.

Current Operations

- G. POAL operates two seaports, an inland port, a minor port and has an interest in an inland port at Palmerston North, but this submission is primarily concerned with the main part of our business, the Port of Auckland on the Waitematā Harbour, in the Auckland CBD.
- H. The Port is made up of a primary Container Terminal (Fergusson, to the east) and a number of multi-cargo wharves to the west (Freyberg, Jellicoe, Bledisloe, Marsden and Captain Cook). Bledisloe also acts as a secondary / backup container terminal.
- I. The Port of Auckland is the busiest container port in the country. The Port handled 968,741 TEU (twenty-foot equivalent units, the standardised measurement for containers) in the 2013/14 financial year, an 18 per cent increase over the previous year and over 200,000 TEU more than the next busiest container operator, the Port of Tauranga.
- J. The multi-cargo wharves handled over 5.6 million tonnes of non-containerised cargo in 2013/14 (including over 207,000 cars), an increase of 26 per cent over the previous financial year.

Port Optimisation

- K. Over the last three years, POAL has undertaken a significant restructuring to improve efficiency. This work is still on-going, but to date it has delivered excellent results. The Container Terminal now rates as the most efficient in Australasia for speed of loading and unloading ships. That represents a 45 per cent improvement compared to pre-restructuring.
- L. These efficiencies will enable the Container Terminal to increase capacity from 1 million to 2 million TEU on existing land and the

consented reclamation. It is unlikely that POAL would need to apply for consent for further reclamation at the Container Terminal in the foreseeable future. This would not have been possible if POAL had not planned for, and consented, the Fergusson Container Terminal extension in the 1990s under the previous and operative planning framework.

- M. While the Container Terminal does not face capacity constraints in the longer term, POAL does face challenges at the other end of the Port in the multi-cargo operation. Various constraints, including the sub-optimal configuration of the existing wharves, the loss of certain Port infrastructure to other uses, and the international trend towards larger ships are putting pressure on multi-cargo capacity. This is all in the face of significant, ongoing multi-cargo freight growth.
- N. While POAL has taken many steps to improve efficiency at the multi-cargo wharves, berth extensions of wharves and additional back-up land space will be needed in the years ahead. Therefore, the PAUP needs to recognise and provide for the ongoing use, development and for the expansion of the Port of Auckland.

Alternatives to Expansion

- O. A number of alternatives to expansion have been put forward by port opponents. These range from greater use of inland ports, to building a new port, to using other Upper North Island ports to take some or all of Auckland's freight task.
- P. In short, none of these alternatives are viable. In fact, they would likely result in considerable negative effects on the Auckland region and New Zealand as a whole.

Conclusion

- Q. In my opinion, the PAUP needs to be amended to better recognise the need for the Port of Auckland to grow and expand, and to provide a more suitable planning framework to enable the Port of Auckland to meet increased freight demand as Auckland grows.

1. INTRODUCTION

1.1 My full name is Alistair Graeme Kirk. I am the General Manager of Infrastructure and Property for Ports of Auckland Limited ("**POAL**"), a position I have held for 7 years. I am authorised to give this evidence on POAL's behalf.

Qualifications and experience

1.2 I have a Bachelor of Engineering (Civil) (Hons) from the University of Canterbury, a New Zealand Certificate in Engineering (Civil), New Zealand Qualifications Authority, and am a Member of the Institution of Professional Engineers New Zealand ("**MIPENZ**").

1.3 In my role, I am responsible for the provision, and management, of all assets and property of POAL along with Port planning. This includes the maintenance, upgrading and expansion of POAL's assets at the Port of Auckland, Port of Onehunga, Wiri Inland Port (South Auckland), Pikes Point (an area of industrial land in Penrose), Gabador Place (on the Tamaki River), the navigational channels and various other assets.

1.4 I am directly responsible for over \$600 million of assets, including:

- (a) Over 90 hectares of yards and pavements.
- (b) Wharf structures, dolphins and seawalls.
- (c) Buildings, including warehouses, offices and cargo sheds.
- (d) The provisions of services to and within the port, including 11kV electrical reticulation system, water, stormwater and wastewater.
- (e) Access channels, turning basins and berths.

1.5 I am also jointly responsible (along with our Operations Manager) for developing a port masterplan, and regularly reviewing and testing this

plan, along with setting priorities and implementing the required changes / infrastructure.

- 1.6 My team looks after projects such as rail siding development, building construction, wharf construction, dredging, deepening berths and underpinning structures, the Fergusson Container Terminal expansion, layout changes, along with day to day maintenance and inspections of all assets.
- 1.7 My previous roles have included five years at Opus International Consultants in Christchurch managing port projects, roading projects in Canterbury, structural design of heavy civil structures for ports, mines and power stations. I then worked for two engineering consultants in the United Kingdom for a total of six years where I managed the structural design teams for high profile building projects in the centre of London.

Scope of evidence

- 1.8 The Port of Auckland and some other significant infrastructure has been recognised in various parts of the Proposed Auckland Unitary Plan's ("**PAUP**") notified Regional Policy Statement ("**RPS**"). However, POAL does not consider that the notified RPS, nor other parts of the PAUP, sufficiently provide for the ongoing use, development and expansion of significant infrastructure including the Port of Auckland. POAL has made various submissions on the PAUP seeking that the Port of Auckland, and other significant infrastructure assets, be better provided for in the RPS.
- 1.9 The amendments sought by POAL begin at the RPS issue level, and flow down through the RPS and regional and district sections of the PAUP. There are a number of places in the RPS where POAL has sought amendments on this subject matter, but because the RPS has been split up into several topics for hearing purposes, the amendments relate to several different topics. Rather than POAL providing its evidence on a piecemeal basis, or repeating it on every RPS topic, as Topic 005 - RPS Issues is the first RPS topic in which

this issue arises, my evidence and that of the other POAL witnesses relates to Topic 005, and also to the other RPS topics where the same issue arises.¹

1.10 POAL has also been subjected to unusual opposition by Heart of the City, which has opposed every single one of POAL's 564 primary submission points. In order to save time at later hearings, my evidence will also address several of Heart of the City's "general" further submissions points in opposition to the submissions by POAL.

1.11 My evidence is structured as follows:

- (a) Background to POAL.
- (b) The current operations and trends at the Port of Auckland.
- (c) POAL's optimisation plans for the current and consented footprint.
- (d) The challenges with optimising the Port of Auckland's multi-cargo facilities.
- (e) The inability for further inland port development to meet the forecasted trade growth.
- (f) The issues with the alternatives to providing for growth and expansion at the Port of Auckland.
- (g) The functional requirements of port infrastructure in respect of historic heritage.

2. PORTS OF AUCKLAND LIMITED

2.1 POAL is a port company established under the Port Companies Act 1998. That Act requires POAL to operate as a "successful business". POAL's directors are also subject to the Companies Act 1993, which requires the directors to act in the best interests of the company. The ownership of POAL has been intentionally structured so that it acts as

¹ See submission point 5137-46.

a standalone company, independent of Auckland Council ("**Council**"). (However, POAL is 100 per cent owned by Auckland Council Investments Limited, and therefore dividends issued by POAL flow through to the Council.)

- 2.2 In order to be a "successful business", POAL has to deliver a commercially successful return on its assets. This drives decision-making aimed at making the most of POAL's existing assets, which results in good resource management outcomes. Asset utilisation is particularly important for POAL to be successful, because the Port is a capital-intensive business. Port infrastructure assets such as new reclamations (which are often in deep water), significant concrete wharf structures, additional container cranes etc, are particularly costly, and long lasting. They cannot be switched on and off or brought onto the Port site for a short period and removed again. Investment in new assets must be founded on strong confidence that they are required and that satisfactory returns can be earned on the investment over very long periods of time. POAL will always be more successful if it is able to utilise its existing assets to their full potential, in order to postpone investment in additional assets. In other words, all the incentives are for POAL to be as efficient as possible with the existing Port footprint and with its existing assets.
- 2.3 For this reason POAL takes the need to extract more from its existing footprint and facilities extremely seriously. POAL is continually seeking ways to improve asset utilisation, utilise infrastructure more efficiently, extract more capacity from its existing infrastructure, and delay capital investment in expensive new infrastructure as long as is feasible.
- 2.4 Certain opponents to the Port of Auckland, particularly Heart of the City, seem to be obsessed with the notion that POAL does not use its infrastructure intensively enough, and could avoid expansion by improving its use of the existing Port footprint. They have also suggested that POAL is keen to expand its infrastructure as soon as possible, and needs to be restrained from doing so. As noted above, extracting the maximum possible capacity from the existing footprint is uppermost in POAL's mind. POAL will always seek to accommodate

growth without further investment in its infrastructure where it is feasible to do so. POAL continues to invest in the best international advice to ensure that it is achieving the highest levels of asset utilisation possible.

3. CURRENT OPERATIONS AND TRENDS

- 3.1 POAL operates two seaports, the Port of Auckland on the Waitematā Harbour in Auckland's central city and the Port of Onehunga on the Manukau Harbour. POAL also operates an inland port at Wiri, South Auckland and a minor port facility at Gabador Place on the Tamaki River for a variety of bulk liquids. POAL also has extensive land holdings at Pikes Point which is used by third parties for the storage of import vehicles. **Annexure A** contains a map showing the location of these facilities, and photograph of each. POAL is also developing an inland port in Palmerston North in conjunction with the Port of Napier.
- 3.2 The Port of Onehunga is situated on the Manukau Harbour on the west coast. The Manukau Harbour has a shallow, difficult entrance not suited to modern shipping. There has been a move away from this port for some time and the last container service left in 2012. The last remaining major shipping customer, Holcim Cement, is currently building a new facility at the Port of Auckland, and their ships are scheduled to depart the Port of Onehunga by early 2016. I will return to the subject of West Coast ports in the Auckland region later in my evidence.
- 3.3 The Port of Auckland on the Waitematā Harbour, on the other hand, is thriving. I will expand on these elements later, but in summary, it is New Zealand's busiest container port, the New Zealand hub for the cruise industry, and the country's largest vehicle import port. It also handles a significant amount of bulk and break-bulk trade, including gypsum imports, and a regular trade in major "one off" items, including recently the new trains for Auckland and major project cargo such as the tunnel boring machine for the Waterview connection. It is also the

hub port for the Pacific Islands, a trade which continues to grow significantly.

- 3.4 The port is made up of a primary container terminal (Fergusson, to the east) and a number of multi-cargo wharves to the west (Freyberg, Jellicoe, Bledisloe, Marsden and Captain Cook). Bledisloe also acts as a secondary / backup container terminal. **Attached as Annexure B** is a colour aerial photograph showing the different terminals and wharves. In total, the Port of Auckland consists of 10 main cargo berths, 2 dedicated cruise ship berths, a number of secondary berths for tugs, workboats and barges and approximately 80 hectares of yard space. The Port of Auckland is served by the 14 km long Waitematā Navigation Channel, which is dredged to -12.5m below chart datum.
- 3.5 Fergusson Terminal has five modern container cranes, capable of handling the largest ships coming or likely to come to New Zealand. It has a fleet of 37 modern, low-emission diesel-electric straddle carriers, all of which can lift two twenty foot containers at a time.
- 3.6 Bledisloe Wharf has three older container cranes capable of servicing container ships when necessary, but the majority of the lift on-lift off (Lo-Lo) operation at the multi-cargo wharves is carried out using ship's cranes. These wharves handle our considerable roll-on roll-off (Ro-Ro) throughput, which is mainly cars, but includes trucks, buses, trains, tractors, heavy machinery, project cargo and other freight.
- 3.7 The Fergusson Container Terminal is operated by Ports of Auckland staff, whereas freight handling services on the multi-cargo wharves are handled by independent stevedoring contractors.
- 3.8 POAL operates its own Marine Services division, which has six tugs, two pilot boats and one survey boat.
- 3.9 Overall, POAL has over 500 employees. A number of other contractors and port services and transport providers – including Government bodies such as Customs and the Ministry for Primary Industries - operate on the port. On any one day there may be as many as 3000 visits to the port by various people as part of their work.

- 3.10 In the past financial year, the Port has set a number of financial and freight handling records.
- 3.11 I mentioned earlier that the Port of Auckland is the busiest container port in the country. The Port handled 968,741 TEU (twenty-foot equivalent units, the standardised measurement for containers) in the 2013/14 financial year, an 18% increase over the previous year and over 200,000 TEU more than the next busiest container operator, the Port of Tauranga. Of the containers handled in the Port of Auckland, the great majority are handled through the Fergusson Terminal, but some are loaded or unloaded from multi-cargo ships at the other wharves.
- 3.12 Over the same period, the Port handled over 5.6 million tonnes of bulk and breakbulk goods, including over 207,000 cars, both record numbers. (Ports generally use a measure called "freight tonnes" for bulk and breakbulk cargo, which is the greater of the weight (kg) or the volume (m³) of the goods. These are used as they are more relevant factors for wharf and ship utilisation. Dr Fairgray and other economists use the standard weight measure or "pure tonnes" (1000 kg), which is also used by Statistics New Zealand. Cargo measured in "pure tonnes" tends to be a lot lower than the same cargo measured in "freight tonnes". For example, a single car generally weighs less than 1000 kg, however it may take up approximately 11 m³. This means that a port would record 11 tonnes, but Statistics New Zealand would record less than 1 tonne.)
- 3.13 Bulk cargo is in loose form, and includes gypsum, grain etc. Breakbulk cargo is non-containerised cargo which is bundled in consignments or in individual form, such as steel sections, processed timber, machinery, construction equipment etc. Some other ports in New Zealand handle a greater range and quantity of bulk goods, especially for the export industry. For example, the Port of Tauranga has a higher volume of trade in this area as it is a major export port for the log trade. Northport in Whangarei also has a focus on logs, as well as on the import of petroleum products for the Marsden Point refinery facility. Bulk products are typically handled by the port in closest

proximity, to reduce supply chain (transport) costs. For example, the Port of Tauranga and Northport are located near forests, and they are therefore the logical ports for log exports. The Port of Auckland, on the other hand, is located within New Zealand's primary population centre, where import goods are received and dispatched.

- 3.14 Therefore, other upper North Island ports tend to handle a greater tonnage or volume of cargo, because of their greater focus on bulk cargo, but the Port of Auckland tends to handle comparatively higher value, lower volume trade. In 2013-14 year POAL handled 27% per cent of New Zealand's total merchandise trade by value (ie imports and exports combined). The next closest facility in terms of value of trade handled was the Port of Tauranga, which handled 21% per cent of New Zealand's total merchandise trade by value.
- 3.15 Financial results for POAL also hit record levels in the 2013/14 financial year, with net profit after tax up 90 per cent to \$74m and the dividend up 126 per cent to \$66.6m (paid to Auckland Council Investments Limited).
- 3.16 As discussed previously, POAL seeks to operate its facilities as efficiently as possible. For example, POAL's container terminal productivity levels have also hit record highs. We now have the distinction of having the best container terminal 'ship rate' in Australasia. Ship rate measures the speed with which containers are moved on and off a ship, effectively measuring how fast container ships are serviced.
- 3.17 Measured as an annual average, our ship rate in the calendar year 2013 was 45 per cent higher than for 2010, the year before POAL embarked on a reform programme. Looking at it another way, before our reforms the average length of time it took for us to process a container ship was 19 hours. Now it averages 14.
- 3.18 Improved efficiency has more than just a financial benefit. Processing ships more quickly actually increases the capacity of a seaport. For example, if you save five hours per ship visit – as POAL has – after

three ship visits you have, in theory, saved enough berth time to accommodate another ship at the berth. A berth which was previously full now has some free space.

3.19 Improvements in productivity across the Port have come about as a result of three key reforms, all of which are ongoing:

- (a) restructuring the company to create a 'one port' approach;
- (b) optimisation of the port layout and operating processes; and
- (c) a more efficient labour model.

3.20 Implementing these reforms, particularly to the labour model, has not been without pain. Our efforts to improve labour productivity were initially met with hostility which resulted in several weeks of industrial action over late 2011 and early 2012. Yet increased productivity is a vital ingredient in making the most of existing infrastructure and delaying the need to expand the Port footprint to provide more berths and back-up areas.

3.21 For example, we have calculated that simply by improving labour productivity we effectively increased berth capacity at the Container Terminal by around 300,000 TEU per year, meaning that expansion of Container Terminal infrastructure can proceed more slowly than it otherwise would, thereby deferring investment in infrastructure.

3.22 We have been able to further enhance our capacity by seeking expert help planning the layout of the port. In 2012 we engaged TBA, a Dutch port planning consultant widely recognised as a world leader.

3.23 With their help we have been able to identify a number of ways to improve the intensity of our operation, particularly in the Container Terminal, and also optimise the layout of the remainder of the port for the future. For example, we have consolidated our two container operations (Bledisloe and Fergusson Terminals at opposite ends of the port) into one, Fergusson. This has simplified our operation and improved efficiency.

- 3.24 We are now confident, through the combination of the ongoing expansion of the Fergusson Container Terminal, together with its new northern berth and the various efficiencies I have referred to, of being able to reach a throughput of over 2 million TEU per annum through the Terminal. This will provide Container Terminal capacity for many decades.
- 3.25 It is important to note that plans for efficiencies and capacity enhancements are not rigid. There are a huge number of variables, including ship size (and cargo exchange size), dwell time (how long cargo stays on port), ship schedules, varying cargo mixes, regulatory requirements and practices, varying growth rates, future changes in technology etc. POAL and its consultants, like TBA, regularly review and remodel capacity plans as these variables change. Flexibility is the key, including flexible planning provisions, which enable to POAL to respond to market needs.
- 3.26 While POAL's improved productivity and more intense operation has enabled the Port to use its existing infrastructure more efficiently, it does not remove the need for expansion in the years ahead. There are a number of other factors at play. This is especially so in the multi-cargo area. Container Terminal operations, by their nature being geared to uniform, homogenous, unitised throughput, particularly lend themselves to such ongoing efficiencies. (This is why there has been a huge growth in trade handled in containers globally over the last few decades.) Multi-cargo operations, on the other hand, (especially at the Port of Auckland, which does not handle large uniform homogenous bulk trades) are characterised by variable, mixed and inconsistent throughput. These trades do not by their nature lend themselves to quite the same potential for ongoing capacity gains.
- 3.27 Multi-cargo volumes will continue to grow, and a number of other constraints do currently or will in the future affect the multi-cargo area. I will elaborate on this further below.
- 3.28 The most pressing issue is that ships are getting bigger. Mega cruise ships are expected to call at Auckland within the next five years and

wharves such as Princes Wharf, Queens Wharf and possibly Captain Cook Wharf (or some combination of those) will need to be extended to accommodate them. Three years ago, the largest cruise ships calling at the Port of Auckland were 295m long, whereas now 318m cruise ships call regularly. The trend towards longer ships is continuing (as longer ships carry more passengers and lowers the unit cost for cruise lines). It is expected that cruise ships as long as 350m will be regularly calling at Auckland within the next five years. (As an additional point, some cruise lines have also indicated that they will be scrapping their smaller 260m - 270m ships within the next five years.)

- 3.29 The Hearings Panel may recall quite extensive recent newspaper publicity given to the work of the Auckland Council's City Centre Integration Group which has been looking, among other things, at how the Auckland cruise ship berths will be extended and expanded to accommodate these larger vessels.
- 3.30 Container ships are also getting bigger. When Fergusson Terminal was originally constructed in the 1970s and 1980s, it was tailored to vessels of less than 3000 TEU capacity. Its original total berth length of 580m provided three berths for ships of a smaller size. Now, there are fewer small container ships in the range of 500 to 2000 TEU, and many more above 2000 TEU. For example, regular services utilising ships in the 4000 – 5000 TEU range now call at Auckland, and the largest ships have reached 5500 TEU.
- 3.31 With the increase in container ship sizes, the three original Fergusson Terminal berths have been merged into two longer berths for larger ships. Work is currently underway to extend the Terminal berth a further 50m to cater for two larger / longer ships berthed simultaneously at the Fergusson Terminal. At the same time, both of these existing berths have been deepened (as has the approach channel into the port); to accommodate the greater draft these larger vessels operate at. The extended berth configuration on the western side of the Fergusson Container Terminal will, when complete shortly, be able to accommodate two 4000 - 5000 TEU vessels simultaneously.

- 3.32 Multi-cargo ships such as vehicle ships, container ships and bulk carriers are also getting longer and wider, outgrowing our current berth length. In particular, multi-cargo ships have increased dramatically in size over the last three years. Multi-cargo container ships were previously around 900 TEU and 140m in length, but are now up to 2000 TEU and 200m in length. Vehicle ships are also increasing in size, with regular callers now 260m to 265m long. Because these ships are getting longer and wider, they need longer berths and stronger wharf infrastructure. Because more cargo has to be transferred, these ships stay in port for longer, increasing berth occupancy. This means the associated back-up areas need to accommodate greater peaks of transit storage as these larger ships "spill out" or "suck in" greater volumes of cargo in one visit. This puts increased pressure on back-up storage associated with the berths.
- 3.33 As a further illustration of the trends towards bigger and larger ships that I have been discussing, cargo through the Port has steadily increased over the years, but the number of ships visiting has dropped. In 2004 there were 1808 ship calls of all kinds, and in the financial year to June 2013 only 1463. Therefore, fewer ships are calling, but those that do call are longer and wider and carry more cargo, resulting in them staying longer at each berth and increasing berth utilisation. As I understand it, a similar trend is occurring in the aviation industry. There are increases in passenger numbers and air freight, without corresponding increases in plane numbers (as aircraft are similarly getting larger).
- 3.34 As today's ships are longer and wider; they are also higher and have greater windage. They need wider basins to safely manoeuvre in, and longer wharf structures. The port layout at the western end (multi-cargo) is not ideally suited. The area from Captain Cook Wharf, Marsden Wharf, the Bledisloe Terminal and Jellicoe (see **Annexure B**) is largely a remnant of a different shipping era where ships were far smaller and could fit at shorter wharves and relatively narrow basins.
- 3.35 In addition, the older, narrower "finger wharf" configurations such as Captain Cook and Jellicoe, were built for an era where ships

discharged and loaded cargo slowly (sometimes with wheelbarrows and by hand) over long periods of time, so cargo was moving on and off the wharves as fast as it was being loaded or discharged. For that reason wide back-up areas were not so critical. Now these modern, larger ships, which have a much greater capital and daily operating cost, are designed to load and discharge cargo very rapidly, and move on to the next port. The accumulation of cargo for loading and distribution of cargo unloaded takes place over a longer period of time before and after the ship's visit. Thus there is a need for wider back-up areas to service these rapid peaks and troughs in cargo loaded or unloaded from vessels in a much shorter space of time.

- 3.36 The result of these factors is that the Port has a number of berths which are sub-optimal. By way of example, the distance between Queens Wharf and Captain Cook Wharf is some 104m. Until recently, this was sufficient to berth a cruise ship at Queen Wharf and a cargo ship at Captain Cook. This is now not always possible because ships are now wider.
- 3.37 A further example of dated configuration hampering efficiency is Jellicoe Wharf. The limited back-up area associated with this berth means that the berth cannot be utilised as intensively as more modern facilities which have contiguous berth lengths with a much greater depth of back-up land behind the berths. An example of a modern multi-cargo layout with a much more efficient and effective configuration, is the more recently constructed Northport facility, which has contiguous berth length, backed by a substantial depth of reclaimed back-up land.
- 3.38 A final example is B2 berth, on Bledisloe Wharf, which is restricted in its utility by its length and the proximity of the B1 berth.
- 3.39 In comparison to ship size, ship drafts are increasing at a far slower rate. Many international ports have draft constraints, and it is becoming more challenging from both cost and environmental perspectives for ports around the world to keep dredging deeper and deeper. Ship designers are beginning to respond to these pressures,

with new larger ships being designed for shallower ports, which draw just under 12m (which is comparable to the draft of current ships). However, there is also a trend for new larger ships to displace other sizable ships (with deeper drafts) from the northern hemisphere to markets such as New Zealand and Australia. As a consequence, some deepening of the Port of Auckland's berths, approaches and parts of the navigation channel may be necessary in future.

3.40 In summary, the trends the port is having to accommodate of longer and larger ships, with bigger cargo exchanges, of greater peaks and of compounding overall volume growth require greater berth length, more yard space and some dredging in the years ahead.

4. OPTIMISATION OF CURRENT AND CONSENTED FOOTPRINT

General principles

4.1 Port capacity is determined primarily by how well a port uses the land and berths at its disposal. How well a port uses its berths and land depends on a great many factors interacting in a complex manner. These factors include:

- (a) Berth capacity (space for ships).
- (b) Land capacity (space for freight that is in transit).
- (c) Access (shipping channels, road and rail).
- (d) Equipment (cranes, straddle carriers, other machinery and tugs).
- (e) Buildings (workshops, control rooms, silos, covered storage and amenity buildings).
- (f) Processes (IT systems and business practices).
- (g) People / labour.

- 4.2 All these factors affect port capacity, and a balance needs to be achieved between all of them to achieve a given quantum of capacity. Equipment, processes and people can be "geared up" as required. However, an environment of certainty is needed to do so, given relatively long lead times for the purchase of plant and IT systems, and the development or training of people, and the significant investment in capital or people that they represent. The PAUP is critical in providing this environment of certainty.
- 4.3 Berths, creating new back-up land (nearly always by reclamation), access for ships (channels and basins) and buildings require a significant level of investment and long lead times to plan, consent and construct. They have very specific requirements which determine their efficacy, and will be directly affected by the provisions in the PAUP. The detailed provisions of the PAUP, which will be dealt with in later hearings, will be critical in allowing for feasible development. The RPS in particular is the starting point to provide the environment of reasonable certainty needed by POAL to plan and invest in future infrastructure.
- 4.4 As noted above, optimising port capacity is complex; however, the two most critical infrastructure elements in terms of cost and long lead times for investment are:
- (a) berth capacity, and
 - (b) back-up land (storage) capacity.

Both are needed in balance to provide overall port capacity.

Measuring capacity

- 4.5 It is important to understand how these two aspects are measured, in order to understand how they relate to each other and to determine how port capacity can be maximised.

Berth capacity

- 4.6 Berth capacity is a function of the number of berths (berth length), berth occupancy, and ship exchange productivity. Ship exchange productivity for container vessels is in turn, a function of crane intensity (number of cranes deployed on a vessel) and crane productivity (moves per hour per crane). Factors affecting crane intensity and productivity include size of vessels, size of vessel exchanges, deployment and efficiency of plant and labour, proportion of 40 foot containers and "twin-lifting".
- 4.7 Berth capacity for a given container terminal can be expressed as:
- $$\text{Number of berths} \times \text{hours per annum (8760)} \times \text{berth occupancy (\%)} \times \text{average crane intensity (cranes per vessel)} \times \text{average crane productivity (moves per hour per crane)} = \text{total annual throughput capacity.}$$
- 4.8 In practice, berth occupancy (percent of time a berth is occupied) is limited by the need to provide vessels with a berth on arrival. For container terminals, 50 – 60% is generally regarded as the upper limit for sustainable or achievable berth occupancy.
- 4.9 These factors combine to determine berth capacity in any given situation. Berth capacity for container terminals is often summarised as TEU throughput per berth meter per annum. Terminals can be compared on this measure to assess their efficiency of utilisation of berth infrastructure. For example, the 2009 Auckland Regional Holdings report "Long Term Optimisation of the NZ Port Sector" used this measure to compare berth utilisation. Terminals tend to range from less than 1000 TEU per berth meter per annum, to greater than 2000. Terminals with scale advantages tend to produce the higher values in this measure.
- 4.10 Multi-cargo (non-containerised) berth capacity is more difficult to measure, because the nature of multi-cargo operations (particularly at the Port of Auckland) is that cargoes are not homogenous and berths may accommodate widely varying cargo types from one day to the next. For example, multi-cargo trade includes containers (in vessels with their own cranes), vehicles, iron and steel, timber, dry bulk such

as gypsum or wheat, and so on. Measurement of berth productivity and capacity in these circumstances is problematic.

- 4.11 A common measure for multi-cargo berth capacity is simply berth occupancy (%). The PWC report,² citing a well regarded port planning text,³ adopted a figure of 55 – 65% berth occupancy as being maximum potential capacity. This is a reasonable measure for conventional multi-cargo berth configurations which have contiguous berth length with a reasonable depth of back-up land behind the berths (such as exists at the Port of Tauranga and Northport).
- 4.12 However, in the case of the multi-cargo facilities at the Port of Auckland, it is not a relevant measure for much of the berth infrastructure, because of the prevalence of old and inefficient "finger wharf" configurations. For example at Captain Cook, Jellicoe and B1 berths where because of the narrowness of the wharves there is limited immediate back-up land. This means that when the ship that has visited has disgorged its cargo, then that berth cannot be used again until that cargo has been cleared sufficiently off the wharf. As an additional example, the B2 wharf has limited use due its short length, therefore it can only be used by a few smaller ships so this type of occupancy level cannot be achieved.
- 4.13 The planned installation of a cement pipeline to Jellicoe Wharf, to enable cement to be pumped some distance to an off berth storage facility will improve the efficiency and utilisation of this berth. This is a very efficient use of a finger wharf.

Back-up land capacity

- 4.14 Back-up land capacity is a function of area available, density (ie for container terminals number of ground slots per hectare), dwell time, and stack height. For container terminals this can be expressed as:

² The PWC report, "How can we meet increasing demand for ports in the Upper North Island?" (2012) was commissioned by UNISA (Upper North Island Strategic Alliance), a grouping of the Upper North Island Councils, to explore the demand for and capacity of upper North Island ports and their ability to meet the region's future freight task.

³ Agerschou, H. et al (2004), Planning and Design of Ports and Marine Terminals, 2nd ed, Thomas Telford.

Number of ground slots x average stack height x (365/dwell time) = total back-up land capacity.

- 4.15 Average stack height is in turn a function of stacking capability (plant) and peak factors. Terminals with higher peak factors (ratio of peak storage to average storage) tend to have a lower potential capacity for a given area. Again, scale tends to reduce peak factors, so larger terminals can generally achieve greater capacity per hectare.
- 4.16 Back-up land capacity is often expressed as TEU throughput per hectare per annum. Terminals tend to range from less than 20,000 to more than 60,000 on this measure, with larger international terminals achieving the higher values.
- 4.17 Capacity for non-container cargoes such as bulk, steel, timber and vehicles is governed by the same principles, but is less easy to precisely measure because these cargoes are not so uniform and unitised, and some can be stacked vertically and some cannot. In a multi-cargo situation, a berth with its associated back-up land may be required to accommodate a mix of such cargoes in succession, or often even on the same vessel.
- 4.18 These background principles are important because port capacity is not just a function of physical infrastructure, but also of how effectively the infrastructure can be utilised.

Optimisation efforts

- 4.19 As noted above, how well a port uses its assets determines overall capacity.

Fergusson Container Terminal

- 4.20 The recent history of improvements to the container trade through the Fergusson Terminal at the Port of Auckland illustrates that point.
- 4.21 I have previously identified berth utilisation as a key measure of berth capacity. One of the ways to increase berth capacity, as I have previously mentioned, is to increase the ship rate. For the container trade, ship rate measures the number of containers moved on and off

- a ship in an hour. The higher the ship rate, the faster ships are processed and the less time they spend in port. Time is money, so for ship owners a fast turnaround is important.
- 4.22 In 2010, Ports of Auckland achieved a ship rate of 54.6 moves per hour. In 2013, the most recent full calendar year, we achieved a ship rate of 79.1, a 45% improvement.
- 4.23 This also has an impact on capacity. If ships are turned round faster they spend less time at berth, creating space for more ships or bigger ships with larger exchanges of cargo. As I have identified in paragraph 3.16, that rate of 79.1 moves per hour is the highest ship rate in Australasia, which helps demonstrate how hard POAL is working to get the best out of its existing assets. This has enabled POAL, in the most recent year, to achieve a berth utilisation measure of 1387 TEU per berth metre per annum (in the mid-range of the 1000 to 2000 range identified in the ARH report - see paragraph 4.9).
- 4.24 In terms of back-up land utilisation, being the other measure of capacity discussed earlier, POAL has optimised the yard layout (for example by reducing the number of road-ways), implemented two-way driving for straddle carriers, is currently implementing an upgraded IT system, has removed the container repair yard to off-Port, has introduced higher stacking of empty containers, and has achieved world-class low dwell times. In addition, the consented reclamation construction at Fergusson is continuing, which is progressively maintaining the yard-to-berth ratio and improving the configuration of the yard. POAL has also demolished No. 2 store to remove a non-waterfront cross-docking activity off-Port. This has enabled POAL to achieve a back-up land utilisation of 28,370 TEU throughput per hectare per annum, which falls well within the range of 20,000 to 60,000 referred to in paragraph 4.16.
- 4.25 POAL intends to continue making improvements to improve productivity still further at the Fergusson Terminal. With the assistance of an internationally recognised port design consultant

POAL has identified a number of additional improvements, which include:

- (a) Completion of the currently consented reclamation and northern berth - this work is underway.
- (b) Purchase of an additional quay crane - underway.
- (c) Upgrading existing quay cranes - ongoing.
- (d) Purchase of additional straddle carriers able to more efficiently stack containers.
- (e) Intensification of the container stack area.
- (f) Optimisation of the footprint by relocating buildings and carparking.
- (g) Implementation of a new IT system to operate and plan the terminal / container moves - underway
- (h) Construction of a more efficient truck grid - underway.
- (i) Incorporating the Freyberg wharf east berths and land into the Fergusson Container Terminal, with a mobile harbour crane for coastal feeder ships, as shown on the figure below:



Figure 1: Proposed Container Terminal area and multi-cargo area

4.26 The consolidated terminal operations in the east, including the new Fergusson north berth and Freyberg east berth, will result, as I mentioned earlier, in an ultimate capacity of at least 2.0 million TEU per annum, compared to the throughput for the year ending June 2014 of 873,529 TEU. (This volume relates solely to the Container Terminal and does not include the multi-cargo containers. For the same year the total combined container volume was 968,741 TEU.)

4.27 If POAL achieves its intended ultimate capacity for the existing and consented Fergusson Terminal (with the Freyberg Wharf east berth included) of 2.0 million TEU per annum, this would represent respectively:

- (a) 1760 TEU per meter of berth length per annum, and
- (b) 48,780 TEU per hectare per annum.

These figures, when compared to the ranges identified earlier for (a) of 1000 to 2000 and for (b) 20,000 to 60,000, are at the upper end of the ranges.

4.28 The PWC report adopted similar performance standards to assess what could reasonably be expected in the way of asset utilisation from

New Zealand container terminals such as at the Ports of Auckland and Tauranga. It said:⁴

We estimate that the technical capacity for berth utilisation, at a port around the size of POA and POT, is around 1750 TEUs/metre. This is based on analysis by ARH (and subsequently updated by Bestshore UAE), discussions with UNI ports, and analysis of the underlying influences of berth utilisation. However, in order to achieve that level of berth utilisation, a port has to be very efficient in terms of the factors that influence berth utilisation.

- 4.29 As can be seen, the PWC prediction for future berth utilisation at the Port of Auckland of around 1750 TEU/metre matches POAL's own expectation of at least 1760 TEU/metre.
- 4.30 The PWC also estimated that the Port of Auckland could achieve potential back-up land capacity utilisation ranging from 25,000 TEU per hectare for one over two straddle operations to 50,000 TEU per hectare for Gantry crane operations. As can be seen, POAL expects to be at the top end of that range.
- 4.31 Market Economics (Dr Fairgray) has independently estimated that container throughput for the entire Port in the medium term (to 2031) will grow from the current total of 968,741 TEU to 1,568,600 TEU. (This is based on projections of population and economic growth, whereas POAL's estimate of 2 million TEU is a measure of planned capacity for the Container Terminal only.) In his evidence, Dr Fairgray projects that 2 million TEU of throughput will be achieved from 2041 onwards.
- 4.32 It is my opinion that the growth in container trade at the Fergusson Terminal, based on POAL's consideration of capacity and the projections by Market Economics, should be able to be accommodated over the 30 year planning horizon without further expansion of the Terminal's consented footprint. A key point to note is that this ability for the Fergusson Container Terminal to accommodate most of Auckland's expected growth in container trade would not have been achieved if, as a critical part of that future capacity, the Terminal extension (a reclamation and additional berth, which will substantially

⁴ PWC, "How can we meet increasing demand for ports in the Upper North Island?" (2012), at 137.

increase the size of the Terminal), had not been part of POAL's long term planning, provided for as a discretionary activity in the transitional operative regional coastal plan and in the current operative Regional Plan: Coastal, and resource consents granted by the Environment Court.

Multi-cargo

- 4.33 Optimisation measures have also been undertaken over the years to enhance the capacity and efficiency of multi-cargo facilities, where feasible. In particular, areas adjacent to multi-cargo berths have been cleared and paved to increase the back-up area available to support the berths, as this was (and remains) a key problem for multi-cargo, as I outlined above (the discussion about some of the existing multi-cargo wharves being too narrow, affecting the occupancy rates - see paragraph 4.12).
- 4.34 From its inception in 1988, POAL began to purchase leasehold interests in the land it owns immediately south of Jellicoe and Freyberg Wharves, and in the southern half of the Bledisloe facility. It then demolished the buildings occupying this leased land, as well as many other buildings throughout the port, and paved the land so that it became suitable for cargo storage, in order to bring these areas into operational use as back-up for the multi-cargo berths. The plan below shows buildings demolished at the port over the last 25 years.

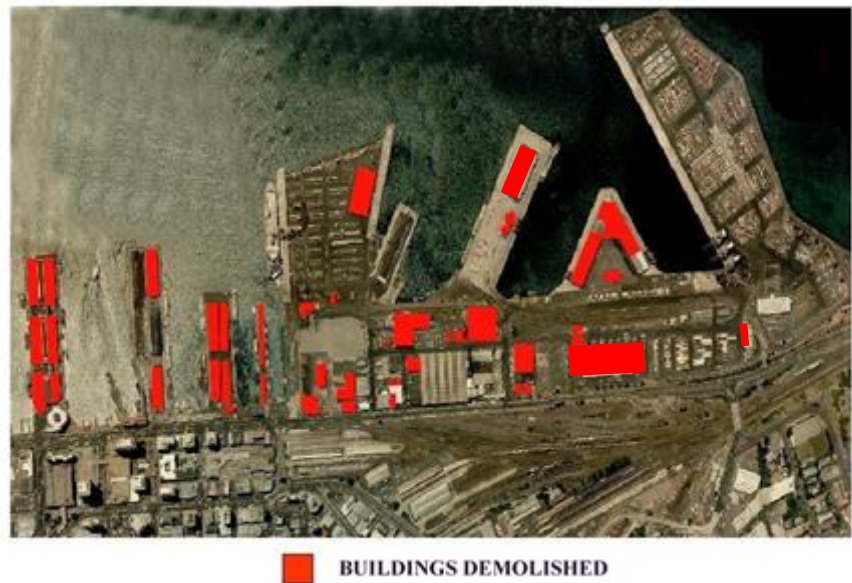


Figure 2: Buildings demolished over the last 25 years

- 4.35 At the same time, POAL was able to secure the closure of some public roads in the area (Tooley, French and Monash Streets), and incorporate those into the port operational area. Around this time POAL also reached agreement with Auckland City Council to purchase Quay Street (as it then was), and realign it to the south. A new rail exchange was then constructed in the area made available by the realignment of Quay Street, allowing the old rail exchange in the area south of Jellicoe and Freyberg Wharves to be removed. That area was then also repaved and brought into operational use to support the multi-cargo berths. The aerial photos below show the port as it was in 1990 compared to 2009.
- 4.36 These changes required investment by POAL of many tens of millions of dollars. They enhanced multi-cargo capacity by providing greater back-up area to support the berths which due to their old-style "finger wharf" configuration, were not able to be used optimally. The multi-cargo berths are still constrained by a lack of back-up area, but these measures did improve the situation over what it was before. These measures now have been fully exploited, and there is no further significant potential to increase back-up areas at multi-cargo in this manner.



Figure 3: Port of Auckland layout in 1990



Figure 4: Port of Auckland layout in 2009

- 4.37 In the past 2 years, POAL has restructured its operations to provide more flexible work practices and yard layouts across the Port. The multi-cargo yard was fragmented across the Port, but it has now been consolidated in to a single area at the western half of the Port. Yard areas are also now more flexible, rather than specific activities being "siloed".

- 4.38 A new more efficient truck grid has also been installed for the multi-cargo operations, which allows for an increase in capacity while minimising the footprint.
- 4.39 These changes and stop gap measures have allowed POAL to accommodate a significant increase in multi-cargo volume over the past years. In addition, this has occurred against a backdrop of some reduction in footprint for multi-cargo, as discussed below.

5. MULTI-CARGO

- 5.1 It is more challenging to optimise multi-cargo because of the wide variety of goods handled. For example, a multi-cargo wharf could be used for vehicles one week, gypsum imports for the following two weeks, then a mix of containers and breakbulk the week after.
- 5.2 The mix of cargos can change significantly from year to year, for example overall car numbers could increase at a far greater rate than break bulk volumes or vice versa. The mix of cargos is complex, and, unlike containers, non-unitised cargo such as bulk and breakbulk do not easily fit into standard numerical models.
- 5.3 As alluded to earlier, the berth occupancy measures used by PWC to estimate current and future capacity for Northport and the multi-cargo facilities at the Port of Tauranga (Mt Maunganui wharves) are not particularly relevant at the Port of Auckland because some of the multi-cargo facilities at the Port do not follow their modern design configuration, some being too short, and others being old finger wharf designs which, notwithstanding the optimisation measures taken (and outlined in my evidence above), still have inadequate back-up area.
- 5.4 Multi-cargo currently comprises the following primary "operational" berths (see **Annexure B**):
- (a) Captain Cook west.
 - (b) Bledisloe B1.

- (c) Bledisloe B2.
- (d) Bledisloe B3.
- (e) Jellicoe west.
- (f) Jellicoe east.
- (g) Freyberg west.
- (h) Freyberg east.

5.5 It also has the following secondary berths for barges, workboats etc:

- (a) Captain Cook east.
- (b) Marsden west.
- (c) Marsden east.
- (d) Kings Low Landing.

5.6 The B2 berth and Captain Cook west berth are now of limited utility, as is set in more detail below.

5.7 This multi-cargo infrastructure is being required to cope with increasing cargo volumes. Since 2009/10 multi-cargo volumes have increased from 2,967,604 tonnes to 3,654,892 in 2010/11 and then to 5,679,325 tonnes in 2013/14, an overall increase of 91%. Apart from the recent addition of B3 berth to multi-cargo (as part of the reorganisation of the port to focus on multi-cargo to the west and containers to the east), the steady growth in multi-cargo volumes is occurring against a backdrop of reducing infrastructure (ie the loss of various other berths or areas). This has put increasing pressure on the multi-cargo operations, meaning POAL has had to be even more efficient in handling multi-cargo trade. Specifically:

- (a) Relocation of Golden Bay Cement facility from Wynyard Quarter to free up a large area around what is now known as Silo Park for public space and other mixed uses as part of the

revitalisation of that part of the Auckland waterfront in 2010. This facility now operates from multi-cargo (Bledisloe B1), taking up one small existing berth and 0.6 hectares of existing yard space.

- (b) Release of Queens Wharf in 2010 for public waterfront and other related community activities, including as a base for the Rugby World Cup 2011, and as a new focal point for cruise ships, resulting in the loss for multi-cargo purposes of two berths and 2.6 hectares of yard space. Car vessels displaced from Queens Wharf have had to be relocated to Jellicoe, B3 and Captain Cook west, and import banana ships displaced from Queens Wharf relocated to Jellicoe Wharf.
 - (c) The increasing use of Queens Wharf east for larger cruise vessels impacts on the utility of Captain Cook west berth, due to constraints on the beam of vessels which can be simultaneously berthed there. This became a significant issue in the 2013/14 cruise season. 12 cruise vessels with a beam greater than 32m are now regular callers. Many of these vessels make multiple calls in the season. Cargo vessels cannot use Captain Cook west on these occasions. Furthermore, Captain Cook west is also unavailable when any cruise vessel is bunkering at Queens east, as there is insufficient width in the basin for a cruise vessel, the bunker vessel and a cargo vessel alongside each other.
- 5.8 Heart of the City's ex-CEO, Alex Swney, once rather unkindly likened the Port's need for expansion to a fat man wanting a bigger suit. In fact the opposite is the case – the Port's "suit" has shrunk and the Port has gone to strenuous lengths to slim down to fit into it.
- 5.9 This pressure on multi-cargo infrastructure will be further compounded in the short and medium term by:
- (a) Jellicoe west berth occupancy expected to increase significantly within the next 2 years, when Holcim New

Zealand Limited ("**Holcim**") establish their cement import facility on port. Holcim will install a cement pipeline from Jellicoe to an off berth silo. (Holcim has been based at the Port of Onehunga, but has completely changed its supply chain arrangements to the east coast, as the Manukau Harbour cannot accommodate larger ships. Together with Golden Bay Cement, Holcim needs to locate in the Auckland region to serve the growth and expansion of Auckland.)

- (b) The increasing trend for cruise vessels to increase in width, effectively making Captain Cook west a totally ineffective berth over the summer peak cruise season.
- (c) The ongoing trend for all vessels to increase in size, putting pressure on berth length.
- (d) The ongoing trend for increased peaking at multi-cargo. For example, there is a tendency for vehicle vessel arrivals to "bunch", with greater peaks and troughs in vessels, meaning greater peaks of vehicle volumes requiring storage on-port before they can be delivered.

5.10 I referred earlier to the recent publicity around the City Centre Integration Group's consideration of the need to provide for larger cruise ships in the central wharves area. A number of options are being investigated and some of these options would require multi-cargo to relocate from Captain Cook wharf to an extended Bledisloe wharf.

5.11 The growing multi-cargo freight task is currently being undertaken with fewer working berths and less yard space. This is testament to the efficiency improvements that POAL has implemented over the past few years; however, multi-cargo now needs both longer berths, and more berths, with additional back-up area, in order to cater for projected freight task, and specifically to cater for longer ships in an efficient manner.

5.12 The multi-cargo freight task is forecast to continue to grow. Market Economics (Dr Fairgray) has forecast volume growth as approximately:

- (a) 32% (medium population future) and 43% (high population future) to 2031.
- (b) 52% (medium population future) and 68% (high population future) to 2041.
- (c) 85% (medium population future) and 124% (high population future) to 2061.

In his evidence, Dr Fairgray provides actual figures in millions of tonnes for this multi-cargo growth. However, as explained earlier, Dr Fairgray's figures are based on "pure tonnes", whereas POAL and other ports use "freight tonnes". I will therefore take our current throughput, which is 5,679,325 freight tonnes in the 2013/14 year and apply Dr Fairgray's growth projections in percentage terms, as set out above. The expected growth is therefore as follows:

- (d) 7,477,000 tonnes (medium population future) and 8,094,000 tonnes (high population future) to 2031.
- (e) 8,634,000 tonnes (medium population future) and 9,538,000 tonnes (high population future) to 2041.
- (f) 10,495,000 tonnes (medium population future) and 12,703,000 tonnes (high population future) to 2061.

5.13 Given the sheer scale of growth predicted for Auckland as demonstrated by the figures above, there is clearly a pressing need to expand the multi-cargo footprint to address not only the pressures which I have described in detail (such as the need for longer berths, the need to make up for the loss of multi-cargo infrastructure, to deal with greater peaking and so on) but also to accommodate this significant future projected freight task. It is completely unrealistic to propose that multi-cargo infrastructure already under pressure with existing freight volumes, will be able to also accommodate this

significant projected growth, simply by becoming even "more efficient". Expansion of the footprint is required.

- 5.14 This analysis of multi-cargo pressure on existing facilities and requirement for expanded infrastructure is not just held by POAL. The PWC report supports the conclusions drawn by POAL. It stated:⁵

For bulk cargo, it appears likely to be much more difficult for the current infrastructure to cater for future growth. This is largely because it appears more difficult for POA to make considerable efficiencies in this area. The key issue is storage space. At the current level of productivity, POA is almost fully utilising its storage space, and this usage is also constraining POA's ability to increase its bulk berth occupancy.

...

Any reduction in the current berth and storage space at POA – for example, if Captain Cook and Marsden wharfs are released for non-port use – will exacerbate these issues.

...

So it seems likely that, even with very significant operational efficiencies, POA will still require additional berth and storage space before 2041 if it is to cater to our projected trade task. This will most likely involve additional reclamations.

- 5.15 While this will be the subject of more detailed evidence later in the PAUP hearing process, for the information of the Hearings Panel for RPS purposes, the only realistic opportunity to provide a sufficient combination of longer berths, more berths and adjacent back-up land is by expanding the Bledisloe Terminal northwards but still within the Port Precinct boundary, in some incremental manner. Purely for illustrative purposes, I set out below two possible options for this type of expansion northwards at Bledisloe that have previously been provided to the Council. They also both show:
- (a) The completed Fergusson Container Terminal expansion to the east (coloured light blue), with its new northern berth (coloured purple).
 - (b) On the western side of the expanded Bledisloe Terminal, two cargo ships of mid-size.

⁵ PWC "How can we meet increasing demand for ports in the Upper North Island?" (2012), at page 149.

- (c) Alternatively, on the same western side, can be seen the outline of the Queen Mary II (in red), to illustrate the length of the largest cruise ships currently calling at Auckland. This demonstrates why the City Centre Integration Group is considering the extension of the central wharves to accommodate longer cruise ships and also shows that cruise ships of that length could be accommodated on the western side of an extended Bledisloe, if required on occasion.
- (d) A smaller reclamation to the east of Bledisloe B1 (coloured grey) of different sizes that would provide a more efficient configuration and additional back-up land.

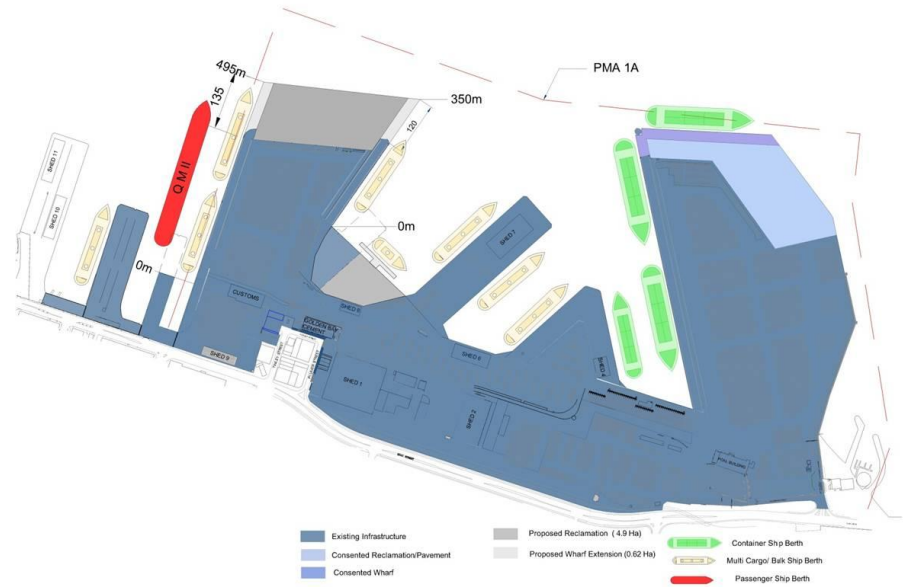


Figure 5: 2012 Option 1: Expand and retain Captain Cook wharf - 5.5 hectare expansion

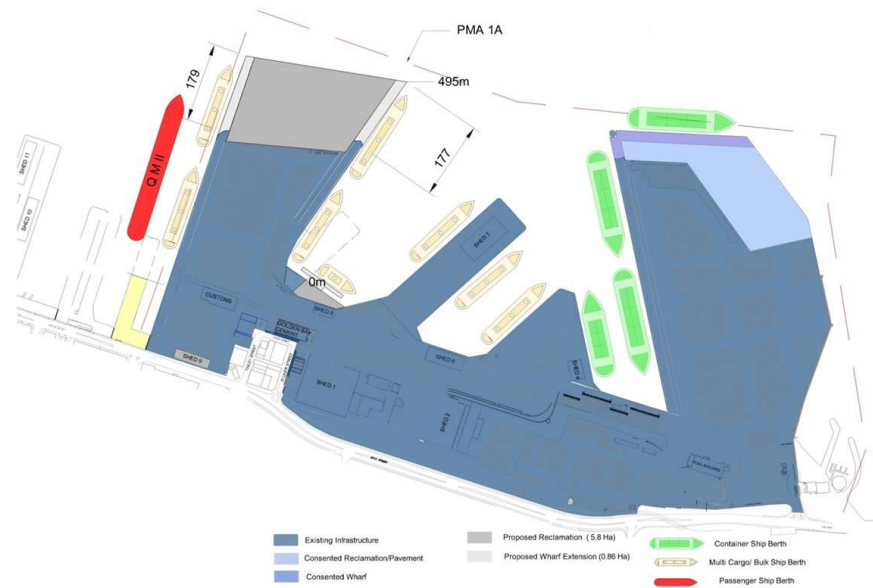


Figure 6: 2012 Option 2: Expand and release Captain Cook wharf - 6.6 hectare expansion

5.16 In summary, while POAL expects to be able to service at least 2 million TEU per annum of container trade over the coming decades at the Fergusson Terminal as a result of all the initiatives POAL has taken and planned (including the consented expansion of that Terminal); in the case of multi-cargo there is a need to expand the existing Port footprint. More and longer berths and more back-up land are needed over the same planning period to meet the projected increases in multi-cargo trade. It is critical that the PAUP recognise and provide for that growth and expansion that is needed for the multi-cargo trade. The current and previous planning documents provided the necessary framework that enabled the Port of Auckland to meet the ongoing needs of the container trade and this foresight should be mirrored in the PAUP to enable the same long-term approach to be taken to multi-cargo.

6. INLAND PORT DEVELOPMENT

6.1 It has been suggested in the past that greater use of inland ports could reduce or prevent the need for expansion of the Port of Auckland's footprint. In addition, this is implicit in Heart of the City's

primary and further submissions, which continually refer to "alternatives" to expansion at the Port of Auckland.

- 6.2 Inland ports can have an impact on capacity by reducing dwell times of cargo (mostly containers) at the seaports. Inland ports are not generally developed, however, for this specific purpose. Inland ports generally impose increased costs on the supply chain due to double-handling (ie freight arrives at the seaport and is transported by road or rail and unloaded at the inland terminal where it may remain for a period, then it is transported by road or rail a second time and delivered to its destination, and vice versa for export trade). They therefore need to provide other off-setting benefits to justify the investment.
- 6.3 For the Port of Tauranga, their Metroport inland port in Penrose provided a means of entry into the Auckland container market, by moving containers between Auckland and Tauranga on fixed rail services. This also enabled the Port of Tauranga to recapture market share of Bay of Plenty/Waikato container trade, which had been bypassing Tauranga in favour of Auckland (because of the scale of the Auckland import trade). It has been successful in this purpose.
- 6.4 POAL's Wiri Freight Hub serves a different purpose, since POAL already has direct access to the South Auckland container market. Wiri instead serves a niche role for importers or exporters, generally located close by, who may have particular supply chain requirements such as longer term storage. Volumes at Wiri have grown only moderately over a lengthy period of time. Niche cargo facilities including a cold store and cross dock are currently being constructed / consented for the Wiri site.
- 6.5 POAL is also developing an inland port in Palmerston North, in conjunction with other partners. This will be more similar in purpose to Metroport, in that it will provide a direct and more cost-effective connection between the lower North Island and the Port of Auckland.

- 6.6 The direct capacity effects of inland ports are limited. Historically, ports operated on finger wharves with small ships discharging and loading cargo over weeks rather than hours. Modern port and terminal operations act more like a "bellows" operation, with large (high capital cost) ships disgorging imports and sucking up exports as fast as possible, before moving on to the next port. This requires large areas of back-up land to accommodate the rapid influx of containers or multi-cargo, and allowing receipt and/or distribution of the cargo outside of the ship exchange period. This explains why peak factors are important in overall capacity. Inland ports have very little impact in reducing peaks. By their nature, fixed schedule train services are geared to constant fixed volume movements on a regular basis, rather than responding to short term peaks, and so cannot materially reduce the area of on-port back-up land required to service vessels.
- 6.7 However the greatest shortcoming of inland ports is that they cannot provide extra berth space. Since berthage tends to be a limiting factor for port and terminal capacity in Upper North Island ports, inland ports do not address the critical requirements for capacity.
- 6.8 In conclusion, inland ports have a role to play in the supply chain, but they do not increase port capacity. They provide no extra berths and are only really useful for container freight, not multi-cargo. They are not an alternative to the expansion of seaport capacity.

7. ALTERNATIVES TO DEVELOPING AUCKLAND PORT

- 7.1 A number of alternatives to developing the existing Auckland port have been put forward by opponents. There are essentially four of these:
- (a) Build a new port and close Auckland port.
 - (b) Build a new port and restrict growth at Auckland port.
 - (c) Close the Auckland port and handle all the trade at Tauranga and/or Northport.

- (d) Restrict growth at the Auckland port and handle the growth of Auckland trade at Tauranga and/or Northport.

7.2 I will address these options in turn below. In short, I consider that the PAUP should provide for the ongoing operation, growth and expansion of the existing Port of Auckland rather than the above alternatives.

Build a new port and close Auckland

7.3 A number of opponents of Auckland port expansion have suggested a new port be built and the existing port closed. Heart of the City has made such statements.⁶ Similarly, the Committee for Auckland openly advocates for a new port to replace the existing port, and for alternative uses for the existing port land and wharves.⁷

7.4 Heart of the City stated in its further submission:⁸

We are not promoting moving the port.

7.5 However, they have made it clear they are opposed to any further expansion of the port north of Bledisloe, "pending a stage two study", which inter alia is proposed to consider "as yet unexplored locations for port infrastructure". The reality is that preventing further expansion of the Port of Auckland must mean choosing an alternative means of serving Auckland's growing freight needs. One of the few alternatives is construction of a new port. Heart of the City's own wishlist of the elements which a stage two study should explore includes "Look at options for additional and/or alternative ports in the Auckland region". Heart of the City have in the recent past made presentations which advocate consideration of a new port, and have proposed consideration of a new port in the Firth of Thames.

7.6 Furthermore, Heart of the City has been quite clear that they want to explore alternative uses for all or part of the current port area. They have, for example, advocated for the critical western side of Bledisloe to become a cruise ship terminal, and for constraining the port to a

⁶ See Heart of the City's further submission (number 2935), at page 46 / 194.

⁷ See Committee for Auckland's further submission (number 2916), at page 5 / 19.

⁸ See Heart of the City's further submission (number 2935), at page 5 / 194.

smaller footprint. Their submission states that they want an assessment of alternative uses and in particular tourism, for the area. Their further submission clearly contemplates other uses for the port area, stating:⁹

The history of development of the Port represents numerous missed opportunities for the public domain and City Centre. Reclamation is (invariably) permanent. It does not 'avoid' adverse effects and completely removes other options for use of the coastal marine area, adversely affecting inter-generational equity. Future generations will not appreciate a lack of city vision and lost opportunity.

...

One leg of this approach is also to suggest alternative uses of part or all of the current port land. Waterfront transformations in other cities provide examples, and commentators like Michael Parker (ref: Pine Tree Paradox) and others have opened the discussion for Auckland. On our back doorstep, Sydney and Brisbane have relocated their ports.

7.7 In short, in my opinion, the financial and environmental costs of a new port in the Auckland region cannot be justified. Consideration of a new port needs to be informed by logic and realistic assessments of the constraints and consequences. Broadly, these consequences will include both environmental and financial aspects. It is also necessary to consider the practicalities of establishing a different port, as well as consider the potential alternative use of the Port of Auckland land as a means of funding such a move.

Environmental constraints

7.8 With respect to environmental impacts, the planning consensus over a long period of time has been that incremental development in the already-modified location of the existing port, will generally have lesser environmental impacts than construction of new port facilities in an unmodified greenfield location. A new port would also have environmental effects associated with establishing new road and rail links. This situation is recognised in statutory plans such as the operative Auckland Council Regional Plan: Coastal,¹⁰ and was also

⁹ See Heart of the City's further submission (number 2935), at pages 6 / 195 and 46 / 194.

¹⁰ The operative Regional Plan: Coastal provides an enabling planning framework for port activities in Port Management Area 1A (now known as the Port Precinct), and a less enabling framework for the same activities in other areas.

recognised by the Environment Court in its judgment on the Fergusson Container Terminal expansion consent.¹¹

7.9 A 1999 Beca study, "Port Development Options for the Auckland Region", looked at a range of locations and concluded that, by a wide margin, the environmental impact of development at the greenfield sites were greater than further development at the already modified existing port site. Heart of the City has submitted that this study was not independent – however, it was compiled by independent professional experts and in its initial form, prior to it being subsequently compiled as a report, was presented in evidence under oath to the Environment Court by Dr Phil Mitchell of Mitchell Partnerships, who was the project leader, and who I believe to be a highly respected member of the resource management community. Mr Priestley also provides some additional context to this, as he led the engineering work in that study.

7.10 The independent PWC report stated:¹²

All of the alternative locations considered by other studies involved some form of adverse environmental effect – including continual dredging, port traffic passing through regional parks and DoC land, and substantial effects on the water area and nearby beaches.

7.11 For these hearings, POAL has commissioned Beca and Golder Associates to revisit the options for a new port for the region. Mr Priestley will give evidence about these investigations. Suffice to say, however, that the environmental obstacles to establishing a new port in a greenfield location now, together with road and rail links, are greater than they were at the time of the 1999 study. In my view, it is unlikely that such a project would be consentable.

Financial constraints

7.12 The other major hurdle to construction of a new port is the prohibitive cost.

¹¹ *Judges Bay Residents Association v Auckland Regional Council* ENC Auckland A072/98, 24 June 1998, at [58]-[65].

¹² PWC "How can we meet increasing demand for ports in the Upper North Island?" (2012), at page 187.

- 7.13 The investigation carried out by Beca in 1999, and recently updated by Mr Priestley, indicates that the cost in 2014 dollars will be \$4.4 billion - \$5.5 billion. These costs do not include, for example, the cost of operating two ports simultaneously during the transition period from the old port to the new port. I believe that New Zealand's economy is simply not large enough to justify costs of this magnitude.
- 7.14 The Auckland Plan has identified that general infrastructure needs for the City during the life of the plan are considerably greater than the ability of current funding sources to finance them – with the funding gap estimated to be in the order of \$10-15 billion. It seems unlikely that adding upwards of \$4.4-5.5 billion to this funding gap (by adding a new port to the list), when port infrastructure already exists, would be considered a sufficient priority to outweigh other demands for funding.
- 7.15 It is a source of some frustration to me that opponents of the Port of Auckland bandy about prospects for building a new port elsewhere, without ever addressing this critical funding issue. POAL could not fund a new port. POAL has only recently begun to achieve a commercial return on the value of its existing assets. This current asset value comprises about one-sixth of the cost of a new port. Given this, it is unrealistic to expect any commercial entity to seriously entertain such an investment. The Auckland Council has many other priorities for expenditure which do not involve replacing infrastructure which already exists, and has not identified how these many other demands will be funded. Surely parties wishing to pose a new port as a viable and feasible option need to explain how it would be paid for.
- 7.16 The PWC report recognises this in numerous places, stating:¹³

All potential locations would require the construction of a container terminal operation, with the necessary berths, storage area, dredging, cranes, etc. These costs will depend on the location but are likely to be considerable.

...

Given projections, it seems unlikely that this option would make economic sense over the term of this study.

¹³ PWC "How can we meet increasing demand for ports in the Upper North Island?" (2012), at pages 187, 25 and 25 respectively.

...

Benefits of repurposing current POA land seems, alone, insufficient to outweigh large costs for the foreseeable future.

- 7.17 Related to the financial argument is consideration of how the location of a new port would affect the existing supply chain. Two of the four locations considered by Mr Priestley are for east coast ports on the Hauraki Gulf, and two are for west coast ports on the Manukau Harbour. A further issue, also commented on by Mr Peter Morris, is that the maritime supply-chain for New Zealand has evolved around east coast ports. Shifting a major port to the west coast would disrupt this supply chain and impose significant additional costs.
- 7.18 The east coast options – in the unlikely event they were able to be consented – would not disrupt the maritime supply chain, but would cause significant dislocation of the landside supply chain. Both options are for the establishment of ports on greenfield sites in areas of very low population. There are none of the support facilities which have built up around the Port of Auckland over time and no pool of available labour. Establishment of ports in these areas would require either the establishment of new towns around them or the transport of freight and/or labour to/from existing towns and cities. Either will add significant cost to the project.

Build a new port and retain all or some of Auckland port

- 7.19 Russell Kilvington and Mark Oxley (who I understand are acting as port advisers for Heart of the City) have in the past promoted the option of a new port on the Manukau Harbour and the retention of the Waitemata port. This option is unrealistic. Apart from the environmental constraints I have outlined above, which will apply as much to an "additional" port as to a "replacement" port, creating a second port simply adds another set of problems on top of those involved in consenting, funding, constructing and operating a port on this coast. For example:

- (a) Duplication of many of the elements of port operations including managerial, administrative, support services, infrastructure and equipment.
- (b) Duplication of access links. Road, rail and shipping channel access to the new port would have to be built, and then two sets of access links would need to be maintained.
- (c) Duplication of navigational infrastructure including navigational aids (buoys etc), tugs, pilots and so on.
- (d) The maritime supply chain would be split. The modern maritime supply chain is an interconnected network of shipping services which uses transshipment to create access to a wide range of ports without direct services between them all. With two ports operating, this interconnected network would be split in two, with transshipment containers potentially stranded at the "wrong" port for the required interconnecting services.
- (e) The loss of the benefits of scale. Scale is critical to ports and shipping lines to reduce cost and enhance asset utilisation. Auckland's supply chain would forgo the benefits of scale. Ironically, a consequence of this would be that comparatively more port infrastructure would be required to service a given volume of cargo.

7.20 The duplication of operating costs, the loss of scale and the split supply chain make the option of maintaining two ports for Auckland impractical.

All of Auckland's port trade to Tauranga and Northport, and close Auckland port – OR – All of Auckland's growth beyond what can be accommodated on Auckland's existing or consented footprint to Tauranga and Northport

- 7.21 The other alternatives proposed by opponents of the port is for part, or all, of Auckland's freight task to be handled at other ports in the upper North Island (eg Northport and/or the Port of Tauranga).
- 7.22 Even if it were feasible, and I return to this below, I consider this would have significant adverse economic impacts on the regional economy, and would be inconsistent with the growth aspirations of the Auckland Plan and the enabling provisions for economic growth and infrastructure in the PAUP. It would be unique to adopt an approach in the PAUP of not providing for the region's current needs and future growth.
- 7.23 Among the effects of limiting or reducing or eliminating POAL's capacity and handling Auckland's freight task at Northport and the Port of Tauranga, are:
- (a) Additional road and rail infrastructure would be required to handle increased traffic to and from Auckland. Increased investment in plant (trains and trucks) would be required as would investment in inland ports in Auckland to serve as the collection and distribution points in the Auckland region. Much of the cargo between Northport / Auckland and Port of Tauranga / Auckland would not be suitable for rail (due to weight and dimension and cargo care limitations) therefore a significant proportion of that freight would be required to travel by road.
 - (b) There would be a significant increase in road and rail traffic between those ports and Auckland, with associated environmental and reverse sensitivity effects and the effects of increased heavy vehicle traffic on the connecting highways.

- (c) The other ports would need to bring forward their investment in port infrastructure, with the associated environmental and reverse sensitivity effects.
- (d) Increased supply chain costs for the additional transport and handling, affecting importers and exporters in the Auckland region, which is the largest population base in the country.
- (e) Dislocation effects on the location and investment in production, distribution and supply chain activity in Auckland. There is considerable development of businesses established in Auckland to be proximate to the Port of Auckland including warehousing, manufacturing and distribution, who would be impacted by any such approach.

7.24 The PWC report highlighted these impacts in its appraisal of the option of diverting Auckland trade to Northport and Port of Tauranga. For example, it stated:¹⁴

High domestic freight costs place a premium on having ports located close to population centres and export production locations. This constrains options to make system changes or consolidate cargo at a single port ...

Auckland plays an important role in distributing imported goods throughout the country ... Warehousing and distribution businesses within Auckland require access to ports ... A similar pattern is apparent in the motor vehicle and motor vehicle parts wholesaling industry. A majority of the country's cars are imported through POA and received by Auckland-based wholesalers before distribution throughout the country ...

... we note that the UNI is actually well-served by three ports. This currently provides strong competition to the benefit of exporters and importers, and also operational flexibility and resilience in the UNI's trade and logistics supply chains.

In summary, the most efficient and cost effective options are likely to be based around incremental growth at each port ...

The limit on POA volumes will ... adversely affect port users ... This in effect means increased costs across the value chain for diverted products ...

The UNI's trade supply chain would be more expensive, impacting competitiveness for importers and exporters.

¹⁴ PWC "How can we meet increasing demand for ports in the Upper North Island?" (2012), at pages 75, 82, 193, 197, 186 and 25 respectively.

- 7.25 Market Economics will provide further evidence on the economic impacts of not providing for Auckland's freight needs at POAL, and instead diverting trade to alternative ports.
- 7.26 In my opinion, it is also not feasible in the long term to direct all of Auckland's port trade, or all of the growth in Auckland's port trade through to Northport and/or Port of Tauranga, as that it is not a long term solution for the upper North Island freight task. Instead, it represents a classic example of adopting a short term solution sought by one or two local organisations, which ignores the negative longer term consequences for the region and country. This approach is also at variance with the expressed views of both the Council and Heart of the City, that infrastructure planning, including port infrastructure planning, should take a long term ("30 – 100 year") view.¹⁵ The reason it is a short term approach is that berth capacity at Northport and the Port of Tauranga is finite and must be prioritised to serve the significant growth expected in their own regions and those parts of the country that find those ports the most convenient or efficient supply chain.

Northport

- 7.27 Northport currently has three berths totalling 570m (the short relative length being acceptable for their current ship sizes). (As a comparison, POAL's Fergusson Terminal berth is longer than all of Northport's berths put together). Consent is in place for one additional berth of 270m. The PWC report notes that Northport will need its three existing berths and one consented berth (eastwards from the existing berths) to accommodate its own future freight task to 2041 (as forecast by PWC). If berth occupancy rates are unable to be sustained at required levels, or if volume growth is greater than forecast, it may also need to develop further eastwards within that timeframe, where a 270m additional berth and reclamation extension has been identified in planning, but not consented.

¹⁵ See eg Heart of the City's further submission (number 2935), page 46 / 194.

- 7.28 The only way it could therefore feasibly accommodate a significant volume of POAL's trade, and still cater for its own projected freight task, would be by undertaking further expansion westwards.
- 7.29 This would mean expanding the port across sensitive beach, residential, and marina areas (see the below figure). This may present similar consenting difficulties.



Figure 7: Potential Northport expansion required to replace the Port of Auckland's current and consented container terminal berthage

- 7.30 Unless it expands significantly westwards, Northport does not have the potential physical scale to make a serious dent in POAL's cargoes, if at the same time it is to provide for its own cargo and growth in the years ahead. This is illustrated in the aerial in figure 7 above by the red line which shows the length of berthage which would be required to the west, for example, to replicate POAL's current and consented Container Terminal berthage.

Port of Tauranga

- 7.31 Port of Tauranga does have considerable latent and developable capacity at both its container terminal (Sulphur Point) and multi-cargo (Mt Maunganui) operations. Sulphur Point Container Terminal can be

extended to approximately 1055m of berth length (according to PWC). The Mount Maunganui wharves can also be extended, and there is latent capacity inherent in the relatively low current berth occupancy at the existing wharves. Port of Tauranga could therefore theoretically absorb Auckland cargo in the short and medium term, if POAL were constrained. Longer term, however, its potential capacity will be required to service its own freight task. Utilising that future capacity in the short term to service POAL cargo, would mean it will not be available in the longer term when it is needed to service the growth in trade at the Port of Tauranga. The consequence of this will be a deficit of port infrastructure capacity affecting the whole upper North Island supply chain. This would in my view represent a gross failure of planning.

"Halfway house" not sustainable

- 7.32 An additional important factor arises under the scenario where Auckland's growth is capped. This is that it is not in fact feasible to siphon off "growth" to another port location while leaving existing trade at a constrained POAL. Shipping trade patterns do not work like that. Shipping operates as services, which are often interconnected with other services for transshipment and empty container exchange. It would not be practicable to split services over different ports on different vessel calls. In practice, if capacity is constrained, then whole services would need to move elsewhere in single substantive shifts, rather than a smooth "skimming off" of growth.
- 7.33 Furthermore, as it became apparent that POAL would not be able to accommodate the future needs of its customers, those customers would look to alternative ports to meet their long term needs. A shipping provider plans ahead and needs to be sure their long term supply chain is secure and reliable. Any major shipping company would not see the Port of Auckland as a reliable long term partner, able to meet their increased need as the country and region grows. The same is applicable to importers, exporters, warehouse operators and other participants in the supply chain.

- 7.34 In practice, this would mean the likely scenario is for POAL to begin to lose significant "chunks" of trade to the alternative port (probably the Port of Tauranga), even before capacity constraints became determinative. The consequence of this would be two-fold:
- (a) Port of Tauranga's short and medium term spare capacity would "fill up" even faster than envisaged, meaning it would reach its potential developable capacity more quickly, bringing forward even further, the time when growth in Port of Tauranga's own cargo could not be accommodated; and
 - (b) POAL infrastructure would begin to experience under-utilisation. This would increase external pressure for that infrastructure to be devolved to other uses, but it would also lead responsible directors of POAL to consider alternative uses for the assets, rather than continue to utilise them poorly and unsuccessfully. As a consequence, POAL infrastructure would likely be progressively devolved to other uses. Then, in the medium and longer term, when it became apparent that capacity constraints were affecting other upper North Island ports' ability to accommodate all of the upper North Island trade, that POAL infrastructure would no longer be available to respond to the need.
- 7.35 In conclusion, in my opinion the consequence of preventing expansion at POAL is likely to have significantly greater effects on the wider supply chain and importers, exporters and manufacturers in Auckland than has been contemplated by port opponents. Unexpected or unforeseen consequences would inevitably compound the adverse economic effects. Supply chains and shipping services would be forced to adjust to the uncertain future, precipitating more rapid realignment of trade patterns, so that alternative ports would "fill up" more quickly. POAL assets would become less well-utilised, this would catalyse a devolution of POAL's assets to alternative uses in the short and medium term. The consequence of this in the longer term would be an irreversible deficit of capacity for the upper North Island. This serves only to underline the short-sightedness of planning

which contemplates seismic changes to the upper North Island supply chain.

Alternative use of the Port of Auckland land

7.36 Proponents of a new port for the upper North Island sometimes claim that the alternate use value of the existing port land and wharves would finance the new port. This argument fails to withstand scrutiny. PWC alludes to the lack of rigour in this argument when it says:¹⁶

Benefits of repurposing current POA land seems, alone, insufficient to outweigh large costs for the foreseeable future.

7.37 A number of important factors make it unlikely that releasing existing port assets for redevelopment for alternative uses would release any net surplus funding, and more likely in fact that it would result in additional public costs. These include:

- (a) Any such waterfront development would inevitably entail generous allocations of public space including parks, roads, boulevards, squares, plazas and access to the water's edge. Experience with waterfront redevelopment west of the port indicates this would constitute around 50% of the total area. This means the value of the privatised area purported to pay for the new port is halved.
- (b) The cost of developing the public spaces is likely to be substantial. This additional cost would have to be borne by the redevelopment. This effectively means the value of the privatised assets would need to be greater again, in order to pay for the new public infrastructure as well as a new port.
- (c) It is unlikely that intensity of development on the privatised spaces (height, floor area ratio, etc), would be allowed to be maximised because of political or public interest pressures. This would limit value.

¹⁶ PWC "How can we meet increasing demand for ports in the Upper North Island?" (2012), at page 25.

- (d) The size of the port area (80 hectares) means uptake of any portion made available for development would take place over many decades (perhaps 60 years), limiting real present value. At the same time, there would likely be negative effects on development and value in other parts of the CBD (eg Quay Park, Wynyard Quarter and Aotea Precinct).
- (e) An aversion to freehold sale of public waterfront land means development would more likely be on a leasehold basis, further limiting value.
- (f) Other factors such as transport, contamination and geology would also impact development potential and costs, and therefore value.
- (g) There is a need for intellectual honesty in assessing the alternate use value of existing port assets, and the ability for value uplift to finance new port infrastructure.

Conclusion

7.38 None of the alternative options to enabling growth and expansion to occur at the Port of Auckland are feasible, in my opinion. That applies whether there is a new port developed in the Auckland region, or reliance is placed on the Port of Tauranga or Northport. In all these options, the Auckland region would be significantly adversely affected in numerous ways and there would be significant costs, both to the region and the country. In the longer term, these alternatives would also have damaging effects on the upper North Island supply chain.

8. OVERALL CONCLUSION

8.1 In my opinion, it is critical that the PAUP be amended in order to better recognise and provide for the on-going operation, development and expansion of the Port of Auckland. Such provision is fundamental if the Port of Auckland is to meet increased the freight demands of Auckland's projected population and economic growth.

Ports of Auckland Limited
Submitter number 5137

Topic 005 - RPS Issues
Primary evidence

Alistair Graeme Kirk

17 October 2014

Annexure A - Ports of Auckland Limited's Facilities

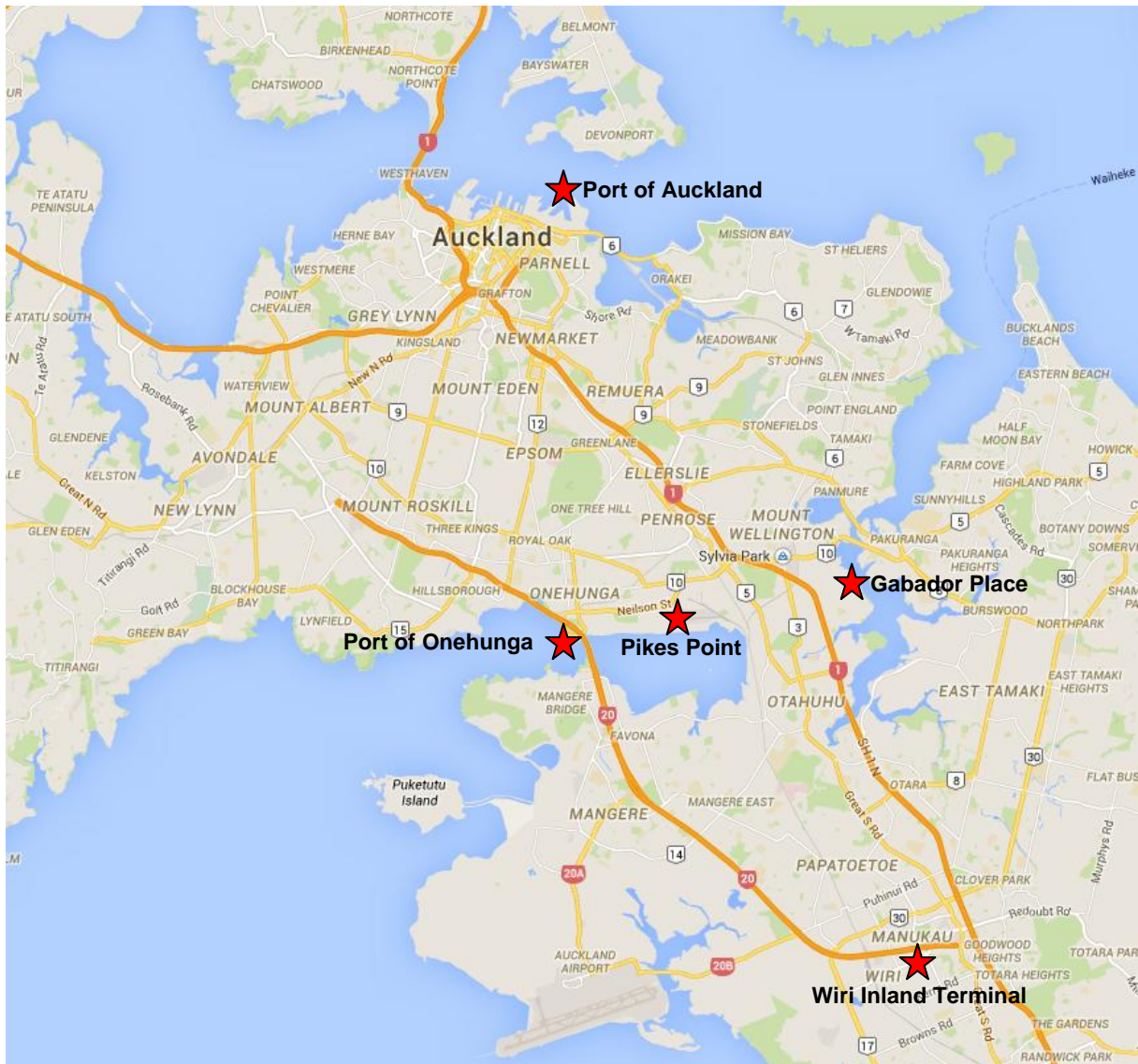


Figure A: Location of Ports of Auckland Limited's Facilities



Figure B: The Port of Auckland (viewed from the east)



Figure C: The Port of Onehunga (viewed from the north west)



Figure E: Wiri Inland Terminal (viewed from the north)



Figure D: Gabador Place (aerial)

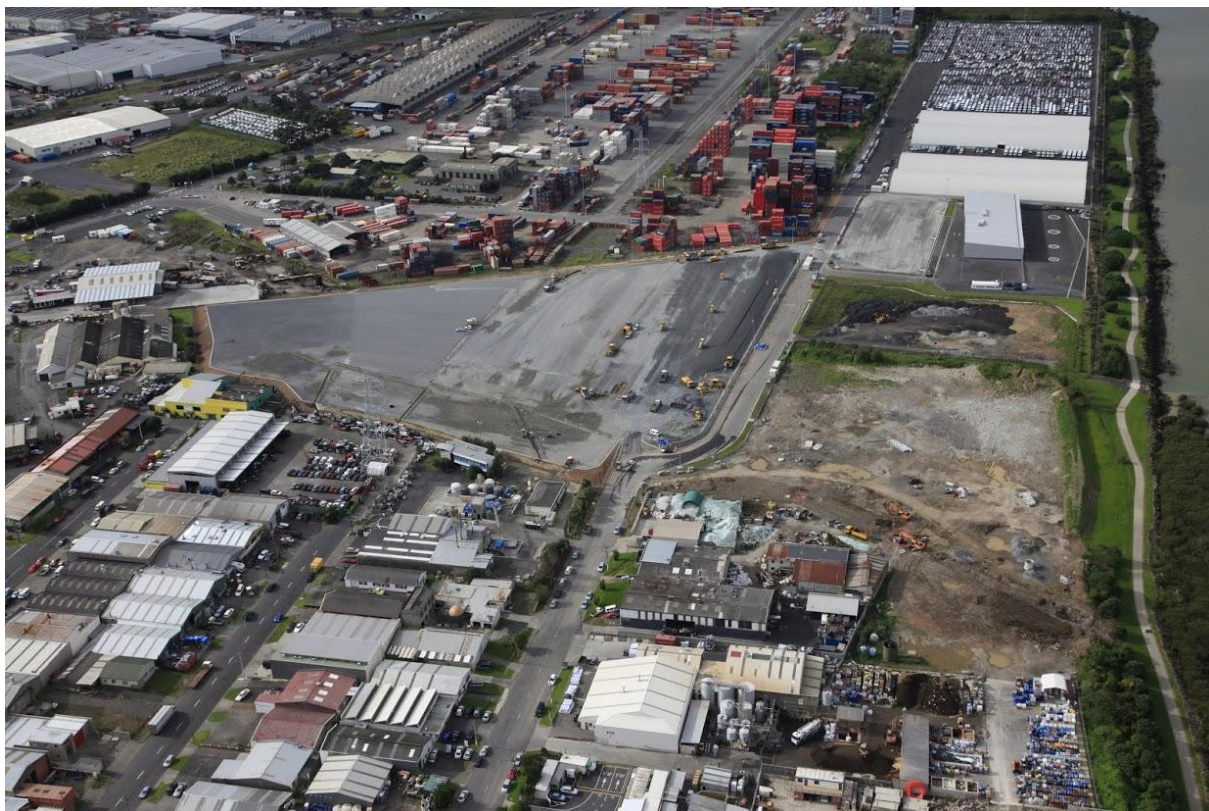


Figure F: Pikes Point (viewed from the west)

Annexure B: Port Areas

