## Financial implications at a glance

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</table>
Thank you
Thanks Dan,

Updated PDF attached
Note ‘port mode’ also appears on the fold-out brochure, so we’ll action that update on the artwork file now too.

Almost there with the report PDF

---

On 8/11/2019, at 10:05 AM, Dan Jenkins wrote:

Hannah,

Thanks – I would remove the version number from the front and the future state map title should be “A resilient two port model” not “mode”.

Thanks,
Dan

---

Hi Dan,

We are just combing through last checks before sending you the report PDF.

In the meantime, here’s the updated presentation PDF for you to check.
I noticed the May date on page 4 was inconsistent with the fold-out brochure (which states May 2019), so this has been updated for consistency.

Also note this is dated October, which also matches the printed fold-outs.
Cheers,
Hannah

Dear
Account Manager

VOICE
Auckland | Melbourne

W: voicebrandagency.com
Upper North Island Supply Chain Strategy

$8.5m
The dividend received from $6bn worth of Auckland port land

$4bn
The capital needed to just keep the Port of Auckland open

$6bn
Uplift to Auckland City balance sheet from port move

2million m³
Port shift avoids 2m cubic meters of dredging in the Waitemata channel

Information document
October 2019
The New Zealand economy is the 57th largest and 41st most complex. Top imports are fuel, vehicles, machinery and consumer goods. Top exports are agriculture, forestry and horticulture.
The New Zealand economy

- Most imports enter via Auckland to service urban consumers needs. Exports, contributing to economic growth, are produced in rural areas and leave via regional ports.

- Auckland accounts for 33% of New Zealand's population, 38% of GDP and only 6% of exports.

- The primary sector, mainly forestry and dairy, are the biggest user of domestic freight. Dairy is mainly located in Waikato, Taranaki, Manawatu and Canterbury and account for 20% of freight movements.

- Forestry in Northland, Waikato, Bay of Plenty, Gisborne, Hawke's Bay and Nelson/Tasman accounts for 35% of regional freight.

- The Upper North Island region accounts for 53% of all freight movements. Northland is experiencing high growth in population and horticulture.

- Northport’s layout will be designed to favour rail over trucks.
Timeline

September 2018
Cabinet appoints a Working Group to review freight and logistics sector in Upper North Island, formally known as the Upper North Island Supply Chain Strategy (UNISCS).

May 2019
The Ministry of Transport appoint a consortium to economically evaluate a range of investment scenarios.

September 2019
The Supply Chain Strategy is presented to key stakeholders.
The role of freight

We heavily rely on efficient supply chain to connect our goods to the world. Currently 50 tonnes per capita of freight is moved and this is expected to grow significantly over time, impacting roads and rail infrastructure.

The pipeline from Marsden Point to Auckland presently accounts for more tonnage per capita than rail. Rail would increase dramatically if a fit-for-purpose railway was built.

50 tonnes per capita each year

Regional freight %
Road dominates as a mode

Road dominates for both inter and intra-regional freight with over 95% share of market, with the exception of the Bay of Plenty and Auckland due to proximity to good rail and ports. This suggests intermodal capacity dominates mode choice.
 Biggest impacts and drivers of change

1. City congestion in Auckland
2. Shifting land value demands usage changes
3. Lack of cooperation between port owners
4. Lack of rail infrastructure and poor state highways in Northland
5. Need for easier export routes
6. Climate change: rail versus trucks
Commercial realities

- Changes to the Upper North Island supply chain and port structure need to maximise land values in the Auckland CBD.

- Auckland needs more than one point of entry for goods if the city is serious about reducing congestion.

- Cost to consumer for perceived increase in freight charges, if the existing port structure is moved to Northport, is nominal to nil.

- Rail to port investment has historically been footed by the taxpayer. Tauranga, most recently benefitted from a $4bn investment.

- Rate payers subsidise Ports of Auckland $500,000 annually.

- Auckland Port only has 10 years of operational life remaining.
Ports are the crucial international link

Today, New Zealand ports link 99.5% of the country’s trade with international markets. In 2014, Auckland, Tauranga and Northport accounted for 45% of New Zealand’s total freight export weights. The Port of Tauranga alone shipped 30% of national export weights. More significantly, the three ports handled 68% of total national import weights in 2012.

The key issue is optimal land use

Freight and logistics capabilities are just part of what needs to be considered. The most important factor is: where will expansion deliver the greatest positive impacts to the regional and national economy?
The Port of Auckland

77 hectares
alternative better value use

⚠️ Current land use runs on a low yield model
🚫 Current port infrastructure generates mass CBD congestion
⚠️ Future port growth constrained by lack of available land
🚗 800,000 truck movements through the city via the port each year

There are currently 33 million tonnes of inbound and 30 million tonnes of outbound freight between Auckland and Northland, Waikato, ROP and Gisborne.

The Port of Auckland largely handles containers, and bulk and break-bulk volumes, and is the largest container importer in New Zealand.

The combination of increased road freight activity within Auckland and significant growth in population has led to congestion problems in Auckland. This is important because the majority of The Port of Auckland trade volumes are distributed via the road network.

Projections predict a 10-year maximum possible usage of the port at its current depth. Future use will require significant harbour dredging, with major environmental and economical impact.
Northport

180 hectares available to expand

- Large area of underutilised industrial land available
- Rail line in need of upgrade. No current rail spur.
- The shorter run to the outskirts of Auckland will bring future efficiencies when compared to Tauranga
- Port depth is of Suezmax, able to accommodate the deepest draft ships

There are currently 8 million tonnes of inbound and 10 million tonnes of outbound freight between Northland and Auckland, Waikato, BOP and Gisborne. Currently, 1/3 of logs are processed locally and there is economic potential in wood processing, logging, saw-milling, wood-chipping, veneer and plywood manufacture.

Freight in the region is forecast to increase by almost 40% in the region between 2012 and 2042.

Road transport remains the main means of moving freight and people. Right now, there are approximately 30,000 Northland export containers trucked to Auckland then sailed to Tauranga which is both inefficient and costly for exporters. At present, there is no connectivity between Northport and the rest of the rail network. Addressing this will have material impact on the development of Northport and Northland region as well as helping maintain other transport infrastructure, especially roads.
The Port of Tauranga

107 hectares available to expand

- Already a major export port
- Congestion is becoming more and more of an issue
- Kaimai Tunnel represents significant earthquake risk

There are currently 21 million tonnes of inbound and 18 million tonnes of outbound freight between BOP and Auckland, Northland, Waikato and Gisborne. The Port of Tauranga is New Zealand’s fastest growing and most productive port, however the port has an import-export imbalance. Import volumes are less than two thirds of its export volumes, meaning significant empty containers. Dairy is a major driver of exports in Tauranga but is expected to remain relatively flat.

By 2025, imports into The Port of Tauranga are likely to decrease as Genesis Energy has pledged to stop using coal to generate electricity at Huntly Power Station.

Road traffic congestion is a city-wide problem in Tauranga, and forecast growth in both passenger and freight travel means it is likely to get worse. The Port of Tauranga in comparison to The Port of Auckland and Northport has a high volume of freight entering and exiting the port via rail, at nearly 50 percent.
Upper North Island Supply Chain Strategy

The recommended options:

1. The managed closure of The Port of Auckland freight
2. The development of Northport
3. Continued operation of the The Port of Tauranga
4. Rejuvenated North Auckland rail line
5. A new inland freight hub in North West Auckland
Three primary objectives:

1. To develop efficient and effective transport and logistics infrastructure that works in the national interest.

2. To ensure the best use of scarce resources such as land, especially in metropolitan areas.

3. To promote opportunities for regional development and employment.
A resilient two port model

Aligns with the decentralisation of growth, out of central Auckland, and towards the north, south and west.
Future state

Urban Growth – North Summary
Total hectares: 4,992ha
Lived zoned area: 485ha
Total dwellings: Approx. 44,454

Urban Growth – North-West Summary
Total hectares: 3,225ha
Lived zoned area: 938ha
Total dwellings: Approx. 42,355

Urban Growth – South Summary
Total hectares: 6,706ha
Lived zoned area: 2,370ha
Total dwellings: Approx. 50,600

The Port of Auckland

Possible new line
Avondale to Southdown

Reopened rail line
Upgraded rail line
New rail line
Potential new freight terminal
Existing Oil Tank Farm
Proposed Oil Tank Farm
Existing freight terminal
Existing Port
Non-freight (cruise liners)
Date TBC
Future urban growth

Upper North Island Supply Chain Strategy
Benefits to Northland
- Promotes regional development and employment across the region
- Shifts jobs north where housing is more affordable than Auckland
- Northport site could be used to develop industrial parks and production facilities, stimulating additional economic growth in the local area
- Local businesses will have easier and faster access to regional, inter-regional, and international markets
- Maximises the existing port system and surrounding land at Northport
- Positive cultural impact by supporting Māori enterprises across forestry, agriculture and fishing sectors, as well as health and community services

Benefits to Tauranga
- Promotes further growth in the Bay of Plenty
- Tauranga benefits from the new infrastructure by an expected uplift in freight, and an improvement in supply chain efficiency as a whole

Benefits to New Zealand
- Two distinct north and south entry points for international freight
- Potentially improves road safety by increasing rail freight capacity
- Maintains competition, fosters innovation and cost effectiveness/efficiency of freight delivery
- Greenhouse gas emissions will decrease by diverting road freight onto rail
<table>
<thead>
<tr>
<th>Benefits to Auckland</th>
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<tbody>
<tr>
<td>- Less congestion in the Auckland CBD and motorway network</td>
</tr>
<tr>
<td>- Releases huge land value to Auckland City Council’s balance sheet</td>
</tr>
<tr>
<td>- Less friction with urban personal transport and regional deliveries with a dedicated freight rail line through the Avondale corridor</td>
</tr>
<tr>
<td>- Returns the harbour to the people and helps Auckland become a more ‘liveable city’</td>
</tr>
<tr>
<td>- More resilient and sustainable supply chain</td>
</tr>
<tr>
<td>- Stronger balance sheet</td>
</tr>
<tr>
<td>- Creation of higher paying jobs through better land use of the port area</td>
</tr>
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# Financial implications at a glance

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Upper North Island Supply Chain Strategy
Good afternoon

Please see below our consolidated response on behalf of AFFCO / Open Country Dairy / Talley’s on the questions posed by the review.

**Question 1. What are the strengths of the Upper North Island’s (UNI’s) current 3-port freight system?**
- Tauranga and Auckland compete with each other to drive increased throughput, service and attract international carriers & services. Northport is not currently seen as a viable option/competitor because of the location and available container vessel services calling there. If Northport was to ever become a viable alternate it would require significant infrastructure investment in the internal transport network (i.e. plant to port options) given its distance from the key production areas (e.g. Waikato) and significant cooperation with shipping lines.
- “Port connect” is a joint website which both Tauranga & Auckland use for visibility of container whereabouts. (one stop shop)
- Tauranga and Auckland are large ports (in terms of scale in New Zealand)
- Tauranga already dredged as a large vessel capacity port

**Question 2. What are the weaknesses of the UNI’s current 3-port freight system?**
- Northport doesn’t compete with Auckland or Tauranga. The location of Northport limits the ability to participate in large volumes similar to Auckland and Tauranga because of the freight network to get to Northport and that the volume has to travel past (through) Auckland or Tauranga to get to Northport.
- Two big ports reasonably close to each other competing rather than working together. Fighting for vessel calls and container supply. Transit times are increased unnecessarily if both ports are called in a vessel rotation.
- Imbalance of imports and exports at each of the two big ports, resulting in inefficiencies with empty containers and full containers coming into one port and going out from another.
- Northport also relatively close to Auckland creating possible extra duplication
- Impacted by other port calls around NZ and Australia. Delays, omissions, ‘cut & runs’ at other ports have flow on impacts to port calls at Auckland & Tauranga.
- Lack of consistent and regular feeder vessel options from other parts of NZ. Limited capacity and schedules available adds time to transit times from producer to customer when using feeders. Also feeders can be held up in Australia
- Unionised staff at ports able to cause disruption as seen in previous strikes in Auckland and Lyttelton and Sydney.
- Both have congestion issues on the port and in the road/rail network supporting the port. If one gets congested, cargo moves to other which then congests that one as seen at the moment with cargo moving away from Auckland to Tauranga. No spare capacity to handle changes in the NZ supply chain
- If Northport was used instead of Auckland, then a large portion of cargo would have to travel through an already congested Auckland supply chain (road & rail)

Question 3. What opportunities exist to improve the UNI freight system over the next 10, 25 and 50 years?
- Regular connections direct to key global destinations on vessel services.
- Consolidation of logistics services into hubs to improve efficiency of movements from door to door using efficient transport solutions to meet these regular vessel connections.
- Attraction of large global players to ensure container supply and vessel space is consistent to meet our increasing volumes and often seasonal supply.
- Significant improvement in the internal transport network (i.e. plant to port options). That would include more efficient, timely and cost competitive rail options from key producing regions direct to ports. Rail has a much larger role to play if it was as efficient as it could be, similar to other networks in US & Europe.
- Customers able to deliver to their closest port or hub and still be able to access all services available at any port because of inter-connection and collaboration between hubs and ports.
- Reliable and consistent services provided to reduce rework and uncertainty of supply of logistics services.
- Port specialisation ([containers vs logs & Breakbulk), (Deep port vs shallow port)] to improve efficiency. Transport & logistics specialisation to follow to support. Investment to be focused on requirements to support the port specialisation to deliver better value rather than trying to do everything.

Question 4. What are the main threats to the UNI freight system over the next 10, 25 and 50 years?
- Becoming a hub to Australia rather than direct calls from New Zealand with final destinations.
- Congestion on ports and congestion on land transport to and from port.
- Loss of major shipping and logistics players, reducing capacity and options.
- Consolidation of vessel services resulting in less frequent options into market.
- Truck driver & truck availability, Rail capacity availability. Dedicated transport capacity not available to service growing logistics requirements.

Question 5. Do you think the ownership structures of the 3 UNI ports are providing optimal freight outcomes for NZ Inc? If not, why not, and what would you change?
- Auckland port being owned by the Auckland City Council is not ideal as they are not specialists in operating a freight operation. They are torn between what are the best interests for Auckland city vs the best interests for the port as an operating entity. Community backlash is often seen when the port announces changes to their layout.
- Tauranga port being owned as a public company and listed on the NZX has a much stronger focus on development and growth to be the best port in NZ. Cruise ships are welcomed in Tauranga as an example.
- Northport 50% / 50% ownership of private companies, similar to Tauranga can ensure port and supply interests are front of mind.

Question 6. If you could redesign the UNI freight system from scratch:

a. How many ports would you have? Two ports would encourage competition and potentially specialisation. Ideally only one container port required though to service the upper North Island. This would then fix the container inbound/outbound imbalance and create a specialist hub.

b. Where would you locate them? Central to where the volumes are to reduce the logistics moves and to support hub operations spread throughout the rest of the North Island. Enough area to support the seasonal demand placed on the port with contingency and transport availability. Not land locked or constrained by other man made or natural constraints.

c. What would their roles be? If one port was the solution, then the port to control everything on the port and in the hubs. The Hubs become acceptance points and the port can then create efficiencies of transport in and out of port. If two ports is the solution, then the port controls just port operations so that Hub is independent and can service both ports. This gives exporters options of which services suit their requirements and can ensure there is competition.

d. Who would own them? Private owned but with Government watchdog to ensure monopoly isn’t abused with rates & charges.
Question 7. What feedback do you have on the questions implied by our current Terms of Reference for the review?

- We support the development of a unified national port/supply chain strategy and share the views of other member organisations of the NZ Shippers Council and recommendations of the NZIER “Bigger Ships” report (2017) calling for a synchronised approach to investment decisions in road, rail, port and coastal shipping infrastructure.
- The Upper North Island will play a critical part in any such national strategy, with the two largest ports of Auckland and Tauranga alone accounting for around 70% of the country’s container throughput. As such, any investment decisions specific to the Upper North Island will have major implications on the NZ supply chain as a whole and this needs to be factored in from the start.

Please let me know if you have any questions on this or if we can be involved in any other way.

Kind regards

[Name]

AFFCO New Zealand

6128 Great South Road, Horotiu 3288 | Private Bag 3301, Waikato Mail Centre, Hamilton 3240

From: Vaughan Wilkinson
Sent: Monday, December 10, 2018 4:24 PM
To: [Name]
Subject: UNICS meeting agenda and notes

Hi [Name],

FYI. See attached.

If the December meetings didn’t suit you then there are likely to be more in January.

It might be worth considering having your views heard.

Vaughan

Sent from my iPhone

Begin forwarded message:

This email message and any attachment(s) is intended solely for the addressee(s) named above. All sales are subject to AFFCO's Terms and Conditions of Trade.
Tēnā koe [recipient]

Re: Upper North Island Supply Chain Strategy

You may be aware of the Government’s review on the Upper North Island logistics and freight settings. The Government has a strong interest in the future of New Zealand’s ports, freight services and coastal shipping, seeing it as critical to lifting and securing the economic well-being of New Zealanders, and in promoting opportunities for regional development and employment. There is a strong interest in developing an efficient and effective transport and logistics infrastructure that is resilient and works in the national interest. The Government is also mindful of the need to ensure the best use of scarce resources such as land, especially in metropolitan areas.

New Zealand’s freight volumes are expected to continue to grow, and all parts of the freight system will be impacted by this growth. The Ministry of Transport suggests that New Zealand’s freight task is projected to increase by about 50 per cent over the next 30 years. Understanding the drivers of, and uncertainties around, future freight and logistics demand is critical to ensure that New Zealand’s supply chain is fit for purpose in the longer-term.

We are an independent working group appointed by Cabinet to lead the Upper North Island Supply Chain Strategy. Our work includes the development and delivery of a freight and logistics (supply chain) strategy for the Upper North Island, including ports. We will advise on the priorities for investment in rail, roads and other supporting infrastructure. We will also advise on the feasibility of moving the Ports of Auckland, with serious consideration to be given to Northport. We will consider a range of impacts including transport, land use and urban planning, as well as national and regional economic growth.

We are currently in the discovery phase of our work, taking stock of stakeholders and information that precedes this review. As part of this phase, we have identified your organisation as holding relevant expertise. We have a number of particular areas of focus (set out next page) that we would like to seek information and your views on. We would also value your professional consideration of the questions implied by our Terms of Reference that aren’t covered by our specific questions as they occur to you.

There will be two opportunities to provide us with input in the coming weeks:

1. On 13 and 14 December we are accepting applications for interested parties to meet directly with our study group in Auckland to discuss your thoughts on our questions. Please contact the secretariat through the email below, who will allocate a one hour slot.

2. We request that you send written input no later than 1 February 2019, we would imagine that this would not be longer than 3-4 pages of information.

We will use your input to inform how we proceed with the remainder of the review, and our interim reporting to Ministers.
In early 2019 we intend to get in touch with an update on our progress including more detail on further engagement and consultation with the Working Group.

In the meantime, you are welcome to contact myself or the secretariat at the Ministry of Transport via info@transport.govt.nz for more information or to express interest in meeting with us.

Nāku noa, nā

Wayne Brown,
Chair, Working Group

Further Information:

General information on the review: https://www.transport.govt.nz/multimodal/keystrategiesandplans/upper-north-island-supply-chain-strategy/


Working Group questions – your information requested:

1. What are the strengths of the Upper North Island's (UNI's) current 3-port freight system?

2. What are the weaknesses of the UNI’s current 3-port freight system?

3. What opportunities exist to improve the UNI freight system over the next 10, 25 and 50 years?

4. What are the main threats to the UNI freight system over the next 10, 25 and 50 years?

5. Do you think the ownership structures of the 3 UNI ports are providing optimal freight outcomes for NZ Inc? If not, why not, and what would you change?

6. If you could redesign the UNI freight system from scratch:
   a. How many ports would you have?
   b. Where would you locate them?
   c. What would their roles be?
   d. Who would own them?
   e. Who would operate them?

7. What feedback do you have on the questions implied by our current Terms of Reference for the review?
Will It Serve to 2050 and Beyond?

Logistics Capacity and Dynamic Operation of the POINT Strategy for development of the Upper North Island Supply Chain, Northland and Auckland Waterfront

Susan Krumdieck

Technical Analysis

The development of a robust strategy for the long-term future of the UNISC must be based on sound technical analysis. The UNISC Working Group engaged with EY Consultants to carry out economic and multicriteria analysis of a range of infrastructure development options. This report provides analysis of the Preferred Option Infrastructure: Northport-Tauranga (POINT) based on logistical dynamic modelling of the full realization of the POINT Strategy.

Near-term economic benefits and costs can be estimated with some level of confidence. Value of land which could be re-developed as Auckland waterfront has been estimated by EY Consultants. Capital cost of full development of Northport has been estimated by Marsden Maritime Holdings. Capital cost of the NAL and Northport Spur have been estimated by MOT and KiwiRail. The capital cost to upgrade and widen state highways and other roads have been estimated by consultants and contractors. The cost of imported fuel used in the freight supply chain can be estimated.

Other costs and benefits are harder to estimate, particularly when considering the 40-100 year timeframe. Cost of current supply chain inefficiencies is difficult to assess. Cost of uncooperative operations or current shipper behaviour are likewise problematic. The cost of imported fuel not used, and benefits to the balance of payments for the national economy can be understood, but are difficult to quantify. The risk to economic activities due to probably freight infrastructure failure, such as the Kaimai Tunnel, is also hard to put a monetary figure on.

Figure 1. POINT Strategy

The Working Group commissioned economic analysis of various options. The Preferred Option, called the Full Move to Northport Scenario, had superior multicriteria analysis score and BCR >1.
POINT Strategy 2050

The motivation for this modelling project is to provide technical evidence for the system logistics capacity and dynamic operation of the POINT Strategy. The approach is to build simulation models of key components of the fully implemented UNISC, test the capacity pinch-points, and validate the functionality in the long-term. This logistics dynamics analysis looks at the future UNI supply chain around 2050, when the full potential of the POINT Strategy has been realized and it is functioning as normal. The UNI transport geography has challenges that will have been overcome with good engineering and management. The POINT 2050 will also have some pinch points, where natural geography or infrastructure may limit dynamic performance or capacity.

The approach is to identify the possible pinch-points in the POINT Strategy for handling the full freight task in 2050, and thus validate the concept or identify the need for further work. Table 1 gives the infrastructure capacity of the POINT Strategy as it will be under operation in 2050.

Table 1. The POINT Strategy 2050 and the freight task used to test the capacity and operational dynamics at the UNISC pinch points.

<table>
<thead>
<tr>
<th>2050 Component</th>
<th>Description POINT 2050</th>
<th>Export Capacity</th>
<th>Import Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northport</td>
<td>1.4 km Berth at 14.5 m depth 7 x 185 m or 6 x 215 m vessels; Berths: 4 x container, 1 x log, 1 bulk 33 ha container hardstand 5.3 ha hard pavement Rail Spur to NAL Intermodal Terminal at port 5 small consolidation hubs in Northland hinterland on Rail</td>
<td>2.5 MT Logs 1 MT wood 1.1 MT bulk 1 MT Fruit 1 MT Milk 0.16 M TEU (3.5 MT) from Auckland</td>
<td>0.45 M TEU (25 MT) to Auckland 215,000 RORO with 35,000 transshipped 8000 Heavy Vehicles 2.5 MT to Northland</td>
</tr>
<tr>
<td>North Auckland Rail Line</td>
<td>Rail line from Southdown Auckland to Northport 140 km Single Track Enlarged Tunnels for full containers Number of passing loops and tracks required to facilitate the train rate. No constraint on operation hours.</td>
<td>NAL Connections Northport to -Moerewa -Waimuku -Southdown</td>
<td>Capacity 15 trains per day 140 TEU per day 0.715 TEU per year</td>
</tr>
<tr>
<td>Coastal Shipping</td>
<td>Transhipments from Northport to all other ports</td>
<td>No constraints on windows around main shippers</td>
<td></td>
</tr>
<tr>
<td>North-West Auckland Waimaku MetroPort</td>
<td>Waimaku Intermodal Terminal for freight continuing to South MetroPort Multimodal Terminal for North Auckland freight being distributed in North Auckland</td>
<td>No constraint on rail yard, terminal or container storage</td>
<td></td>
</tr>
<tr>
<td>Avondale Freight Rail Corridor</td>
<td>55 km Freight Rail double track with either tunnel or flyovers and engineering of minimized friction with</td>
<td>Transhipment at N-W = no constraints 6-8 trains pd 75-140 TEU per train</td>
<td></td>
</tr>
<tr>
<td>Swanson to South MetroPort</td>
<td>Auckland urban activities. 60% of import TEU continue through Auckland on the rail to Southdown.</td>
<td>to southern deliveries</td>
<td>Tranship from other ports 5 MT per year</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>----------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Ports of Auckland CBD Terminal at Fergusson Wharf</td>
<td>Transhipments from NorthPort and other ports land cargo at Fergusson Wharf which also has warehouses, fish markets, and open air farmer’s market supplied by local vessels.</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Ports of Tauranga full capacity, and new Kaimai Tunnel</td>
<td>Second or alternative Kaimai tunnel route is built. The new tunnel does not significantly increase capacity, but does improve resilience. Higher risk of delays will result from increasing the rail to 55% mode share</td>
<td>Trains Per Day Container 6 Agriculture 2 Wood Prod 2 Logs 3 (empty) Freight 1 Steel 1</td>
<td>Trains Per Day Container 6 Agriculture 2 Wood Prod 2 Logs 3 Freight 1</td>
</tr>
</tbody>
</table>

**Freight Task of the Upper North Island in 2050**

*What assumptions should we make about the freight task for imports and exports in 2050?*

The Zero Carbon Amendment Bill stipulates that net greenhouse gas emissions will be carbon neutral by 2050 (Shaw, 2019). At least 24% of NZ’s GHG emissions are from diesel fuel (MBIE, 2018). Planting trees will provide some carbon accounting benefits in 2020-2030. However, system-level transition from a freight supply chain that relies entirely on diesel to one that does not need more than 60 million litres of diesel fuel will have been accomplished by 2050. Personal transport is responsible for at least 25% of GHG emissions, and the re-development of urban form to accommodate the zero carbon modes of transport will have been completed by 2050. The re-development of urban form will also reduce the “last leg” goods delivery distances, and will be accompanied by logistical system management innovations that greatly reduce fuel demand. This re-development transition is the subject of research, and methods are currently being developed to engineer the low carbon transition (Krumdieck, 2019). An important part of this transition will be reduction of consumption of low-value, short-lived goods from abroad, which will arrest the growth of the import freight task. The export of high bulk, low-value commodities from New Zealand will also have transitioned to high value, low bulk goods. Under the low carbon scenarios of the OECD, a carbon price of more than $200 US per tonne of CO2 will be in effect, by various means. This will disincentivise freight transport of low value goods and waste. The assumed freight demand will not grow from 2019 to 2050 as was forecast in the 2014 National Freight Demand Study, and rather will be more in line with the 2018 forecast of essentially no growth (MOT, 2014; MOT, 2018).

**Assumptions for POINT 2050 Operation**

Auckland’s import markets are supplied through POT and Northport via road, coastal shipping and rail. The North Island’s export industries are connected to international shipping via rail link to their nearest regional port. In 2050 the demand for long-haul truck freight is nearly 0% mode share. In 2050 the COP21 Paris agreement has been achieved, and global petrol and diesel supplies are less than 10 mbpd (compared to 100 mbpd in 2019).

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1 2016 diesel fuel consumption was 630 million litres of diesel | [StatsNZ, 2017](https://www.stats.govt.nz)
The North Auckland Line (NAL) extends from Northport to a new West MetroPort, located near Waimaku, and through Auckland via upgraded line and Avondale freight corridor between Swanson, Southdown and South MetroPort. The NAL in 2050 has single track with station loops and tunnels and bridges capable of handling modern containers. The average train speed is 30-40 km/h. The average train is around 50 wagons with 3 TEU capacity each. The West MetroPort in 2050 has sufficient capacity in area and lay-out for container hard stand and train intermodal terminal, and thus is not a pinch-point. Industries and warehouses have located at the ports, along the rail lines at depots, and surrounding the inland terminals so that the customer delivery of 85% of freight can be accommodated by rail siding. Auckland CBD is a high-density urban city. The 2050 Auckland waterfront has mixed use residential, commercial and retail development of the previous wharves, except for Fergusson which serves the goods delivery, warehousing and open-air market for the 1 million residents of the CBD area. The goods delivery are transhipments from Northport and other regional ports are delivered to the “front door” into a public space of high amenity value.2

Modelling Method Description

Agent-based simulation is used to model the key component infrastructure and combined dynamic performance of the POINT 2050. Appendix A has descriptions of the modelling methodology. The simulations investigate key variables which influence the operational capacity of the UNISC. Additional capabilities include measurement of simulated tkm and energy use, effects on congestion in a particular part of the urban area or on particular roads.

The objective of the simulations is to evaluate the pinch points in the supply chain and provide engineering answers to the question; will the POINT 2050 serve the freight task?

Pinch Points Investigated

1. Bream Bay channel entrance into Whangerei Harbour:
   One ship at a time can enter or exit through the channel. The ships cannot turn around and must be tugged into the berth. The tug time depends on size of the ship and the tide. Can the fully developed Northport service the 2050 freight task?

2. North Auckland Line Rail Capacity:
   In 2050 all of the long-haul freight task must be carried by the rail in order to achieve the low-carbon economy. What capacity of the NAL must be built in order to serve the 2050 freight task?

3. 2050 Freight Behaviour in Auckland:
   The POINT 2050 would have large import freight flows into the north-west of Auckland, and rail carrying on through the Avondale Corridor to Southdown. Coastal transhipments from Northport to the POA for CBD customers is also available at Furgeson Wharf. How does this 2050 supply chain work? What is needed to make it work efficiently?

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2 For reference Wellington’s Harbourside Market or Sidney’s Rocks Market
Freight Operation Management System

Freight companies such as Mainfreight and Toll currently have logistics management systems to ensure high utilization, backfill delivery and efficiency. The UNISC in 2050 will have a NZInc. logistics management system. The behaviour of the independent operators and wholesalers will match cargo loads at terminals, ports and depots with the truck companies that can pick up cargo and deliver it to a customer at a warehouse, distribution centre or industrial location, then return with a load as well. Efficient freight forwarding behaviour means that any truck can accept a transfer of any cargo from any depot to any customer, but their utilization is optimized and energy use minimized by the NZInc. logistics management system.

1. Northport Simulation

The first pinch-point investigation in the Preferred Option is the operation of Northport. The simulation will be vital to validation of the Preferred Option, as the port is not yet designed or built, and because the operation of a port is primarily determined by the ocean, bay and land geography. The simulation focuses on the arrival to berthing of the international cargo ships. The Preferred Option has the expansion of Northport to 1.4 km of berthage at 14.5 m depth along the whole berth. This is on a par with the POA, so is not a concern. The key question is the rate at which the week’s freight duty aboard international ships can enter the Northport, be tugged into the berthage, tugged out and exit the port. The crane rate and other dock-side operations would be able to be developed to handle the cargo, so are also not going to be part of the simulation.

![Figure 2. The land-side facilities are assumed to have capacity to fully develop the intermodal terminal and processing facilities and the train and truck entrances and exits to accommodate the full import and export loads.](image)

We assume that port-side handling cranes, staging areas, storage areas and train building can be built and expanded to supply the freight tasks without constraint. The constraints to
be investigated are the ship arrivals, windows, and exits of the berths and the shipping lane at the rates needed to deliver and pick up the 2050 cargo.

**Port Performance Assumptions:**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Description</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vessel Rate</td>
<td>Containers per hour moved by Labour</td>
<td>60-80</td>
</tr>
<tr>
<td>Crane Rate</td>
<td>Containers per hour moved by Crane</td>
<td>30-37</td>
</tr>
<tr>
<td>Land Efficiency</td>
<td>TEU handles per year per hectare of land</td>
<td>70000</td>
</tr>
<tr>
<td>RORO Productivity</td>
<td>Car equivalent units (CEU’s) per ha/yr</td>
<td>25,000</td>
</tr>
</tbody>
</table>

**Bream Bay Entrance to Whangarei Harbour**

The curvature and narrowness of the deep channel result in restrictions in speed, and traffic of large ships. The rate at which a ship can safely manoeuvre the inlet and get towed to a berth will need to be managed to achieve the target 2050 freight duty at Northport. Thus, we discussed the time requirements for navigation and towage with Tom Greg at NorthTugz. The data given below were used to model the Northport operations.

**Tug Operation**

- Suezmax ships 275 m length overall, 160000 displacement (high tide only) 2.5 hours
- Palm Kernel Ships (From Indonesia) 1.5 hr straight in (high tide), 2 hr (low tide)
- Logs ships 1.5 hr straight in (high tide), 2 hr swing in (low tide)
- Container Ships 1 hr straight in (high tide), 1.5 hr swing in (low tide).

*Figure 3. Entrance of the Whangarei Harbour from Bream Bay requires that ships make the manoeuvre one at a time. Large ships can only make the transit at high tide. No ships can turn around in the Whangarei Harbour, so the tug operation brings them in from the bay to the wharf.*
Time in Port for Export Cargo ships
- Log ships from China (3 days loading)
- Log ships from other parts (12 days loading)
- Pop in pick up (1.5 - 2 days)

Time in Port for Import Cargo, RORO and Container Ships
- Palm Kernel Ships (3-4 day to unload)
- Car Carriers (12-24 hours)
- Container Ships (12-24 hours)

Ship Window Demand
The berthing window for August-October 2019 was used in the simulation.

1.1 Results of Northport Ship Windows Modelling

A sample of the historical Northport log export ships and Auckland ship windows were applied to the full Northport development. The results show that all of the ships can be handled at the port, with container berth utilization of 60.7%. This is relatively high berth utilization. In the simulation, the maximum time in the arrival queue was 550 minutes, and maximum time in the departing queue was 65 minutes. Figure 4 shows the results for the simulation setting of applying the POA window schedule and randomized arrivals but historical berth window times. Table 2 gives the results of all the simulation settings.

![Figure 3. Container Ship queue wait events and queue times for arrivals (top) and departures (left) for POA window historical schedule (left) and random arrival simulation (right).](image)

<table>
<thead>
<tr>
<th>Northport Simulation Setting</th>
<th>Container Ships Served</th>
<th>Berth Utilization</th>
<th>Maximum Arrival Queue</th>
<th>Maximum Depart Queue</th>
</tr>
</thead>
<tbody>
<tr>
<td>POA Window Historical</td>
<td>100%</td>
<td>60.7%</td>
<td>550 min</td>
<td>65 min</td>
</tr>
<tr>
<td>Random Assignment of POA Volume</td>
<td>100%</td>
<td>58.5%</td>
<td>1183 min</td>
<td>52 min</td>
</tr>
<tr>
<td>Managed Arrival Windows</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1.2 Conclusion

Northport full development can serve the UNI supply chain and with good port management the port could be efficient and attractive to container ships. Dock-side services can achieve world-class efficiency and short berth times through good engineering and management, and thus increase the number of ship calls and TEU handled. The channel is a pinch point, but it is not a constraint on the development of Northport as the main port of call for imports to Auckland to 2050 and the century beyond.
2. North Auckland Line

The NAL in the POINT 2050 has heavy duty single-track with passing stations and double track sections where needed to meet the capacity. The line has no height restrictions on containers. The rail line connects from Waimuku to Southdown and Wiri. There is a new freight track through the Avondale corridor.

*Figure 4. Historical NAL, MetroPort box storage and Intermodal Terminal*

The NAL 2050 is single narrow-gage track with at least 3 stations where trains can wait and pass. The main constraint on this line will be train speed and operation schedule. The main capacity investigated is the number of trains per day. If all imports cannot be handled by train, then we will determine how many coastal shipments per week would be required.

Figure 5 shows the simulation platform for the NAL to Southdown. The NAL 2050 line will be assumed to have train cruising speed up to 40 km/h which is commensurate with level crossings and hauling of liquids and tight curves and tunnels. The NAL will use two known stations as passing loops and will then we will investigate adding loops where congestion is indicated. The train length average is 50 wagons, and the capacity per wagon is 3 TEU, with average train set moving 140 TEU. The train departure schedule is the main pinch point on the number of trains per day. In order to generate more trains per day, the crane rate at Northport and the handling rate at the metroports would need to be able to handle the cargo. The first set of models were carried out with the currently seen train schedule of 105-minute inter-train departures.

*Figure 5. Agent based simulation of the North Auckland Line for a case of 30 minute departure intervals and 3 passing loops.*

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3 Current NAL train length is ~35 wagons, and current ECMT train length is ~50 wagons.
Long Term Question: Can all the Auckland import freight be moved by train?

In 2050 the NAL should have the capacity available for freight duty of 450,000 TEU per year. The main factors on the NAL are train speed, loading time and operation schedule. The maximum number of trains should be able to handle the POT containers as well in case of natural disaster or accident. The maximum capacity model has four passing stations with double tracking the main congestion point for return train traffic which was identified through the dynamic simulations. It is still not possible to carry the total UNI freight unless an aggressive 30-minute intertrain departure schedule is implemented. The short departure schedule could be possible but it would impose high risks of cascading delays if one small hitch in the system were to happen.

2.1 Results North Auckland Line Simulations

Table 3 gives the results of the North Auckland Line dynamic simulations. The NAL 2050 can carry the assumed import task of 450,000 TEU per year, but the line has to be in very good condition for high cruise speed, the handling rate has to be world-class, and the management has to be able to allow tight departure schedules. Relieving the congested section of the line with double track does not automatically increase capacity. Capacity is more determined by the number of trains that are departed from the port, which is determined by the departure schedule.

<table>
<thead>
<tr>
<th>Simulation Setting</th>
<th>Train Speed</th>
<th>Train Departure Schedule</th>
<th>Trains per day (max)</th>
<th>TEU Capacity per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Track 3 Passing Stations</td>
<td>30 km/h</td>
<td>105 min</td>
<td>5</td>
<td>255,000</td>
</tr>
<tr>
<td>Single Track 3 Passing Stations</td>
<td>40 km/h</td>
<td>105 min</td>
<td>7</td>
<td>357,700</td>
</tr>
<tr>
<td>Single + Partial Double Track 4 Passing Stations</td>
<td>40 km/h</td>
<td>75 min</td>
<td>8</td>
<td>408,800</td>
</tr>
<tr>
<td>Single + Partial Double Track 4 Passing Stations</td>
<td>30 km/h</td>
<td>30 min</td>
<td>15</td>
<td>715,000</td>
</tr>
</tbody>
</table>
3. Inland Depots on the Outskirts of Auckland

The Transition from POA to Northport:

The arrival of container ships at the POA generates train trips and truck trips to move the containers to Southdown inland depot. Truck trips are generated between the inland depot and the customers, which are warehouses or factories. Thus, in the Auckland urban area, we can model the effect on urban truck tone-kilometers (tkm), of the location of the ship arrivals and the locations of inland ports. The freight supply chain usually refers to the tkm from port to inland depots which can be by train or truck. The distribution tkm is between the inland depots and the warehouses or factories. The distribution is largely in the urban area and can be greatly affected by the supply chain infrastructure. The effect of the POINT 2050 on the urban truck distribution tkm was explored using agent-based simulation scenarios.

How does the freight supply chain infrastructure and operation affect the City of Auckland?

Figure 6 shows the screen capture of the simulation. Three cases were simulated with the same average ship arrival rate of 1-2 ships per hour, 1000 containers per ship offloaded and 100 ships arriving per month. There are no constraints on the number of trucks or rail wagons in the scenarios. The number of wagons and trucks utilized is determined by the cargo flows from inland depots to customer warehouses. The rules of the simulation stipulate that the truck trips are generated at the warehouse (empty) drive to the inland depot, and return with the cargo. The logic requires that trucks take the most direct route. The performance measures are the average tkm per truck and the average number of trucks on streets in the CBD area during the time to distribute the 100,000 TEU. In Figure 6 the warehouses are shown as green boxes, and are taken from 2019 GIS data.

Figure 6. Simulation of truck trips in the Auckland CBD for POA business-as-usual and comparison to the same 1000 TEU movements from Northport under two operations management settings.
3.2 Scenarios for POINT 2050 in Auckland

1. All of the freight TEU land at the POA, Fergusson Warf, and are transported by train to Southdown inland depot. All distribution is from Southdown to warehouses and depots around the greater Auckland metro area.
2. 50% of freight TEU land at POA and 50% at Northport. All containers are transported by train along the NAL to the inland depot closest to the final warehouse destination. The Northwest inland depot at Waimauku receives containers for customers on the North Shore. All other freight goes to Southdown.
3. 100% of freight TEU land at Northport. All containers are transported by train on the NAL. The logic for choosing either Waimauku or Southdown inland depots is again, proximity to the customer.

3.2 Results POINT 2050 effect on Truck Traffic in Auckland CBD

The results show that the POINT 2050 has much lower impact on the CBD than the current supply chain. Table 3 shows the results of the three cases. Note that the first case of all TEU landing at POA does not represent the current situation where 85% of the containers are transported to Southdown by truck, through the CBD. Rather it represents the POINT 2050 where the rail connection between Fergusson Wharf and Southdown can carry 100,000 TEU per year if needed for resilience. With the shift of freight traffic to Northport and location of an inland depot at Waimauku, the freight going to North Auckland customers has less tkm than from Southdown. The third scenario where all freight lands at Northport and is railed to the inland depot nearest the final destination, the tkm per truck, and the number of trucks are the lowest. It should be noted, that once the POINT Strategy is implemented, and the new northwest MetroPort is established, new industry will likely locate near the inland depot. Also some of the industries and warehouses currently in high cost, congested areas of the city are likely to re-locate closer to the rail access.

Table 3. Results of simulation of distribution of 100,000 TEU from 100 ships, with all transport from port to inland depot by rail.

<table>
<thead>
<tr>
<th>Simulation Setting Percentage TEU at NorthPort</th>
<th>Average Number of Trucks in CBD at any time</th>
<th>Average tkm per Truck from inland depots to warehouses</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>20</td>
<td>71</td>
</tr>
<tr>
<td>50%</td>
<td>11</td>
<td>35</td>
</tr>
<tr>
<td>100%</td>
<td>10</td>
<td>24</td>
</tr>
</tbody>
</table>

3.3 NOTE on Logistics Management System

The simulation was also run without the logic or closest delivery for truck trip generation. This randomized call for delivery resulted in more than 10x greater truck density and tkm for all scenarios. This is the main reason we are stressing the need for a logistics management system as part of the transition for the POINT Strategy.
Appendix A – Agent Based Simulations

A1. Port Modelling

The agent-based simulation is carried out by establishing the logic of the model, then creating programming blocks that execute the logic. Figure A.1 illustrates the logic and data flow of the simulation. The simulation runs in real time, so actual data about ship windows, tides, TEU landings, train schedules, crane rates, tug servicing times, etc. are used to program the logic. Agents are the ships, containers, trains or trucks that enter the supply chain at a source point. The arrival of ships is set by the operator. The type and size of ships is set for the simulation. The arrival can be set according to a schedule or can be randomly generated to fit a statistical distribution derived from historical data. Figure A.2 illustrates a statistical distribution for interarrival times and unloading times of container vessels derived from data for POA. Conditions can be placed on progress through the processing. For example ships may need to stand off in a queue if there is already a ship being tugged to or from the berth, or if all of the berthing is occupied. The arrival and departures of ships take a certain amount of time depending on the size of the ship and the tide condition.

![Diagram of agent-based simulation logic](image)

**Figure A.1.** Schematic of the agent-based simulation programming flow and logic for ships arriving and being serviced.

![Histograms of time between ship arrivals and unloading times](image)

**Figure A.2.** Distributions of time between ship arrivals (left) and unloading times (right) for container vessels at POA.
A.2 Train Modelling

The Agent based simulation for the NAL requires the GIS data for the route which was acquired from existing sources. The number of passing loops and train speed are set for the simulation and the departure schedule is the main independent variable. The logic rules are that the trains are generated according to the schedule, and travel the line to the destination at the designated speed. There can also be stop times at each station on the route. The main limitation on the number of trains per day will be the ability of trains to pass each other on the return trip. The logic rule is that a northbound train must wait at a station if an oncoming southbound train is approaching and the northbound train cannot make it to the next station ahead of the southbound train. The northbound train must wait until the southbound train passes. The wait time at each station is thus the set schedule wait time plus any line conflict wait time.

The objective of the simulation is to push the most number of trains through the supply chain as possible within one working day. The time to unload at Waimauku is also set but is assumed to be short due to high efficiency terminal operations.

The screen capture in Figure A3 shows the simulation model as built for the NAL 2050 study. The simulation has the historical train route and different scenarios of stations with passing loops and stops. The simulation shows train congestion experienced at Wellsford due to the last trains heading south causing delay in return start by northbound trains. The simulation on the scenario with the maximum capacity runs 15 trains on a return trip each day at 30 km/h train speed with 30 min departure intervals and 4 stations with passing loops plus a double tracked section around Wellsford to reduce congestion. The assumed intermodal transfer rate is 1.5 minutes per TEU. Assuming the 2050 train length is 50 wagons and the loading is 140 TEU per train, then the annual TEU delivery for the maximum capacity scenario would be 0.715 million TEU full to the south and empty to the north.

Figure A3. Agent based simulation of the North Auckland Line model interface showing the variables used
For reference, the 2019 train set has average number of wagons of 35, carrying 3 TEU per wagon. The figures below give the results of the simulation for the 4 scenarios.

NAL 2050 – 3 passing stations, 30 km/h, 105 min departure schedule

NAL 2050 – 3 passing stations, 40 km/h, 105 min departure schedule

NAL 2050 – 4 passing stations + partial double track, 40 km/h, 75 min departure schedule
A3. Auckland City Truck Trip Modelling

The POINT 2050 would have a profound effect on the truck traffic in the CBD of Auckland. This was investigated by first setting up a basic simulation on a controller specified number of ships, TEU arrivals for distribution, a set number of trucks and train wagons. Then the same load was imported through POA and compared to import through Northport to Waimauku and Southdown by rail and distribution to customer by truck. We tested two Northport cases to understand the effect of operations management on the truck tkm and urban congestion.

The first Northport case had randomly generated truck deliver trips from both metroports to randomly selected customer warehouses. The second case had restricted truck delivery trips to south located customers being delivered from Southdown and similarly north Auckland located customers being delivered from Waimauku. Figure A4 shows the simulation of ship arrivals, transfers to Southdown, and local deliveries to customer warehouses. The GIS data was used to determine the urban truck routes chosen and the locations of the customer warehouses.
Figure A4. Simulation of CBD truck trips, tkm per truck and truck-rail utilizations.
Appendix B – Cargo and RORO ship Windows

The forward ship windows from Ports of Auckland were used to generate the demand for ship berthage at the fully developed Northport.

Log ships berth at the west end of the port where the log staging areas are located. The container ships are serviced at the same rate as the current Ports of Auckland. A maximum of 4 container ships can be serviced at one time.
Appendix C – Navigation Channel at Northport

References


Ship Arrivals to Northport (Scheduled Arrivals)  Document 81A

- The model simulates ship arrivals to Northport. Ships arrivals and unloading times follow a schedule based on vessel arrival records from Ports of Auckland (http://www.poal.co.nz/operations/schedules/arrivals).
- The main purpose of this model is to assess the impact of having to coordinate log ship vessels with container/vehicle vessels at Northport. Berth arrangement is based on Northland’s future vision.
- The time it takes to approach and depart to and from the port is a function of tide levels and data reported by port operators.
- The main constraint prevents the simultaneous flow of incoming and outgoing ships.

Results
- Average container berth utilization was 60.7%
- Maximum time at departing queue was 65 minutes.
- Maximum time at arrival queue was 550 minutes.

https://www.vision4growth.co.nz/
Ship Arrivals to Northport (Random Arrivals)

- The model simulates ship arrivals to Northport. Ships arrivals and unloading times follow a truncated normal distribution based on vessel arrival records from Ports of Auckland (http://www.poal.co.nz/operations/schedules/arrivals).

Results

- Average container berth utilization was 58.5%
- Maximum time at departing queue was 52 minutes.
- Maximum time at arrival queue was 1183 minutes.
Train Movements between Northport and Waimauku

- The model simulates train movements between Northport and Waimauku. A rail link to Marsden Point has already been proposed. Rather than using routes from OSM, this model is based on a customized network that includes a rail connection to Marsden Point (https://www.greaterauckland.org.nz/2018/03/09/northland-rail-part-2-marsden-point-line/).

- It allows to study different interventions to improve the train frequency within this corridor. The model allows to assess the impact of increasing train speed or converting a specific section of the network to double track.

- Moreover, the model delivers a potential timetable for train operations based on different strategies. The addition of a new terminal is not considered, yet, it is something that can be easily upgraded given the architecture of the background program. In the Business as Usual Scenario only 6 trains manage to do a run a roundtrip within the simulated time (1 day).

Results

- Given the current configuration (3 intermediate stations, 30 km/h train cruise speed, single track), only 6 trains per day will be able to run a roundtrip.

- In the second scenario we increased the train speed to 40 km/h and 6 trains per day will be able to run a roundtrip.

- In the third scenario, despite adding double track on the section that appeared to generate a bottleneck, still only 6 trains manage to do the roundtrip. However, the time between the arrival of the first train back to origin and the start of the next days schedule improves in relation to the BAU.
Links to online models

• Train Movements BAU Scenario:
  • https://cloud.anylogic.com/model/dc3b1a1f-eebd-4305-b4a1-0cae7d99a087?mode=SETTINGS

• Train Movements Alternative Scenario:
  • https://cloud.anylogic.com/model/29587ddb-d959-47ac-9ef9-83e67cff17eb?mode=SETTINGS

• Scheduled ship arrivals at Northport:
  • https://cloud.anylogic.com/model/4751a754-c921-4a0e-bbe1-44cb17d4d302?mode=SETTINGS

• Random ship arrivals at Northport:
  • https://cloud.anylogic.com/model/1cfe3fdf-0113-4ed1-b746-ae258ae87129?mode=SETTINGS
Memo

To: Upper North Island Supply Chain Strategy Working Group (Working Group)
From: Bruce McKay, Saffron Capital Ltd (Saffron)
Date: 23rd January 2019
Subject: Port Company Financial Returns – Paper 4

Summary

A common theme amongst industry participant is the low return on assets generated by the port companies. An Economic Value Added (EVA) analysis was undertaken for the Productivity Commission in 2012\(^1\) which indicated that for the 2008 – 2011 period the five major port companies all generated negative EVA.

This means that the return on capital generated by each company was lower than its weighed cost of capital (WACC), indicating that each company was failing to reward capital providers (and in particular equity holders) for investing in the company.

EVA is a methodology that can be used to compare a wide range of business, although like all financial metrics it does have strengths and weaknesses. The fundamental question is whether the entity being assessed is providing an appropriate level of return to investors or owner. Table 1 and Table 2 set out the data for POAL and POT as set out in the Productivity Commission report.

Table 1 - ROCE\(^2\) for Port Companies

<table>
<thead>
<tr>
<th>Entity</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ports of Auckland</td>
<td>6.0%</td>
<td>6.3%</td>
<td>4.6%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Port of Tauranga</td>
<td>5.3%</td>
<td>5.3%</td>
<td>5.6%</td>
<td>6.3%</td>
</tr>
<tr>
<td>Six Main Ports</td>
<td>5.6%</td>
<td>4.6%</td>
<td>5.4%</td>
<td>6.4%</td>
</tr>
</tbody>
</table>

Table 2 - EVA for Port Companies

<table>
<thead>
<tr>
<th>Entity</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ports of Auckland</td>
<td>-3.3%</td>
<td>-5.6%</td>
<td>-3.3%</td>
<td>-1.9%</td>
</tr>
<tr>
<td>Port of Tauranga</td>
<td>-4.0%</td>
<td>-3.6%</td>
<td>-2.3%</td>
<td>-1.6%</td>
</tr>
<tr>
<td>Six Main Ports</td>
<td>-3.7%</td>
<td>-4.3%</td>
<td>-2.5%</td>
<td>-1.5%</td>
</tr>
</tbody>
</table>

A quick cross check on the ROCE for POT for FY18 undertaken by Saffron Capital Ltd shows a ROCE of 6.12%. Share Clarity (www.shareclarity.com) reports a WACC for POT of 7.5%, indicating an EVA of -1.38%. Although just a snapshot of one year for one entity, it does infer continued negative EVA for New Zealand’s largest port company.

It is currently unclear what is driving these consistently poor financial returns, so further work is recommended in this area.

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\(^1\) International Freight Transport Services Inquiry, Productivity Commission, 2012, pp83 - 87

\(^2\) ROCE = Return on Capital Employed is defined as Operating Profit after Tax / (Net Debt + Shareholders’ Funds)
Memo

To: Upper North Island Supply Chain Strategy Working Group (Working Group)
From: Bruce McKay, Saffron Capital Ltd (Saffron)
Date: 23rd January 2019
Subject: Port Land Valuation Issues – Paper 2

Summary

The issue of the valuation of port fixed assets was raised by the Auditor-General in a letter to all New Zealand port companies in June 2018. The key points were:

- Variations in the fair value valuation of assets between ports;
- Grouping of assets in different classes; and
- Lack of internal/governance separation of investment property and port operating assets.

In considering these points the following is noted:

- The powers of the Auditor General are quite limited in terms of improving the reporting and disclosure obligations of the port companies. Other commentators have noted the discrepancies between accounting treatments for assets, but nothing appears to have changed.
- POT has the highest level of disclosure as a listed public company. POAL does not have any such audience. The disclosure of MMH is not considered further as its investment in port assets is via a shareholding in NTH; it does not own any port assets directly.
- The choices made by the port companies in terms of how assets are disclosed, useful lives, valuations of specialised assets are more or less up to the companies themselves. Advice will be sought from consultants, but the decisions rest with the board of directors, and in the case of some ports, with the shareholder(s).
- All port companies have to comply with IFRS accounting standards, however, as with the industry agreement on container operating statistics an argument could be made that all port companies should adopt the same format and approach to depreciation rates, asset valuations and revaluations. There will inevitably be some differences between ports due to differences in trade flows and location specific issues (dredging vs no dredging), however, that should not take away from the opportunity to place all port companies on the same measurement footing.

The assumptions used by ports is valuing their assets, in particular land, are in the hands of the port companies themselves and their advisors. Auditors do not have a role in assessing the veracity of an independent valuation by a specialist provider (as is the case with land valuations); the role of the auditor is to ensure the financial statements fairly reflect the information in the valuation reports.

We believe there is a case for establishing a common valuation/benchmark for port fixed assets to ensure that there is valid comparability between port companies.
Asset Treatments between POAL and POT

There is no consistent treatment of assets across ports. For example, POAL divides its assets into three classes: land, wharves and pavement, while POT groups wharves and pavement together. These differences make it difficult to clearly identify where assets have been constructed, and what values have been ascribed to them.

POT also includes an asset class called ‘Harbour Improvements’ which is the cost of dredging the channel. POAL spent funds dredging the Rangitoto Channel in 2004 and it has not included this as a separate asset class in its balance sheet; it is not clear whether this asset is even recorded in its balance sheet.

POT identifies two classes of dredging: capital dredging and maintenance dredging. Capital dredging is not depreciated at all, while maintenance dredging is depreciated over three years.

POAL includes land that it uses as part of its port operations as Investment Property, being land in Wiri where its inland port sits and in Penrose where it stores vehicles. POT does not separate its land into Port Operations and Investment Property but rather has just one entry for land. POT does however indicate to investors and analysts which of its land holdings are Port Operations and ‘Future Development’ separately from its financial statements.

The issue of investment properties relates more to the governance and management of these assets rather than valuation per se. The issue as far as the UNI ports is concerned relates to the investment property owned by POAL and to a lesser extent POT.

The Auditor General sees that investment property should be held through a separate entity with its own management and clear reporting lines to the parent company board. POAL does not appear to have any such structure in place for its identified investment property, while POT does not treat any of its land and buildings as investment property, although clearly some of its land holdings could be considered as such.

Asset Valuations

The key accounting policies and valuation metrics for POAL and POT are set out below in terms of the valuation of their respective land, pavement/hardstand and wharf assets. For the purposes of this analysis the plant, equipment & machinery assets are excluded.

<table>
<thead>
<tr>
<th>Policy Item</th>
<th>POAL</th>
<th>POT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valuation at Cost</td>
<td>No disclosure is made.</td>
<td>Discloses values of land, buildings, wharves, hardstand and harbour improvements at cost.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aggregate Value at Cost is $360,271m for FY18.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Value in Balance Sheet is $1,311,222m for FY18.</td>
</tr>
<tr>
<td>Useful Lives</td>
<td>Buildings 20 – 50 years</td>
<td>Buildings 33 to 85 years</td>
</tr>
<tr>
<td></td>
<td>Wharves 50 – 100 years</td>
<td>Wharves 44 to 70 years</td>
</tr>
<tr>
<td></td>
<td>Pavement 25 – 85 years</td>
<td>Basecourse 50 years</td>
</tr>
<tr>
<td></td>
<td>Plant &amp; Equipment 5 – 20 years</td>
<td>Asphalt 15 years</td>
</tr>
<tr>
<td></td>
<td>Other Assets 3 – 20 years</td>
<td>Gantry Cranes 10 to 40 years</td>
</tr>
<tr>
<td></td>
<td>Land is not depreciated</td>
<td>Floating Plant 10 to 25 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electronic Equipment 3 to 5 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other Plant &amp; Equipment 5 to 25 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintenance Dredging 3 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Neither Land nor Capital Dredging are depreciated</td>
</tr>
<tr>
<td>Depreciation Method</td>
<td>Straight Line</td>
<td>Straight Line</td>
</tr>
<tr>
<td>Deferred Tax Liabilities</td>
<td>Yes - $68.897m for FY18</td>
<td>Yes - $70.484 million for FY18</td>
</tr>
<tr>
<td>Policy Item</td>
<td>POAL</td>
<td>POT</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Valuation Date</td>
<td>30th June 2018</td>
<td>30th June 2018</td>
</tr>
<tr>
<td>Freehold Land Method</td>
<td>Port Operations Land is valued using the income approach. Other Operations Land is valued using a comparable sales approach and the income approach.</td>
<td>Land is valued using the comparable sales approach. POT adopts a ‘Waterfront Access Premium’ for land near the wharves of 25%, although there is no data on what this land area actually is.</td>
</tr>
<tr>
<td>Income Approach Inputs</td>
<td>Assumes land is sold in blocks of 2,300 sqm over a 30 year period (effectively nine lots per annum) with a sales value of $5,075 sqm per block. Using a discount rate of 12.85%, presumably pre-tax. Sale price escalation between 1.00% and 3.50% and cost price escalation growth between 2.56% and 3.00% over the term.</td>
<td>Not Applicable.</td>
</tr>
<tr>
<td>Comparable Sales Inputs</td>
<td>Land sale price between $3,000 per sqm to $6,000 per sqm for Other Operations Land. The income approach for Other Operations Land uses a market capitalisation rate between 6.25% to 7.25%.</td>
<td>Range of values per square meter of $300 - $700 for Sulphur Point and Mt Maunganui, with weighted average of $374/sqm. Range of values of $500/sqm - $522/sqm for Auckland land, with weighted average of $522/sqm.</td>
</tr>
<tr>
<td>Buildings</td>
<td>Not Separately Disclosed</td>
<td>Using Income Approach. Marketing Capitalisation Rate between 5.00% and 8.00% with a weighted average of 5.47%.</td>
</tr>
<tr>
<td>Wharves / Hardstand / Pavements / Harbour Improvements</td>
<td>Using Depreciated Replacement Cost basis as these are specialised assets. DRC calculates the current cost of replacing the assets in the current year and then depreciates that value backwards to when the asset was added/constructed on a straight line basis. Data is the weighted average.</td>
<td>Using Depreciated Replacement Cost basis as these are specialised assets. DRC calculates the current cost of replacing the assets in the current year and then depreciates that value backwards to when the asset was added/constructed on a straight line basis. Data is the weighted average.</td>
</tr>
<tr>
<td>Disclosed DRC Inputs</td>
<td>Total Wharf Construction Cost range is $2,767 - $5,650 per square meter. Residual value at end of economic life is 15%. No data provided on pavement</td>
<td>Wharf Construction Cost/sqm $6,446 Earthworks/sqm $9 Bascourse/sqm $31 Asphalt/sqm $44 Capital Dredging (range) $4 - $75 Pavement remaining useful lives 14 yrs Wharves remaining useful lives 24 yrs</td>
</tr>
</tbody>
</table>

Points to note:

- **Useful Lives**: Note that these are not equal to the depreciation rates adopted by the two companies. These are estimates of the remaining useful lives of the assets employed by the ports, but as can be seen there is quite some variation in the terms adopted for the useful lives. The depreciation rates used by each company are not disclosed but can be inferred with sufficient analysis.

- **Depreciation Method / Deferred Tax Liabilities**: Both companies use the straight line method in their published accounts, but use diminishing value method in their tax accounts, thus the amount of depreciation each year is greater in their tax accounts than their published accounts. This means that the profitability of the company is higher in the published accounts than the tax accounts, leading to the
impression of an overall lower tax rate. This difference give rise to the deferred tax liabilities, which can be thought of as the 'equity' that would have arisen if the straight-line method had been adopted in the tax accounts.

Over the life of an asset the deferred tax liability will extinguish once the asset is fully written off. This is a complex tax/accounting area; however, it is common amongst infrastructure styled companies and those with large fixed asset bases to adopt this differential accounting treatment for depreciation.

- **POAL Valuation of Port Operations Land**: The valuation methodology looks reasonable, although a number of assumptions appear to be at variance with current market practice e.g. land being sold in 2,300 sqm lots over a 30 year period, and the discount rate of 12.85%.

This discount rate seems to take into account developer risk as it is significantly higher than the market capitalisation rate used for built assets or for land bankers; however, it is not clear that POAL would take on this risk.

A change to shorten the timeframe assumption and lower the discount rate would increase the valuation of the Port Operations Land; see the discussion below on the CBRE Report.

- **POAL Valuation of Other Operations Land**: The market capitalisation rates used for FY18 are in the range of 6.25% to 7.25% for FY18 (midpoint of 6.75%) as compared to 6.25% to 8.25% for FY17 (midpoint of 7.25%). This compares with the discount rate of 12.85% used for the Port Operations Land – it is unclear why there is this significant divergence between discount rates.

Further, the market capitalisation rate used for Buildings by POT is lower than the rates used by POAL. The weighted average for POT is 5.47% compared to the midpoint for POAL of 6.75%, a difference of 128 basis points or almost 19%. The rate adopted by POT will mostly reflect the buildings sitting on its land in Penrose, but this cannot explain why the discount rates adopted in Auckland’s CBD should be higher.

There seems to be much obfuscation on this point. Additional data and analysis is required to assess the impacts of these issues on land valuations.

- **DRC Inputs**: POT provides far more disclosure on the DRC inputs than POAL in terms of input data and the useful remaining lives of the wharves and pavements. Further, there is no valuation input data for the pavements for POAL, nor does POAL provide a weighted average cost for its wharves.

**CBRE Indicative Valuation Report**

Table 2 sets out the key valuation parameters used by CBRE in its May 2013 report on the value of the Port Operations Land. This methodology appears to be the basis of the income approach used by POAL in its financial statements.

**Table 2 - Land Value Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CBRE 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Area</td>
<td>77.0000 hectares</td>
</tr>
<tr>
<td>Road Allowance</td>
<td>15.6000 hectares</td>
</tr>
<tr>
<td>Public Space</td>
<td>18.4000 hectares</td>
</tr>
<tr>
<td></td>
<td>Note this is 23.9% of the total area in part reflecting the longer coastal frontage as compared to Wynyard Quarter (6km vs 3km)</td>
</tr>
<tr>
<td>Developable Land Area</td>
<td>43.0000 hectares</td>
</tr>
<tr>
<td>Land Area Breakdown</td>
<td>Activity</td>
</tr>
</tbody>
</table>

Confidential
<table>
<thead>
<tr>
<th>Parameter</th>
<th>CBRE 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Residential</td>
</tr>
<tr>
<td>Maximum Floor to Land Area</td>
<td>3.75:1</td>
</tr>
<tr>
<td>This is the gross floor area (GFA) compared to the land area. This provides a total GFA of 1,612,500 sqm</td>
<td></td>
</tr>
<tr>
<td>Maximum Height</td>
<td>15 meters</td>
</tr>
<tr>
<td>This allows for a four level building with a 3.0m stud height.</td>
<td></td>
</tr>
<tr>
<td>Usage Mix*</td>
<td>Activity</td>
</tr>
<tr>
<td>Residential</td>
<td>943,100</td>
</tr>
<tr>
<td>Commercial</td>
<td>431,100</td>
</tr>
<tr>
<td>Retail/Entertainment</td>
<td>33,100</td>
</tr>
<tr>
<td>Parking</td>
<td>205,200</td>
</tr>
<tr>
<td>Total</td>
<td>1,612,500</td>
</tr>
<tr>
<td>Usage Mix Comments</td>
<td>Assumes 58.5% is residential, 26.7% is commercial, 12% is on grade parking and 2.1% is retail. Assumes 9,200 apartments and 7,300 on grade carparks (excl those within buildings).</td>
</tr>
<tr>
<td>Absorptions Rates</td>
<td>Residential = 200 apartments per annum Commercial = 8,000 sqm per annum Retail = 650 sqm per annum (but lumpy)</td>
</tr>
<tr>
<td>Average Apartment Size</td>
<td>88.8 sqm</td>
</tr>
<tr>
<td>Occupants Per Dwelling</td>
<td>1.9 occupants per dwelling</td>
</tr>
<tr>
<td>Development Time Frame</td>
<td>50 years, including four years of planning, consenting, roadservices installation and initial building construction before apartments occupied.</td>
</tr>
<tr>
<td>Civil Works</td>
<td>Estimated at $234.3 million for the entire land parcel, or $304 per sqm. This is necessarily imprecise as the actual civil costs depend on geo-technical surveys and engineering work to determine the actual ‘in the ground’ costs.</td>
</tr>
</tbody>
</table>

POAL instructed CBRE to conduct its indicative valuation on the basis that the land would be sold ‘in one line’. This implies that all 77ha would be sold to a single buyer in one transaction, which given the scale of the land and development timeframes adopted by CBRE is possibly unrealistic. There would be very few buyers for a parcel of land of this size and value globally and even fewer in New Zealand. A sale in one line is also at a discount to a more orderly sell down, reflecting the scale of the parcel. The net effect is to push the value of the land down by up to 25%.

CBRE have assumed that the buyer of the land parcel would act as a master developer, with ‘super lots’ progressively developed and sold to other developers and construction firms to create the structures and dwellings. CBRE has assumed super lots of 5,000 sqm each on average, although the actual size of the super lots would depend on design considerations.
The demand forecasts have been based, at POAL’s request, on the competition for land from Wynyard Quarter and other land parcels available for apartment development across the CBD. CBRE has assumed that development would begin in 2023, 10 years into the future based on the report date.

CBRE have adopted what could be considered aggressive discount rates for the development of the land. It has used two rates:

- A holding period discount rate, reflecting the time period until the super lots are sold to a developer for the construction of the buildings/dwellings/offices etc. This is assessed at 8.5% per annum.
- A development discount rate, reflect the period of construction or the buildings/dwellings/offices etc. This is assessed at 20.0% per annum

CBRE notes that the overall discount rate for the master developer works out to 10.7% over the 50-year term of the development. This is a blend of the holding period discount rate and the development discount rate spread over the term of the project.

CBRE ascribed a value of $300 million to $600 million for the Port Operations land, or $390/sqm to $780/sqm, implying a midpoint of $450 million or $585/sqm. The value adopted by POAL in its FY18 financial statements is $532.78/sqm which is below this implied midpoint.

The CBRE report is now over five years old and there has been considerable change in the property development market in Auckland, noticeable population growth and a considerable rise in property values in the CBD and across the city generally. A reworking of the assumptions in the report to reflect current market conditions would likely arrive at a higher valuation for the land. It may be worth pursuing a reworking of the valuation to take account of these factors.

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Memo

To: Upper North Island Supply Chain Strategy Working Group (Working Group)
From: Bruce McKay, Saffron Capital Ltd (Saffron)
Date: 21st January 2019
Subject: Port Company Financial Statements – Paper 3

Summary

This Paper sets out a brief analysis of the financial statements for each port company; firstly, the financial statements as presented and secondly the core port operations excluding associates, investments and investment property, as the case may be. Other adjustments, such as tax benefits are also adjusted for.

Table 1 - As Reported Financial Comparison

<table>
<thead>
<tr>
<th>Financial Analysis</th>
<th>2018 Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>POA</td>
</tr>
<tr>
<td>EBITDA Margin</td>
<td>41.6%</td>
</tr>
<tr>
<td>Operating EBIT Margin</td>
<td>32.1%</td>
</tr>
<tr>
<td>Debt/(Debt+Equity)</td>
<td>33.6%</td>
</tr>
<tr>
<td>Interest Coverage times</td>
<td>6.19</td>
</tr>
<tr>
<td>Tax Rate</td>
<td>10.2%</td>
</tr>
<tr>
<td>ROCE (pre-tax) based on Book Value</td>
<td>7.5%</td>
</tr>
<tr>
<td>ROCE (post tax) based on Book Value</td>
<td>4.9%</td>
</tr>
<tr>
<td>EVA</td>
<td>-3.3%</td>
</tr>
<tr>
<td>ROE based on Book Value</td>
<td>10.1%</td>
</tr>
</tbody>
</table>

Table 2 - Port Operations Financial Comparison

<table>
<thead>
<tr>
<th>Financial Analysis</th>
<th>2018 Port Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>POA</td>
</tr>
<tr>
<td>EBITDA Margin</td>
<td>40.0%</td>
</tr>
<tr>
<td>Operating EBIT Margin</td>
<td>30.2%</td>
</tr>
<tr>
<td>Debt/(Debt+Equity)</td>
<td>43.0%</td>
</tr>
<tr>
<td>Interest Coverage times</td>
<td>5.67</td>
</tr>
<tr>
<td>Tax Rate</td>
<td>26.2%</td>
</tr>
<tr>
<td>ROCE (pre-tax) based on Book Value</td>
<td>6.8%</td>
</tr>
<tr>
<td>ROCE (post tax) based on Book Value</td>
<td>4.9%</td>
</tr>
<tr>
<td>EVA</td>
<td>-3.3%</td>
</tr>
<tr>
<td>ROE based on Book Value</td>
<td>8.8%</td>
</tr>
</tbody>
</table>

Table 1 and Table 2 show that POT has an overall better financial performance as compared to POAL, with a higher operating margin, lower debt, higher return on capital employed and return on equity from core port operations.

POAL has a reported tax rate of 10.2%, however, this is artificially lowered by accessing the tax losses of Watercare, a fellow council owned subsidiary via a subvention payment. This is perfectly legal, however, it does ‘artificially’ lower POAL’s tax rate and enables it to boost its apparent profitability. After adjusting for this subvention payment POAL’s tax rate is 19.5%.

Table 2 also shows the tax rate from core port operations for POAL at 26.2%. This is because the imputation credits earned on its dividend from its MMH shareholding is removed, along with the tax effect of the revaluation of investment property. The revaluation of investment property is part of Profit Before Tax, however, as this is a ‘book entry’ only it is not taxable and is deducted from the tax calculation for Port Operations.
It is also noteworthy that both MMH and POT have higher returns on capital (ROCE) from their core port operations than their overall business. POAL is the reserve. Note that these numbers are based on book value, thus if an adjustment was made to ‘market value’ for the assets of POAL to reflect the fair underlying value of the Port Operations land then its ROCE would be even lower.

As noted in Paper 2, there are a number of issues with the way assets such as land, buildings, pavements, wharves and dredging are treated by the port companies, including the presentation of the financial information and underlying valuation inputs.

More work is required to understand these issues and correctly adjust for them to ensure that implicit subsidies (such as land value) are clearly stated. This analysis should therefore be seen as indicative of financial performance rather than descriptive.
Appendix - Adjustments between Reported and Port Operations Results

The following assets and revenue/expense streams, where possible, have been removed as follows for each company:

- **POAL**: All investment property and related revenue and expenses as well as the investment in MMH. Further, the tax position of POAL has been adjusted to remove the subvention payments received by POAL as part of the Auckland Council tax group arrangements. This places POAL on the same tax basis (more or less) as POT and MMH.

- **POT**: All associate investments, including NTH. Property lease income and an assessment of the related assets have also been removed.

- **MMH**: All property related activities. Note that MMH is in substance a property company with a 50% shareholding in NTH, thus the only relevant asset on this basis is the investment in NTH.

- **NTH**: Insufficient data is available at this time to undertake an analysis. Once data becomes available the analysis will be undertaken.

The income statements and balance sheets are shown for FY18 only on an 'as reported' and a 'restated' basis. While non-port operations assets are removed there is no change to the level of debt in the balance sheet. It is assumed that all debt of each UNI port company is primarily supported by the operating cash flows of the main port operations of each UNI company.

**POAL**

<table>
<thead>
<tr>
<th>POAL Income Statement</th>
<th>2018 Reported</th>
<th>2018 Restated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Revenue</td>
<td>243,201</td>
<td>236,674</td>
</tr>
<tr>
<td>Total Operating Expenses</td>
<td>142,110</td>
<td>142,110</td>
</tr>
<tr>
<td>EBITDA</td>
<td>101,091</td>
<td>94,564</td>
</tr>
<tr>
<td>Depreciation</td>
<td>19,522</td>
<td>19,522</td>
</tr>
<tr>
<td>Amortisation</td>
<td>3,469</td>
<td>3,469</td>
</tr>
<tr>
<td>EBIT Operating</td>
<td>78,100</td>
<td>71,573</td>
</tr>
<tr>
<td>Interest &amp; Finance Costs</td>
<td>(12,616)</td>
<td>(12,616)</td>
</tr>
<tr>
<td>Impairment/(reversal) of Assets</td>
<td>1,876</td>
<td>1,876</td>
</tr>
<tr>
<td>Change in Investment Properties</td>
<td>16,917</td>
<td>-</td>
</tr>
<tr>
<td>Loss on Disposal of Inv Properties</td>
<td>(1,159)</td>
<td>-</td>
</tr>
<tr>
<td>Equity Accounted Profits</td>
<td>2,418</td>
<td>-</td>
</tr>
<tr>
<td>PBT</td>
<td>85,536</td>
<td>60,833</td>
</tr>
<tr>
<td>Income Tax</td>
<td>(8,700)</td>
<td>(15,915)</td>
</tr>
<tr>
<td>NPAT</td>
<td>76,836</td>
<td>44,918</td>
</tr>
</tbody>
</table>

Points to note:

- POAL collected only $5.2m in rental income and $1.3m in dividends in FY18, with over 97% of its revenue sourced from Port Operations.
- Costs associated with Investment Property are not able to be calculated as POAL does not provide a divisional breakdown of its revenue, costs and assets. POT and MMH do provide this.
- Investment property is not depreciated, thus there is no change to the depreciation and amortisation lines.
- The Profit before Tax (PBT) is significantly impacted by removing the change in value the Investment Properties.
- The tax cost has increased due to the removal of the subvention payments noted above and adjustments for the removal of the investment property and holding in MMH.
- POAL reported NPAT of $76.8 million, however, the NPAT of the Port Operations was just under $45 million.
Table 4 - POAL Balance Sheet

<table>
<thead>
<tr>
<th>POAL Balance Sheet</th>
<th>2018 Reported</th>
<th>2018 Restated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Assets</td>
<td>61,830</td>
<td>43,424</td>
</tr>
<tr>
<td>PP&amp;E</td>
<td>936,744</td>
<td>936,744</td>
</tr>
<tr>
<td>Intangible Assets</td>
<td>44,293</td>
<td>44,293</td>
</tr>
<tr>
<td>Investment Properties</td>
<td>184,284</td>
<td>-</td>
</tr>
<tr>
<td>Equity Securities</td>
<td>43,149</td>
<td>-</td>
</tr>
<tr>
<td>Investments &amp; Advances</td>
<td>2,815</td>
<td>2,815</td>
</tr>
<tr>
<td>Non-Current Assets</td>
<td>1,211,285</td>
<td>983,852</td>
</tr>
<tr>
<td>Total Assets</td>
<td>1,273,115</td>
<td>1,027,276</td>
</tr>
<tr>
<td>Current Liabilities</td>
<td>60,610</td>
<td>60,610</td>
</tr>
<tr>
<td>Interest Bearing Liabilities</td>
<td>377,354</td>
<td>377,354</td>
</tr>
<tr>
<td>Derivatives</td>
<td>6,897</td>
<td>6,897</td>
</tr>
<tr>
<td>Provisions</td>
<td>1,033</td>
<td>1,033</td>
</tr>
<tr>
<td>Deferred Income</td>
<td>578</td>
<td>578</td>
</tr>
<tr>
<td>Deferred tax Liabilities</td>
<td>68,877</td>
<td>66,877</td>
</tr>
<tr>
<td>Non-Current Liabilities</td>
<td>454,759</td>
<td>452,739</td>
</tr>
<tr>
<td>Total Liabilities</td>
<td>515,369</td>
<td>513,349</td>
</tr>
<tr>
<td>Shareholders Funds</td>
<td>757,746</td>
<td>508,861</td>
</tr>
</tbody>
</table>

Table 5 - POAL Financial Analysis

<table>
<thead>
<tr>
<th>Financial Analysis</th>
<th>2018 Reported</th>
<th>2018 Restated</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBITDA Margin</td>
<td>41.6%</td>
<td>40.0%</td>
</tr>
<tr>
<td>Operating EBIT Margin</td>
<td>32.1%</td>
<td>30.2%</td>
</tr>
<tr>
<td>Debt/(Debt+Equity)</td>
<td>33.6%</td>
<td>43.0%</td>
</tr>
<tr>
<td>Interest Coverage times</td>
<td>6.19</td>
<td>5.67</td>
</tr>
<tr>
<td>Tax Rate</td>
<td>10.2%</td>
<td>26.2%</td>
</tr>
<tr>
<td>Return on Capital Employed (pre-tax)</td>
<td>7.49%</td>
<td>6.82%</td>
</tr>
<tr>
<td>Return on Capital Employed (post tax)</td>
<td>4.93%</td>
<td>4.91%</td>
</tr>
<tr>
<td>EVA (estimated)</td>
<td>-3.27%</td>
<td>-3.29%</td>
</tr>
<tr>
<td>POAL Return on Equity reported</td>
<td>15.20%</td>
<td>15.20%</td>
</tr>
<tr>
<td>Actual Return on Equity</td>
<td>10.14%</td>
<td>8.83%</td>
</tr>
</tbody>
</table>

Points to note:

- The port operations shows a lower return on capital employed than the overall business; in contrast to both POT and MMH
- POAL likes to state a type of return on equity (ROE) which is shown at 15.2%, however, this is done via the removal of revaluation gains, estimated at over $252 million on the reported accounts. The actual ROE for the Port Operations is 8.83%, significantly lower than the company's announced 15.2% return.
Table 6 - POT Income Statement

<table>
<thead>
<tr>
<th>POT Income Statement</th>
<th>2018 Reported</th>
<th>2018 Restated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Revenue</td>
<td>283,726</td>
<td>256,780</td>
</tr>
<tr>
<td>Expenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Operating Expenses</td>
<td>129,631</td>
<td>129,631</td>
</tr>
<tr>
<td>EBITDA</td>
<td>154,095</td>
<td>127,149</td>
</tr>
<tr>
<td>Depreciation</td>
<td>24,338</td>
<td>19,338</td>
</tr>
<tr>
<td>Amortisation</td>
<td>485</td>
<td>485</td>
</tr>
<tr>
<td>EBIT Operating</td>
<td>129,272</td>
<td>107,326</td>
</tr>
<tr>
<td>Interest &amp; Finance Costs</td>
<td>(18,037)</td>
<td>(18,037)</td>
</tr>
<tr>
<td>Equity Accounted Profits</td>
<td>15,141</td>
<td>-</td>
</tr>
<tr>
<td>PBT</td>
<td>126,386</td>
<td>89,299</td>
</tr>
<tr>
<td>Income Tax</td>
<td>(32,113)</td>
<td>(24,908)</td>
</tr>
<tr>
<td>NPAT</td>
<td>94,273</td>
<td>64,391</td>
</tr>
</tbody>
</table>

Points to note:

- Almost $27 million of revenue for POT is sourced from property leases, thus this value has been removed from the Income Statement.
- Depreciation has been lowered by $5 million to reflect the removed of the property income; this is an estimate and is based on most of the assets removed being land, and thus not depreciable.
- All associate income and assets have been removed.
- The tax rate has been adjusted upward to reflect the removal of the associated from the tax calculation.

Table 7 - POT Balance Sheet

<table>
<thead>
<tr>
<th>POT Balance Sheet</th>
<th>2018 Reported</th>
<th>2018 Restated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PP&amp;E</td>
<td>1,446,270</td>
<td>1,086,270</td>
</tr>
<tr>
<td>Intangible Assets</td>
<td>18,521</td>
<td>18,521</td>
</tr>
<tr>
<td>Investment in Associates</td>
<td>134,331</td>
<td>-</td>
</tr>
<tr>
<td>Receivables</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Non-Current Assets</td>
<td>1,599,147</td>
<td>1,104,816</td>
</tr>
<tr>
<td>Total Assets</td>
<td>1,657,031</td>
<td>1,162,700</td>
</tr>
<tr>
<td>Current Liabilities</td>
<td>321,013</td>
<td>321,013</td>
</tr>
<tr>
<td>Interest Bearing Liabilities</td>
<td>130,021</td>
<td>130,021</td>
</tr>
<tr>
<td>Derivatives</td>
<td>11,787</td>
<td>11,787</td>
</tr>
<tr>
<td>Provisions</td>
<td>1,746</td>
<td>1,746</td>
</tr>
<tr>
<td>Deferred tax Liabilities</td>
<td>70,484</td>
<td>70,484</td>
</tr>
<tr>
<td>Non-Current Liabilities</td>
<td>214,038</td>
<td>214,038</td>
</tr>
<tr>
<td>Total Liabilities</td>
<td>3,055,051</td>
<td>3,055,051</td>
</tr>
<tr>
<td>Shareholders Funds</td>
<td>1,121,980</td>
<td>627,649</td>
</tr>
</tbody>
</table>

Points to note:

- $494.3 million of assets have been removed, being the investment in associates and an estimated of $360 million of PP&E. The PP&E has been based on the lease income set out in the Income Statement at a cap rate of 7.50%. This cap rate is at the higher end of industrial land values in Tauranga and reflects the specialised nature of port operations.
- This reduction in the value of assets by 29.8% compares with the 19.3% reduction of POAL’s balance sheet. The key difference being the investment in associates by POT.
- It is arguable that POT should report its leased assets as investment property, given that these assets are not used in Port Operations, however, that is a matter of policy and is outside the scope of this analysis.
Table 8 - POT Financial Analysis

<table>
<thead>
<tr>
<th>Financial Analysis</th>
<th>2018 Reported</th>
<th>2018 Restated</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBITDA Margin</td>
<td>54.3%</td>
<td>49.5%</td>
</tr>
<tr>
<td>Operating EBIT Margin</td>
<td>45.6%</td>
<td>41.8%</td>
</tr>
<tr>
<td>Debt/(Debt+Equity)</td>
<td>26.3%</td>
<td>38.9%</td>
</tr>
<tr>
<td>Interest Coverage times</td>
<td>7.17</td>
<td>5.95</td>
</tr>
<tr>
<td>Tax Rate</td>
<td>25.4%</td>
<td>27.9%</td>
</tr>
<tr>
<td>Return on Capital Employed (pre-tax)</td>
<td>8.50%</td>
<td>10.45%</td>
</tr>
<tr>
<td>Return on Capital Employed (post tax)</td>
<td>6.12%</td>
<td>7.52%</td>
</tr>
<tr>
<td>EVA</td>
<td>-1.38%</td>
<td>0.02%</td>
</tr>
<tr>
<td>Actual Return on Equity</td>
<td>8.40%</td>
<td>10.26%</td>
</tr>
</tbody>
</table>

Points to note:

- The Port Operations generate a higher ROCE and ROE than the whole company, suggesting that the associates and leased land is underperforming the Port Operations.
- POT has better Port Operations financial metrics compared to POAL on every line.

MMH

Table 9 - MMH Income Statement

<table>
<thead>
<tr>
<th>MMH income Statement</th>
<th>2018 Reported</th>
<th>2018 Restated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Revenue</td>
<td>5,096</td>
<td>-</td>
</tr>
<tr>
<td>Expenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Operating Expenses</td>
<td>4,418</td>
<td>500</td>
</tr>
<tr>
<td>EBITDA</td>
<td>678</td>
<td>(500)</td>
</tr>
<tr>
<td>Depreciation</td>
<td>299</td>
<td></td>
</tr>
<tr>
<td>Amortisation</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EBIT Operating</td>
<td>378</td>
<td>(500)</td>
</tr>
<tr>
<td>Interest &amp; Finance Costs</td>
<td>(267)</td>
<td></td>
</tr>
<tr>
<td>Gain/(Loss) on Sale of PP&amp;E</td>
<td>(45)</td>
<td></td>
</tr>
<tr>
<td>Change in Investment Properties</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Fair Value Movements</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td>Pre-tax Equity Accounted Profits</td>
<td>12,294</td>
<td>12,294</td>
</tr>
<tr>
<td>PBT</td>
<td>12,478</td>
<td>11,794</td>
</tr>
<tr>
<td>Income Tax</td>
<td>(3,081)</td>
<td>(3,261)</td>
</tr>
<tr>
<td>NPAT</td>
<td>9,398</td>
<td>8,533</td>
</tr>
</tbody>
</table>

Points to note:

- There are a number of adjustments to the MMH Income Statement and Balance Sheet as all the company's Port Operations are contained within NTH.
- The revenue and costs of MMH reflect the operation of the Marsden Bay Marina, dairy farming operations and lease of land and building near, but not on the port land.
- An estimate of $500k has been included as the costs of operating the company, but all other cost and revenue lines, apart from the share of profits from NTH have been excluded.
- The presentation of the Income Statement above is different from the reported financial statements. The above presentation has been done to set the Income Statement on the same basis as POT and POAL making them more readily comparable.
Table 10 - MMH Balance Sheet

<table>
<thead>
<tr>
<th>MMH Balance Sheet</th>
<th>2018 Reported</th>
<th>2018 Restated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash &amp; Cash Equivalents</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Trade &amp; Other Receivables</td>
<td>819</td>
<td></td>
</tr>
<tr>
<td>Inventories</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Earn-out - Northland Coolstores</td>
<td>155</td>
<td></td>
</tr>
<tr>
<td><strong>Current Assets</strong></td>
<td><strong>1,061</strong></td>
<td><strong>-</strong></td>
</tr>
<tr>
<td>PP&amp;E</td>
<td>26,802</td>
<td></td>
</tr>
<tr>
<td>Investment Properties</td>
<td>67,020</td>
<td></td>
</tr>
<tr>
<td>Investment In Associates</td>
<td>47,050</td>
<td>47,050</td>
</tr>
<tr>
<td>Other Investments</td>
<td>652</td>
<td></td>
</tr>
<tr>
<td><strong>Non-Current Assets</strong></td>
<td><strong>141,524</strong></td>
<td>47,050</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td><strong>142,585</strong></td>
<td><strong>47,050</strong></td>
</tr>
<tr>
<td>Trade &amp; Other Payables</td>
<td>563</td>
<td></td>
</tr>
<tr>
<td><strong>Current Liabilities</strong></td>
<td><strong>563</strong></td>
<td><strong>-</strong></td>
</tr>
<tr>
<td>Interest Bearing Liabilities</td>
<td>6,050</td>
<td></td>
</tr>
<tr>
<td>Deferred Income</td>
<td>810</td>
<td></td>
</tr>
<tr>
<td><strong>Non-Current Liabilities</strong></td>
<td><strong>6,860</strong></td>
<td><strong>-</strong></td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td><strong>7,423</strong></td>
<td><strong>-</strong></td>
</tr>
<tr>
<td><strong>Shareholders Funds</strong></td>
<td><strong>135,163</strong></td>
<td>47,050</td>
</tr>
</tbody>
</table>

Points to note:

- As with the Income Statement, all activities other than the investment in NTH have been removed from the Balance Sheet, including debt.
- Debt has been removed as it is unlikely that MMH holds debt over its shares in MMH, and instead holds debt over its property assets, thus it makes sense to remove this from the balance sheet also.

Table 11 - MMH Financial Analysis

<table>
<thead>
<tr>
<th>Financial Analysis</th>
<th>2018 Reported</th>
<th>2018 Restated</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBITDA Margin</td>
<td>13.3%</td>
<td>n.a.</td>
</tr>
<tr>
<td>Operating EBIT Margin</td>
<td>7.4%</td>
<td>n.a.</td>
</tr>
<tr>
<td>Debt/(Debt+Equity)</td>
<td>4.3%</td>
<td>n.a.</td>
</tr>
<tr>
<td>Interest Coverage times</td>
<td>1.42</td>
<td>n.a.</td>
</tr>
<tr>
<td>Tax Rate</td>
<td>24.7%</td>
<td>27.7%</td>
</tr>
<tr>
<td>Return on Capital Employed (pre-tax)</td>
<td>8.84%</td>
<td>25.07%</td>
</tr>
<tr>
<td>Return on Capital Employed (post tax)</td>
<td>6.36%</td>
<td>18.05%</td>
</tr>
<tr>
<td>EVA</td>
<td>-2.34%</td>
<td>9.35%</td>
</tr>
<tr>
<td>Actual Return on Equity</td>
<td>6.95%</td>
<td>18.14%</td>
</tr>
</tbody>
</table>
Memo

To: Upper North Island Supply Chain Strategy Working Group (Working Group)
From: Bruce McKay, Saffron Capital Ltd (Saffron)
Date: 23rd January 2019
Subject: Upper North Island Port Land Analysis – Paper 1

Summary

This Paper sets out details of the land holdings of each of the UNI ports and the values attributed to the land in (i) the financial statements and (ii) from the values listed in Property Guru (based on Local Authority registered valuation data). Note that the Property Guru data is a starting point for addressing the question of fair value, but it is not a valuation number that would meet the requirements of the accounting standards (see below).

Table 1 summarises the land values for each port company based on their respective financial statements. Note that there are a number of differences across ports in the treatment of land from a valuation perspective which are discussed in a separate memo.

<table>
<thead>
<tr>
<th>Port</th>
<th>Land Type</th>
<th>Land Value ($m)</th>
<th>Area (ha)</th>
<th>Land Value ($/sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>POAL</td>
<td>Port Operations</td>
<td>734.961</td>
<td>77.0000</td>
<td>954.50</td>
</tr>
<tr>
<td>POAL</td>
<td>Investment Property</td>
<td>127.489</td>
<td>102.6921</td>
<td>124.13</td>
</tr>
<tr>
<td>POT</td>
<td>Port Operations</td>
<td>865.767</td>
<td>155.9217</td>
<td>555.26</td>
</tr>
<tr>
<td>POT</td>
<td>Future Development</td>
<td>165.218</td>
<td>45.9359</td>
<td>361.85</td>
</tr>
<tr>
<td>MMH</td>
<td>All Land</td>
<td>86.340</td>
<td>202.3680</td>
<td>41.33</td>
</tr>
<tr>
<td>NTH</td>
<td>Port Operations</td>
<td>777</td>
<td>49.1968</td>
<td>777</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>1,960.755</td>
<td>633.1145</td>
<td>312.860</td>
</tr>
</tbody>
</table>

Table 2 - Summary of UNI Port Land based on Property Guru Data

<table>
<thead>
<tr>
<th>Port</th>
<th>Land Type</th>
<th>Land Value ($m)</th>
<th>Area (ha)</th>
<th>Land Value ($/sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>POAL</td>
<td>Port Operations</td>
<td>734.134</td>
<td>77.0000</td>
<td>954.43</td>
</tr>
<tr>
<td>POAL</td>
<td>Investment Property</td>
<td>126.287</td>
<td>102.6921</td>
<td>124.92</td>
</tr>
<tr>
<td>POT</td>
<td>Port Operations</td>
<td>287.361</td>
<td>155.9217</td>
<td>184.30</td>
</tr>
<tr>
<td>POT</td>
<td>Future Development</td>
<td>128.895</td>
<td>45.9359</td>
<td>280.60</td>
</tr>
<tr>
<td>MMH</td>
<td>All Land</td>
<td>70.399</td>
<td>202.3680</td>
<td>34.79</td>
</tr>
<tr>
<td>NTH</td>
<td>Port Operations</td>
<td>777</td>
<td>49.1968</td>
<td>777</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>1,349.616</td>
<td>633.1145</td>
<td>203.53</td>
</tr>
</tbody>
</table>

Note: The port operations land values include, where identified the value of wharves and hardstand/pavement.

The values for POAL land are almost equal for both Port Operations Land and Investment Property land, indicating that the values set out in the FY18 financial statements are likely to be understating the fair value of the land. In contrast POT reports a far higher land value than Property Guru, although the Property Guru data is from 2015 and POT has revalued its land by $213 million in the past two financial years; this indicates that the Tauranga City Council has previously had a significantly lower value on the land than POT has recorded.
It is an open question as to whether any of the values reported by the UNI port companies represent fair value. It is unlikely that Property Guru is reporting fair value, however, that is the only independent, readily accessible source of data that is currently available.

More work needs to be done to establish a set of acceptable and reasonable valuation inputs to assess the likely fair value or fair value range. The same can be done for POT and MMH, however, the size of any variance between reported value and fair value is likely to be far less material. Of note, CBRE undertook a detailed valuation of the POAL Port Operations Land in 2013, which can be used as the basis to establish a number of the core valuation inputs.

**Ports of Auckland (POAL)**

POAL has 179.6ha of land, including 12.6ha of wharf area. Only 77ha of land is identified as being used for Port Operations, being the land located beside Quay Street. The balance of 102.6ha is identified as Investment Property, however, approximately 61.7ha of this Investment Property land is used for identified port operations (inland port / vehicle storage) or is being developed for an inland port. The Investment Property land is not considered further.

**Table 2 - POAL Port Operations Land Summary based on FY18 Financial Statements**

<table>
<thead>
<tr>
<th>Type</th>
<th>Land Value ($m)</th>
<th>Capital Value ($m)</th>
<th>Area (ha)</th>
<th>Land Value ($/sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port Operations, of which...</td>
<td>734.961</td>
<td>734.961</td>
<td>77.0000</td>
<td>934.90</td>
</tr>
<tr>
<td>Land</td>
<td>343.349</td>
<td>343.349</td>
<td>64.4442</td>
<td>532.78</td>
</tr>
<tr>
<td>Pavement</td>
<td>76.469</td>
<td>76.469</td>
<td>64.4442</td>
<td>117.11</td>
</tr>
<tr>
<td>Wharves</td>
<td>316.143</td>
<td>316.143</td>
<td>12.5688</td>
<td>2,517.90</td>
</tr>
</tbody>
</table>

Table 2 sets out the value of the Port Operations land based on the 2018 financial statements of POAL. The Land Value of $533/sqm. This is a lower per sqm rate than comparable industrial land located in the Auckland CBD; see Paper 2 for a discussion on this. 43% of the value is in the Wharves, however, these only make up 18.3% of the area.

CBRE’s 2013 valuation of the land provided a range of $300 million to $600 million or $390/sqm to $780/sqm, implying a midpoint of $450 million or $585/sqm. The value of the land in the FY18 financial statements at $532.78/sqm is below the midpoint of this despite the increases in land values observed in Auckland over the past 5 years and the overall lower level of interest rates, which all other things being equal would increase the valuation.

**Port of Tauranga (POT)**

POT does not split its land holdings between Port Operations and Investment Property in its financial statements, however, the company has, in presentations to analysts and shareholders, indicated the areas of land identified as Port Operations and non-Port Operations (also known as Future Development Land).

**Table 3 - POT Land Holdings based on Property Guru Data**

<table>
<thead>
<tr>
<th>Address</th>
<th>Type</th>
<th>Land Value ($m)</th>
<th>Capital Value ($m)</th>
<th>Area (ha)</th>
<th>Land Value ($/sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphur Point</td>
<td>Port Operations</td>
<td>101.004</td>
<td>203.357</td>
<td>54.9833</td>
<td>183.70</td>
</tr>
<tr>
<td>Sulphur Point</td>
<td>Future Development</td>
<td>54.881</td>
<td>67.721</td>
<td>20.0000</td>
<td>274.41</td>
</tr>
<tr>
<td>Mt Maunganui</td>
<td>Port Operations</td>
<td>186.357</td>
<td>288.288</td>
<td>95.2000</td>
<td>195.75</td>
</tr>
<tr>
<td>Mt Maunganui</td>
<td>Future Development</td>
<td>51.514</td>
<td>67.513</td>
<td>19.1000</td>
<td>269.74</td>
</tr>
<tr>
<td>Nelson Street, Akl</td>
<td>Inland Port</td>
<td>22.500</td>
<td>52.000</td>
<td>6.8359</td>
<td>329.14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>420.256</strong></td>
<td><strong>678.859</strong></td>
<td><strong>156.1192</strong></td>
<td><strong>214.29</strong></td>
</tr>
</tbody>
</table>

---

1 Fair Value is defined in the accounting standards (NZ IFRS 13, para 9) as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

2 Presentation to analysts/investors 13th November 2018
POT also identifies a further 9.5ha of leased land in Penrose, Auckland as part of its operations (Metroport) and potential expansion opportunities of a further 9.5ha adjacent to Metroport on land leased by an associated company, Metrobox.

POT owns c190ha of land in Tauranga, with 150ha identified for Port Operations. This compares to 138.7ha of Port Operations land identified for POAL, although 33.0ha of this is currently being developed for an inland port at Horotiu. The land values report in Table 3 as based on the 2015 Tauranga City Council ratings valuations.

Table 4 shows the data from the FY18 financial statements for POT. This shows that while the aggregate value of land is higher for POT, on a per square meter basis the value is in fact lower than POAL ($526.20 vs $532.78).

<table>
<thead>
<tr>
<th>Type</th>
<th>Land Value ($m)</th>
<th>Capital Value ($m)</th>
<th>Area (ha)</th>
<th>Land Value ($/sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land</td>
<td>730.406</td>
<td>730.406</td>
<td>196.1192</td>
<td>372.43</td>
</tr>
<tr>
<td>Wharves &amp; Hardstand</td>
<td>301.579</td>
<td>301.579</td>
<td>155.9217</td>
<td>193.42</td>
</tr>
<tr>
<td></td>
<td>1,031.985</td>
<td>1,031.985</td>
<td>196.1192</td>
<td>526.20</td>
</tr>
</tbody>
</table>

Marsden Maritime Holdings

MMH owns c202.4ha of land, partly in the marina at Marsden Cove and to the south and west of Northport bordering State Highway 15 and roughly proportional to the land identified as industrial and port industrial land in the Marsden Point – Ruakaka Structure Plan 2008. MMH does not own any port operating land.

<table>
<thead>
<tr>
<th>Type</th>
<th>Land Value ($m)</th>
<th>Capital Value ($m)</th>
<th>Area (ha)</th>
<th>Land Value ($/sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freehold Land</td>
<td>19.320</td>
<td>25.092</td>
<td>??</td>
<td>??</td>
</tr>
<tr>
<td>Investment Property</td>
<td>67.020</td>
<td>67.020</td>
<td>??</td>
<td>??</td>
</tr>
<tr>
<td></td>
<td>86.340</td>
<td>92.112</td>
<td>202.3680</td>
<td>42.65</td>
</tr>
</tbody>
</table>

The segmental reporting provided by MMH in its financial statements is not very helpful as it splits the freehold land and Investment Property between Property Holdings and Marina and Commercial Operations. Without further data from the company it is difficult to estimate from Property Guru or other sources the value of the freehold land and the value of the investment property.

Property Guru suggests that the rating valuation of the land provided by the Whangarei District Council is $70.4 million with a capital value of $94.2 million. The Investment Property figures in Table 5 will include the value of improvements, thus it is difficult to reconcile the data between the financial statements and Property Guru.

Northport

NTH is a joint venture between MMH and POT. As such both entities report some, but not all financial information about NTH in their respective financial statements. We would recommend that a request be made of the shareholders to receive a copy of the NTH financial statements for FY18 to allow for a full analysis to be undertaken of the Northport property holdings. Without the data from the financial statements it is not possible to further analyse the land value metrics for NTH.

NTH owns just under 15.0 ha of land immediately behind its reclaimed area and wharf. The reclaimed area operated by NTH covers 34.3ha plus 0.9 ha of wharf area. In total the land area occupied by NTH is 50.1 ha for Port Operations. It does not have any other land holdings.
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17 May 2019

Mayor Phil Goff
Mayor’s office
Auckland Council
135 Albert Street
Auckland

Vide email: phil.goff@aucklandcouncil.govt.nz

Dear Mayor Goff,

**Ports of Auckland UNISCS Interim Report and 30-year Master Plan**

Please find attached our response to your letter of 03 May.

We would also request a meeting with yourself and the Councillors to talk them through the letter and answer any questions that may arise, and we will be in touch with your office to arrange a meeting time.

Yours sincerely

Liz Coutts
Chair

Encl:

Cc: Councillor Darby
    Councillor Clow
17 May 2019

Mayor Phil Goff
Mayor's office
Auckland Council
135 Albert Street
Auckland

Video email: phil.goff@aucklandcouncil.govt.nz

Ports of Auckland: UNISCS Interim Report and 30-year Master Plan

Dear Mayor Goff and Councillors Darby and Clow

Following my initial response to your letter of 3 May, POAL management and Council officials have been discussing the arrangements to address the matters raised by you, taking into account the commercial sensitivity of some of the topics and the existing frameworks, including the SCI process, the Governance MOU between POAL and Auckland Council, and the Council’s prior consideration and approval of our 30-year Master Plan.

The objective of this document is to set out our thinking on the specific questions and observations in your letter of 3 May and on the broader implications of the Upper North Island Supply Chain Strategy (UNISCS) Working Group’s Interim Report to the extent that we can without breaching commercial confidentiality. We will continue engaging with the Council through the SCI process and the Governance MOU Framework to share more detailed and more specific information as appropriate. We hope this response will assist understanding of both our strategy and our performance.

Before responding to the queries in your letter, it is useful first to set out the context within which POAL operates.

First, consistent with the wishes of its stakeholders, POAL has been committed to releasing as much waterfront land as possible for use by Auckland’s residents and businesses while balancing the need to cater for the region’s growing imports and exports. Since 1996, we have released some 112 hectares of Waitemata Harbour land for urban development. A further 5
hectares were released in Onehunga, with the freight task transferred to Waitemata. In the same time, we added only 9 hectares to the port through reclamation.

This consolidation of our footprint has been occurring despite rapid growth of Auckland’s freight task. As population grows and per capita incomes increase, Auckland’s demand for everything from consumer goods to construction machinery to cars keeps rising, and most of that comes across the waterfront.

The drive for land use transfer in Auckland combined with significant freight growth is unique among New Zealand’s ports and creates challenges that are specific to POAL. We have no choice but to use our land more productively than other ports. For example, it is interesting to note that in the 2018 financial year, POAL earned $1.26 million EBIT per hectare of port land, while Port of Tauranga earned $0.64 million per hectare.

As the population and the economy continue to grow, Auckland’s demand for handling of containerised, bulk and break-bulk cargo and vehicles will also continue to increase. Our 30-year Master Plan has been developed to accommodate the city’s growing freight needs on a shrinking footprint. Auckland Council’s Planning Committee considered the plan and noted that it aligns with the Council’s City Centre Master Plan, Waterfront Plan and Central Wharves Strategy and is consistent with the recommendations of the Port Futures Study. The plan sets out the limits to further land use transfer. Once the development of the Multi-User Terminal on the Bledisloe Wharf is complete—enabling the release of the Captain Cook Wharf for alternative use—there are no more options for future change in land use without lowering the freight capacity or dropping freight services. The Port Futures Study recommended that this should not be allowed to happen, as the shedding or downsizing of freight operations would weaken the case for moving the port. Any future change in land use will require relocation of the entire port operation to an alternative location.

POAL has no objection to future relocation of the port, assuming that a suitable site can be identified and consented, and the cost of such relocation can be covered. However, until that happens, there will remain an irreducible level of footprint that is needed to efficiently handle Auckland’s cargo needs. POAL is focused on constantly innovating to accommodate growing volumes within this limited footprint.

Second, since POAL serves the city of Auckland, its cargo composition is determined by the demands of urban economic activity. Any comparison between POAL and other New Zealand ports needs to take this into account in order to make sense of comparative performance.

Cargo composition is important for the financial performance of a port because of different economic circumstances and levels of competition in different trades. As you know, container trade is particularly competitive.
Unlike commodity ports which passively respond to import and export growth within their natural hinterland, the Ports of Auckland faces considerable competitive challenges. The particular issue of concern to us is the rapid change in the global container shipping industry. Shipping lines are responding to competitive pressures on them by:

- Introducing larger vessels with lower costs for the shipping lines. However, such vessels shift costs, such as additional dredging and requirements for berths and cranes, on to ports. In addition, such vessels are likely to stop at fewer ports, heightening competition between ports and increasing requirements for land transport connections.
- Consolidation, leading to increased bargaining power for shipping lines. Consolidation results in port businesses being increasingly vulnerable to the loss of a large shipping line as a customer.

A critical feature of the changing market landscape is that POAL does not compete for container volumes at the margin. It competes for line services. As shipping line consolidation proceeds, the potential effect of a loss or a gain of a line service grows. In addition, competition is now increasingly between integrated supply chains, which in turn requires ports to invest further into the supply chain beyond the port gate.

The intense competition between POAL and the Port of Tauranga has generated significant benefits for importers and exporters, as it inevitably squeezed port operator margins and forced both ports to become more efficient. However, such competition can also have the side effect of distorting the supply chain and having cargoes transported considerable distances across land from other ports, creating rail and traffic congestion.

One effect of this intense competition has been that POAL has recently lost market share in the Upper North Island container market. However, this loss of share does not reduce our need to invest in capacity to meet the overall market growth. Neither POAL nor Port of Tauranga have the ability to cope with the full freight task from the other port. Our commercial strategy in this competitive environment needs to be built around ensuring efficient utilisation of our capacity.

By contrast, there is less competition between ports over export of logs and bulk cargoes. The difference in exposure to different trades determines the challenges that each port must face.

1 Profitability and Efficiency

In order to succeed in the highly competitive environment we face, it is important to understand how we perform relative to our peers and competitors. Your queries are a timely opportunity to consider how we compare against those benchmarks.

In order to draw meaningful conclusions, benchmarking has to be relevant, fit for purpose and truly comparable. Ideally, the metrics used should take into account underlying differences.
that are unavoidable or driven by shareholders’ strategies. Metrics should also be interpreted over time, rather than drawing conclusions based on results at a single point in time.

Our benchmarking against comparators is a constant work in progress, as we seek to gain more information and insight about our performance relative to our peers.

1.1 Financial Returns

Ports are capital-intensive businesses with long-lived assets. As such, a port’s progress along the investment cycle will have a strong influence on financial metrics in any one year. In the years just after a major investment to underpin growth, the returns will be much lower than in the years just before such an investment. The nature of investment projects in ports—such as building a new berth, or our straddle automation project to increase the capacity of the Container Terminal—is such that a lot of money has to be spent in the short term to add a substantial capacity increment that will be fully utilised only over time as it absorbs growth. This means that the cycle of returns can be unavoidably pronounced.

The UNISCS Interim Report focuses on our financial performance in 2018 by comparison with the Port of Tauranga. The Interim Report appears to draw the conclusion that POAL is under-performing in relative terms. Your letter also refers to a comment in the UNISCS report that attributing group tax losses “allowed POAL to appear more profitable”.

Let us first address the issue of attributing tax losses. We agree that for operational and management purposes, sensible comparisons of financial performance need to be made on a pre-tax basis given the differences in the tax circumstances of different owners. Our reporting does not attempt to make POAL “appear” more profitable and we certainly do not accept attribution of group losses—which is a matter for the Council Group—as something that should attract criticism.

Putting that issue aside, we agree with the UNISCS report that operating ROCE (return on capital employed before tax, interest and investments) is a key benchmark—among other possible measures—for making judgements about financial performance. Unlike measures such as return on equity or EBITDA margin, return on capital removes the effect of capital structuring. This is important, given that POAL’s funding sources—as a Council owned company—are in practice constrained to retained earnings and debt, whereas privately owned or listed companies such as Port of Tauranga have greater flexibility over their capital structure.

The flaw in the UNICSC Working Group’s analysis is its focus on a single year rather than developing an understanding of financial performance over the investment cycle.

As a first step, we re-created the 2018 pre-tax ROCE figures for POAL and Port of Tauranga set out on page 9 of the UNISCS Interim Report. We then produced a historical time series of these figures, based on publicly available information. For reference, we also calculated the
same metric for Lyttelton Port of Christchurch (LPC)—the main urban import port in the South Island (the numbers were adjusted to take out the effects of the earthquakes). The results are set out in the figure below.

**Figure 2.1: Pre-tax Return on Capital Employed for Port Services Only**

![Graph showing pre-tax return on capital employed for port services only over years 2014 to 2018.](image)

Source: Annual Financial Disclosures for PoT, PoAL and LPC.

Notes: Metric calculated as: Net income before adjusting for tax, financing and investments / Capital Employed. For LPC, all items related to the Christchurch earthquake were excluded.

In 2014, 2015 and 2016, prior to the commencement of our current investment cycle, POAL generated higher operating returns on capital than the Port of Tauranga. However, as we began to invest for growth, our capital employed increased markedly. Between 2014 and 2018, our capital base grew by 66 percent, while Port of Tauranga’s increased by 43 percent. Despite continued growth in our net income, the current stage of the investment cycle resulted in the relative softening of our performance compared to the Port of Tauranga. Our pre-tax ROCE remains consistently higher than LPC’s.

It is also useful to note that ROCE needs to be compared to the cost of capital to understand the economic value added by the business. The cost of capital in New Zealand declined materially between 2014 and 2018, with the yields on 10-year NZ Government Bonds falling from almost 5 percent to below 3 percent. Consequently, the recent deterioration in pre-tax ROCE overstates the decline in the economic value add of POAL.

In any case, a deterioration in the return metrics during the current stage of the investment cycle does not by itself signal a problem. Of course, we would be concerned if return on capital did not start improving, both in absolute and relative terms, once the investment cycle is
completed and we increasingly utilise the additional capital. Our strategy—which we are happy to continue discussing subject to commercial confidentiality—aims to ensure that we maximise the value of the new investments.

Overall, we believe that the implied criticism in the UNISCS Interim Report is misplaced and does not support the conclusions of the Report. This is not to say that we are complacent about our recent performance or that we could not have done or should not do better.

1.2 Land Valuation

Your letter refers to a comment in the UNISCS Interim Report that compares the valuation of land in POAL’s accounts to prices achieved in “recent … neighbouring land sales”. While no source is given, the prices quoted ($2,500 to $7,500/sqm) lead us to believe that these refer to sales of land parcels for the purpose of high-rise development in the CBD. Such a comparison is far from helpful or realistic.

There are three fundamental flaws in comparing land value for the entire port with individual lots being sold and using this to infer value for the entire port. First, the calculation used in the UNISCS Interim Report does not take into account the fact that if 77 hectares of port land were to be released for urban development, only a small proportion of that land would be available for high-rise projects. Allowing for roads, parks, other public spaces and low-rise areas would mean that commercial land value of the whole port would be substantially lower even if there was immediate demand for every available land plot.

Second, as mentioned above, once our land consolidation is completed, POAL will no longer be in a position to release small incremental land parcels. Future releases of land will require moving entire terminals, or the entire port, out of the CBD. The Auckland CBD market has limited capacity to absorb such large releases of land for development projects. As has happened with the land released for the Wynyard Quarter, development will proceed over an extended period of time. In the meantime, the landowner would incur significant holding costs for vacant undeveloped land. The alternative of selling a large number of small parcels simultaneously would quickly drive down prices in the market. A realistic valuation of the port land must either allow for holding costs or adjust for the price reduction if the entire area is dumped on the market.

Finally, converting port land to alternative use will involve incurring significant remediation and change of use costs.

POAL’s current valuation methodology for land used for port operations is based on estimating the present value of income from a hypothetical sell down of small equally sized lots over 25-30 years at the land prices currently prevailing in the vicinity of the port. This valuation methodology, called the most-valued-alternative-use (MVAU), is the standard approach for valuing large areas of land that can be released for alternative use. For example, the Commerce Commission mandates the use of this methodology for airports. It is also
consistent with industry practice. The methodology employed is also stipulated by IFRS accounting standards and is audited by external auditors appointed by the Auditor General.

This year we have engaged a new independent land valuer. However, even before receiving the valuer’s report, it is clear that the idea that somehow POAL is sitting on land worth billions of dollars—and that these billions can be used to pay for the relocation of the port in the near future—has no basis in reality. While we accept there will be some differences in views and the final valuation figure, it is clear that the sale of the port land cannot fund a new port.

1.3 Efficiency

In addition to financial metrics, we constantly measure our operating performance on a range of physical benchmarks against other ports locally and internationally.

1.3.1 Container handling

In handling containers, we use labour and cranes, and it is important that we use both efficiently. The industry standard efficiency measures for these variables are:

- The Vessel Rate, which tracks the number of containers moved in an hour of labour, and
- The Crane Rate, which tracks the number of containers moved by a crane in an hour.

The Ministry of Transport collects and publishes benchmark data for all New Zealand ports. The graphs below show that POAL is consistently among the best performers in New Zealand, and materially outperforms Australian ports.
Figure 1.1: Efficient Use of Labour—Vessel Rate (Containers/hour)

Source: Ministry of Transport, ACCC

Figure 1.2: Efficient Use of Cranes—Crane Rate (Containers/hour)

Source: Ministry of Transport, ACCC
We also make efficient use of land area and berth length employed. You may recall that, as part of Port Futures Study, EY benchmarked POAL against Hong Kong Port (HKP), one of the world’s most efficient container ports, which occupies some of the most expensive land globally.

POAL’s annual TEU handled per hectare of land employed is currently 28,000, which we expect to rise to 69,700 following automation and consolidation. This compares to 55,000 for HKP. Our TEU per metre of berth per annum is currently 1,426 and expected to rise to 2,135, while HKP is currently at 2,360.

1.3.2 Vehicles

EY similarly benchmarked our performance in vehicle handling against Southampton port, which is regarded as one of the world’s most productive and innovative automotive import ports. Southampton utilises 5-level car storage and achieves yard productivity of 27,108 Car Equivalent Units (CEUs) per hectare per annum. POAL currently achieves 23,785 and will look to improve this figure once the new facility is operating.

We are particularly proud of keeping vehicle dwell time to a minimum—currently around 2.5 days. Southampton’s dwell time is estimated to be twice as long. We have managed to maintain this low dwell time since 2012, despite vehicle numbers quadrupling since that time. We discuss dwell time in more detail later in this document.

2 Straddle Automation Project

The straddle automation project is an innovative response to one of our greatest challenges—increasing capacity to handle growing container volumes, while minimising our footprint and ceasing new reclamations and extensions. To meet this challenge, we are implementing a technological solution that has to conform to two key requirements:

- Post-implementation, POAL will need to operate a mixed fleet of automated and manual straddles. Manual straddles will continue berth operations to preserve productivity of our crane rate (explained above), while automated straddles will operate in the yard. Safe and efficient interaction of the automated and human-piloted straddles is a world-first feature of our project. In other semi-automated port terminals, automated machinery is usually kept clear in a separate area from the human-driven equipment. We chose this solution after careful consideration in response to POAL’s limited berth space.

- Given our operational and capacity constraints, the project must be implemented “on-the-go”, with no disruption to current business-as-usual operations. This

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1 EY, Consultant’s report to the Port Future Study, June 2016, page 105
2 EY, Consultant’s report to the Port Future Study, June 2016, page 117
means we absolutely have to get “go-live” right first time to avoid significant
disruption to Auckland’s freight handling. A more standard approach is to
implement automation either on a greenfield upon start up, or on a brownfield site
but with significant down time to allow for testing and implementation.

The unique aspects of this project mean that this is more than an equipment purchase—at its
core, this is a complex IT project to design, develop, test and bring to life an integrated
software and hardware robotics solution.

The integration of customised software with hardware requires extensive testing of each
automated straddle in a special test environment on site. We have set aside a dedicated area
for live testing and have allowed 12 months for such tests. To identify and remove any
performance issues, we intend to achieve at least 500 operating hours for each automated
straddle before we go live.

Your letter notes that the new automated straddles were delivered and assembled in 2018. You
also correctly note that we currently plan to rollout the automation project in 2020. The
implication in the letter is that the project is already being substantially delayed and that the
delayed timing of implementation is itself a signal of risk.

Without underestimating the risks of this complex project, we would like to emphasise that it
remains broadly on time and within budget. Automated straddles were delivered in line with
the original plans and the time since their delivery has been spent exactly as intended—going
through the live testing exercises. In principle, we expect to be able to go live at the end of
this year. However, we have decided that given the risks of the switch over, it would not be
prudent to undertake it during the busy part of the pre-Christmas container season, and there
is no material downside to having new capacity delayed till early next year. For this reason, we
have moved “go-live” to early 2020 after the completion of the summer rush.

With respect to the remaining risks, we are intensely alert to two key concerns:

- Software design and implementation risk in the lead-up to “go-live”. Given the
  requirement to integrate automated straddle software with all POAL systems and
  transition in one go, there will remain risks of software bugs that may not become
  obvious until the straddles leave the somewhat artificial testing environment and
  commence operation

- Reduced benefits from automation, once bedded down. The rate at which
  automated straddles operate depends on the performance of the overall software
  system. If issues emerge, the rate may need to be slowed down to ensure safety and
  security. Realistically, we will not know the final productivity of the new yard until
  the system goes live.

More broadly, we maintain a detailed risk and mitigation register for the project and remain
focused on successful delivery of the project.
As you mention in your letter, once the project is delivered, our container capacity will be increased to 1.6-1.7 million TEU. The rate at which we take up that capacity will determine returns on investment in the project. In principle, over time, the additional capacity will be naturally taken up by growth in cargo volumes arriving into Auckland. However, we can and will improve the utilisation of new capacity—and hence returns—by re-gaining market share. To re-gain market share, we will need to improve the overall supply chain.

The straddle automation project is closely linked to our supply-chain strategy, which involves creating inland hubs to minimise landside costs and maximise convenience for our customers, as well as securing long-term relationships with Upper North Island exporters. Our supply chain strategy will improve the balance of container flows between empties and fulls, will make POAL more competitive and overtime—subject to the necessary upgrades in the rail infrastructure—will help us minimise the number of truck movements around Auckland CBD.

Our analysis of sensitivities of the revenue and other benefits derived from straddle automation is commercially sensitive. The same is the case with our supply chain strategies. We would be happy to address these topics within the established SCI process and the Governance MOU Framework to ensure commercial confidentiality.

3 Impact of Bledisloe Multi-Purpose Terminal Projects and Improving the Vehicle Supply Chain

We recognise the need to minimise vehicle presence at the port, while meeting Auckland’s vehicle import needs. Cars, buses and other machinery essential to the functioning of the city must be handled efficiently.

NZIER was engaged by our shareholder (ACIL at the time) to examine the costs and logistics constraints of bringing vehicles into Auckland through other ports. NZIER estimates that relocating car imports away from POAL would cause about $90 million per annum in additional transport costs, about 25 million additional kilometres of haulage, 230 additional trucks on roads and an increase in price of $268 per light vehicle. Such a shift would also have
safety implications (increased road deaths) and cause about 18,000 additional tonnes of CO2 emissions.³

The simple fact is that the most efficient way to accommodate Auckland’s growing demand for vehicles and machinery is through the Waitemata Harbour gateway. The purpose of our investment in the multi-purpose terminal on the Bledisloe Wharf is to ensure that this gateway meets the city’s objectives both with respect to the freight task and to the use of waterfront land.

3.1 Key Drivers of Required Capacity

The need for vehicle handling capacity at the multi-purpose terminal is determined by three factors:

- Total volume of vehicles required to be handled
- Peaks in vessel off-loading, determined by vessel size and now further affected by the brown marmorated stink (BMS) bug season
- Rate at which vehicles can be removed from the port.

Before responding to some specific points raised in your letter, we would like to set out the background on the above three factors.

Total volume of vehicles

While vehicle volumes for this year to date are slightly lower, this is a temporary reduction due to cyclical factors. Our previous shareholder, ACIL, commissioned NZIER to prepare and update medium term vehicle projections to help ACIL assess our strategic plans. These projections, which align with market intelligence from our customers, confirm that we need to anticipate substantial volume growth as Auckland continues to expand its population and the rate of replacement of the existing New Zealand car fleet accelerates due to the trend to reduce the age of the fleet and also increasingly to replace petrol cars with electric vehicles.

NZIER’s projections for light and heavy vehicles are summarised in the figures below.

³ NZIER report to ACIL: Future of New Zealand’s vehicle supply chain: The role of the Ports of Auckland, May 2017, page vi
Figure 3.1: Light vehicle import projections

![Light vehicle import projections graph]

Source: NZIER report to ACIL: Future of New Zealand’s vehicle supply chain: The role of the Ports of Auckland, May 2017, p12

Figure 3.2: Heavy vehicle import projections

![Heavy vehicle import projections graph]

Source: NZIER report to ACIL: Future of New Zealand’s vehicle supply chain: The role of the Ports of Auckland, May 2017, p13
Despite cyclical fluctuations, we have not seen anything to invalidate NZIER’s medium term view.

**Delivery Peaks**

Shipping lines call at multiple ports. Constraints at other ports along a service route result in peaky vessel arrivals in Auckland. We work closely with shipping lines to coordinate the timing of vessel arrivals, but apart from marginal influence around the berth window, schedules are driven by global markets.

In simple terms, the amount of space devoted to vehicle handling on the waterfront is determined by the peaks rather than by the averages.

The figure below demonstrates how peaky discharges of vehicles from vessels and a slower, steadier rate of daily deliveries (removals from yard) drive volatility in the total number of vehicles dwelling in our yard.

**Figure 3.3: Vehicle Discharge, Deliveries and In Yard Stock, Jun-Dec 2017**

![Graph showing vehicle discharge, deliveries, and in-yard stock from June to December 2017]

Source: PoAL analysis

**Dwell time**

POAL has put a lot of work into managing and reducing vehicle dwell times at the Port. As the figure below demonstrates, from 2012 to 2017, we managed to maintain an industry-leading dwell time of approximately 2.5 days, while quadrupling the volumes processed.
Figure 3.4: Vehicle Dwell Times and Volumes 2012-2019

Source: POAL analysis. Excluding export, transhipments and Toyota leased transition facility

After the 2017 disruption caused by the BMS bug, we quickly recovered and reduced dwell times below long-term trend. We are pursuing further opportunities to speed up removal, but these are increasingly more difficult and costly.

Overall, while the remaining opportunities to reduce dwell time are limited, the total volume of vehicle imports will continue to grow and the delivery peaks—over which we have no influence—will get bigger. This is what makes investment in the vehicle handling facility essential.

3.2 Our Strategy

Your letter asks two broad questions:

- Whether the Bledisloe multi-purpose terminal project will free up land and capacity on the Bledisloe Terminal for uses other than break-bulk and bulk cargo?
- Whether we are pursuing additional options to improve the car supply chain and hence reduce the dwell time at the port?

Let us address the second question first, as it helps answer the first.

Additional options to improve car supply chain

Our strategy is to continue to strive for faster removal of vehicles from the port. However, it would be unrealistic to expect material further reductions in vehicle dwell time for a number of reasons:

- Through investment in electronic documentation, we have been able to reduce compliance time—the period from landing a vehicle to handing over keys—to less than 8 hours. We do not anticipate material further gains
- We have to recognise that, while we operate around the clock, Auckland is not yet a 24/7 city—there are restrictions on local operations and opening times through the entire supply chain. Combined with driver shortages, the flow of cars from the yard will continue to be uneven through the week
We monitor car importers’ truck density (the number of cars removed on a single truck) and work with them to increase it. However, bridge height restrictions (which affect deliveries of utes and SUVs) and the need to deliver to dealer’s yards located throughout greater Auckland make incremental improvements difficult to achieve.

We have established an agreement to handle peak overflows by moving “longer dwelling” cars off-port to Highbrook, with near 100 percent truck density. As your letter highlights, we are also exploring a barge option to Highbrook. However, the Highbrook truck and barge options are both expensive, and only make sense when handling the highest peaks. These options are not sustainable as a solution to baseline growth. We note that apart from the question of economics, barging is physically only possible to Highbrook and not to other inland yards.

We will continue to work hard to achieve incremental reductions in dwell time. But we have to be realistic—it is unlikely that anything more than marginal improvements would be economic. Again, we wish to highlight the fact that we are already close to or at world’s best dwell times for vehicle imports.

With respect to your specific question about the sale of the 18.8-hectare land holding at Miami Parade, Onehunga, we note that the sale has been flagged in our annual strategic plans for a number of years. The sale has been delayed due to uncertainty over potential compulsory acquisition of the land by NZTA for the East-West Link.

We are happy to assure you that the sale will have no impact on the car supply chain. The portion of this land currently used for car haulage is under 21-year leases (7+7+7) to car haulage businesses. Two factors will determine whether the land continues to be used for car haulage:

- Possible renewal of requirement for this land for a future motorway project
- Desire of the car haulage businesses to exercise their option to renew every 7 years.

Neither of these factors is under POAL control and will not be affected by the change in ownership.

With respect to the implication of this sale for our capital structure and dividends, we note that the proceeds have been fully factored into our forecasts.

**Impact of Bledisloe multi-purpose terminal projects**

As explained above, our on-going measures to manage vehicle dwell time are not anticipated to reduce the capacity requirements at the Bledisloe terminal, particularly as the total number of vehicles imported into Auckland grows. Overall, we do not see any opportunity for land on the Bledisloe Terminal to become available for uses other than break-bulk and bulk cargo.

In this context, with regard to your question about the timing of possible release of Captain Cook Wharf, it is important to clarify that the release of this wharf is contingent on the completion of all three Bledisloe projects. The car handling building (currently under
construction) will provide additional car handling capacity to meet growth. The planned Bledisloe North berth (some 1 hectare) will provide both a replacement berth for Captain Cook and go a long way to providing replacement yard capacity to offset loss of the Captain Cook surface area. The removal of Marsden Wharf will create additional berthage at Bledisloe Terminal and at Captain Cook Wharf.

As you appreciate, the timing of that development will be determined by the need to secure the necessary regulatory approvals. We do not anticipate that the project can be completed in less than 5 years.

We also note that in any case, significant investment would be required to make Captain Cook Wharf available for other uses, such as berthing of large cruise ships. Captain Cook Wharf will need to be substantially extended (by about 160 meters) and a new cruise terminal developed along with surrounding water-space being dredged to be able to handle such vessels.

You further ask whether freight wharves on the Bledisloe Terminal could be available for cruise ships. Indeed, in the past, we have used Jellicoe Wharf for cargo and occasional visits by cruise ships. However, due to significant growth in both cargo and cruise volumes in recent years, capacity requirements for the multi-purpose terminal make such mixed use unviable.

4 Conclusion

We hope this document addresses your concerns and helps improve understanding of our strategy. In summary:

- Our financial performance, given our current position on the investment cycle, is in line with other port benchmarks
- The straddle automation project, while inherently risky, is proceeding broadly on time, with year-long live testing nearing completion
- The development of the multi-purpose terminal will enable us to accommodate the expected growth, but will not free up additional land on the Bledisloe terminal for non-bulk and break-bulk activities
- While we are pursing additional options to improve the car supply chain, there are only limited opportunities to reduce the dwell time at the port further.

We welcome direct engagement with the Council as a shareholder. Some of the information presented in this response had been communicated to our previous shareholder, ACIL, but did not filter through to the Council. Other elements of information had been communicated in the context of the Council consideration of the 30-year Master Plan. Your letter provides a helpful opportunity for us to explain our performance and strategy in a comprehensive manner. We will continue to be as transparent as possible with our plans through those processes, subject to preserving commercial confidentiality of information that could place us at a competitive disadvantage.
We would like to conclude this response with a broad observation on the UNISCS Interim Report. The report appears to contrast its “New Zealand interest” approach with various previous studies. We believe this characterisation is misleading. It is important to highlight that the Port Futures Study similarly took the overall New Zealand interest into account, and so have other studies undertaken over the past 5 years.

The Port Futures Study has identified potential for the relocation of the entire port in about 35 to 40 years’ time. It emphasised that in the meantime, POAL must continue investing to meet the growing needs of New Zealand’s largest city. Our 30-year Master Plan, which has been subject to careful scrutiny by the Council, is consistent with that approach. We remain agnostic about whether a future relocation would be viable, but in any case, the answer to that question does not matter for the current investment program.

The UNISCS Interim Report, without addressing any of the difficult issues canvassed in the Port Futures Study, appears to create the impression that the relocation of port activities out of Waitemata Harbour is an immediate and immediately economic prospect.

We do not believe the broad implications of the UNISCS Interim Report referred to in your letter are supported by the evidence presented in the Report or by any other evidence. However, there are other aspects of the Interim Report that deserve attention, and further issues may come up as additional reports are produced by the UNISCS Working Group. We will continue to engage with the Council on those topics.

To sum up, POAL is one of the Council’s most valuable assets, both financially and for the effect of our operations on the efficiency of the regional economy. It is not surprising that our activities attract close scrutiny and on-going debate. However, it is important to ensure that policy uncertainty does not undermine our ability to be an effective competitor in the market and to undertake the investments necessary to preserve value for the Council and for the Auckland community.

Sincerely,

Liz Coutts

Chair

CC: Councillor Darby
    Councillor Clow
30 May 2019

For the Attention of the Chairman of the Upper North Island Supply Chain Study

Dear Wayne Brown,

As you are aware, our team at SEA CLEANERS, have been out cleaning the local Waterways of Auckland and now Northland since 2002.

We have removed over 7.5 million litres of litter from New Zealand’s coastal areas. That is approximately 250 shipping containers full of loose litter.

We believe that most of what we collect, has in one way or another come out of internationally inbound freight.

With this knowledge and understanding of the debris we collect daily, and now with your team’s position with the Upper North Island Supply Chain Study. Can you please consider the following for your report?

“That a SEA CLEANERS Levy (of between $1 - $5) be placed on every inbound shipping container into NZ ports, to offset and fund the need to clean up what mess their contents create in the marine environment over time”.

This mechanism would enable the funds to run our proposed 10 boat fleet throughout NZ, which we currently have to go cap in hand fundraising for on a month by month basis.

Each boat and crew’s operational expenditure is $300,000 +GST per annum per region.

Your consideration for this proposal is sincerely appreciated.

Kindest Regards,

Captain Hayden Smith

Founding Trustee

SEA CLEANERS Trust

Email: network@seacleaners.com
Phil Goff
Mayor of Auckland

Tēnā koe Phil

Re: Upper North Island Supply Chain Strategy

Thank you for arranging for your senior team to meet with the Upper North Island Supply Chain Strategy Working Group last Thursday at short notice. Thank you also for providing a copy of Ports of Auckland’s (POAL’s) response to your letter to them.

I am including a copy of the Colmar Brunton findings on how Aucklanders feel about the port, whether it should be moved, and if so, how they feel about that. This is confidential until our report is made public following consideration by Cabinet. I will also provide you with a copy of our next report when it is finished later this month which will also be confidential until it too is released publically by the Associate Minister of Transport.

With regard to POAL’s reply to your letter, they present an argument that Auckland needs to be serviced by an efficient port and we agree with that. POAL also note that their port will become fully efficient when the automation and new crane project gets commissioned.

What POAL’s letter is not, is an argument that the efficient port should be within a congested city and they do not address the wisdom or otherwise of having a port capable of handling cargo from ship to port at a greater rate than the city’s roading infrastructure can accept this cargo. The problem and costs of increasing the landside infrastructure capacity is not theirs but is mainly the council’s and to a certain degree also central government’s.

Our report addresses costs and avoided costs of the options including the option of just keeping the port as is, but this option is not a free option outside the port.

I look forward to continuing our discussions in the search for the best outcome.

Nāku noa, nā

Wayne Brown,

Chair
Upper North Island Supply Chain Working Group
16 October 2019

Dr Caralee McLiesh  
Secretary of The Treasury  
PO Box 3724  
Wellington 6140  
NEW ZEALAND

Dear Dr McLiesh

Upper North Island Supply Chain Study: Engagement with The Treasury

I am writing to you as Chair of the Upper North Island Supply Chain Study (UNISCS) to invite senior representatives from The Treasury to meet with us before the end of October. While The Treasury has made extensive comment on the work of our group, it has not engaged with us in a substantive way on its views to date. I would like to provide an opportunity for this to happen before we deliver our final report.

As background, the UNISCS study is an exercise initiated by the current government to identify a way forward in respect of supply chain pressures in the part of New Zealand where these will be greatest, and where the issues raised with us include questions about the ability of the ports system to play its part in the supply chain system. Our members are appointed by Cabinet, to which we report.

We have delivered two of our three reports. The Treasury has commented on each of these, and its most recent comment was on our second report which sets out the working group’s view on the best future scenario for the UNI supply chain system. This is based on engagement with stakeholders and comprehensive analysis carried out by EY for the study, through to the calculation of BCR values for options they have worked through with the working group.

I understand The Treasury’s view, arrived at jointly with the Ministry, is simply that it is unconvinced by the EY analysis, even following extensive access to the workings through the Ministry of Transport secretariat. Given the weight of the issues we are addressing, I think it is reasonable to expect that The Treasury would have a view of substance on the options, and that this would go further than a determination to be unconvinced by change from the status quo.

I am inviting The Treasury to meet with the working group, as soon as possible and no later than the end of October. This would be in the same format as the other extensive engagement with stakeholders throughout the course of the study, where we have taken the approach of testing our thinking openly with them. I trust The Treasury is prepared to
engage with us in that spirit and that we can have a genuine, substantive engagement on the issues. I will be asking Transport officials to attend as well.

I anticipate this meets with a positive reply, and look forward to meeting with you or your senior officials. Arrangements can be made through the working group secretariat, which can be contacted at the Ministry of Transport via [redacted] at [redacted]@transport.govt.nz.

Yours sincerely

[Signature]
Wayne Brown
Chair
23 October 2019

Peter Mersi
Secretary for Transport
Wellington
NEW ZEALAND

Dear Peter

Upper North Island Supply Chain Study: Engagement with The Ministry of Transport

I am writing to you as Chair of the Upper North Island Supply Chain Study (UNISCS) to invite senior representatives from the Ministry to meet with us before the end of October. While the Ministry has provided support and assistance to the work of our group, it has not engaged with us on its broader advice on our reports and findings. I would like to provide an opportunity for this to happen before we deliver our final report in a few weeks time.

The Ministry’s most recent comment, made jointly with The Treasury, was on our second report which sets out the working group’s view on the best future scenario for the UNI supply chain system. This report is based on engagement with stakeholders and comprehensive analysis carried out by EY for the study, through to the calculation of BCR values for options they have worked through with the working group.

I understand the view put by the Ministry and The Treasury is in general that you are unconvinced by the EY analysis, even following extensive access to the workings through the Ministry of Transport secretariat. Given the weight of the issues we are addressing, I think it is reasonable to expect that the Ministry and The Treasury would have a view of substance on the options, and that this would go further than a determination to be unconvinced by change from the status quo.

I am inviting both the Ministry and The Treasury to meet with the working group, as soon as possible and no later than the end of October. This would be in the same format as the other extensive engagement with stakeholders throughout the course of the study, where we have taken the approach of testing our thinking openly with them. I trust you are prepared to engage with us in that spirit and that we can have a genuine, substantive engagement on the issues.
I anticipate this meets with a positive reply, and look forward to meeting with you or your senior officials. Arrangements can be made through the working group secretariat, which can be contacted at the Ministry of Transport via [redacted] at [redacted]@transport.govt.nz.

Yours sincerely

[Signature]
Wayne Brown
Chair
13 December 2018

Wayne Brown
Chair
Upper North Island Supply Chain Strategy
Ministry of Transport
Wellington

By Email: info@transport.govt.nz

Dear Wayne,

Auckland Council strongly support the establishment of an Upper North Island Supply Chain Strategy Working Group which has three primary lines of enquiry:

- an Upper North Island Supply Chain Review
- a proposed Upper North Island Supply Chain Strategy
- a feasibility Study to explore moving the location of Ports of Auckland

The future of freight in the Upper North Island is an issue of regional and national importance. Decisions about the location and operation of ports and associated infrastructure, as well as the logistics operations coupled to them, represent long-term strategic issues for New Zealand. They must be made in the best interests of not only the city but the region and the country as a whole. Government is the appropriate body to lead this work, with close involvement and input from stakeholders.

Redistribution of freight activity across the Upper North Island would require the mobilisation of enormous national resources. A sound long-term strategy must therefore be based on robust, detailed evidence from investigation of all available options and as such be safe from accusations of predetermination. These points were made in the Mayor’s letter of 14 November 2017 to the Minister responsible for the Study.

In Auckland we spent considerable time considering these issues as they affect our city.

In 2016 Auckland Council received recommendations from the independent Port Future Study. The Port Future Study used a consensus-building model and achieved agreement around major contested issues surrounding Auckland’s port activities. Its recommendations were made after considering member viewpoints, the work of a consortium of consultants and peer review of central issues.

The Port Future Study was commissioned by Auckland Council in the absence of a coordinated National strategy. Its objective was a long-term strategy to best meet Auckland’s freight needs. However an Upper North Island study taking a regional and national perspective was needed to move the debate forward.
Considerable resources and time were invested in Auckland’s Port Future Study. We are concerned that adequate resources appear not to be available in this current work, despite the much larger scope and the substantial requirement for a detailed, technical evidence base.

In progressing the work of the Upper North Island Supply Chain Strategy, it is vital that the Working Group address in its evidence base a number of material issues raised in Auckland’s Port Future Study, including but not limited to:

1. long-term feasible capacity at existing Upper North Island ports
2. long-term strategies to mitigate contribution of supply chain activities to climate change
3. long-term strategies to adapt supply chains to increased impacts of climate change
4. mana whenua iwi values and aspirations, including outstanding Tiriti o Waitangi settlements
5. social and community impacts of supply chain activities
6. impacts of splitting or elongating supply chains, including freight and environmental costs, productivity, duplication of port functions and labour markets
7. impacts on the investment planning of supply chain stakeholders
8. long-term engineering requirements, navigability, safety and availability of the location options
9. how and when any new port could be funded
10. wider and long-term implications of west coast versus east coast port location.

The long timeframes involved make a scenarios-based approach desirable.

A key conclusion of the Port Future Study was there was sufficient probability that capacity at the Auckland Port could be reached in the long-term (50yrs+). The Port Future Study therefore recommended Auckland Council create a relocation option, should it be required. It provided technically feasible alternative location options for further detailed investigation. We strongly urge that full analysis of these alternative locations be included as part of the Government’s Working Group’s programme, consistent with section 5.3 of Study’s Terms of Reference.

In addition to creating a robust evidence base, the Upper North Island Supply Chain Strategy should be conducted in an objective, transparent manner to ensure there is confidence in the report’s recommendations. Public statements have created the impression of predetermination.

Indicating a strong preference for relocation of some or all of POAL activities to Northport prior to any analysis is unhelpful. In particular it is concerning that the Manukau and Firth of Thames options identified in the Port Future Study, have been dismissed prior to any robust evidence of viable alternatives. These options were recommended for detailed analysis after considerable work by the Port Future Study and cannot be lightly dismissed. Possible relocation of Auckland’s Port, which is in your Terms of Reference, would involve expenditure of billions of dollars. It is important that all credible options for relocation be examined before a decision of such magnitude is made.
Finally, the Ports of Auckland are in the sole ownership of Auckland Council and therefore the people of Auckland. The Port is a strategic asset and an anchor of Auckland’s economic performance. The Ports are a facilitator of trade in the supply chain for imports and exports, and associated activities generate wider economic benefits including employment, tourism, business activity and investment. It also returns a substantial dividend to Auckland Council.

Any plans to move all or some of the Port’s functions requires the concurrence of its owners, the people of Auckland through Auckland Council, and that in turn requires our confidence in the analysis on which that decision is based and our acceptance that our own legitimate interests have been taken into account fully.

As owner we have a responsibility to govern the business well to protect and enhance its value now and in the future. The same is true for the other North Island ports. The Working Group should be mindful of the impact of its conduct and recommendations on these locally-owned assets.

Auckland Council wants to work in partnership with the government on this critically important issue for the region, the Upper North Island and New Zealand. We will also of course provide comment to cabinet on the final output of the Working Group.

I look forward to the partnership that needs to exist for this exercise to be successful.

Yours sincerely

Phil Goff
MAYOR OF AUCKLAND