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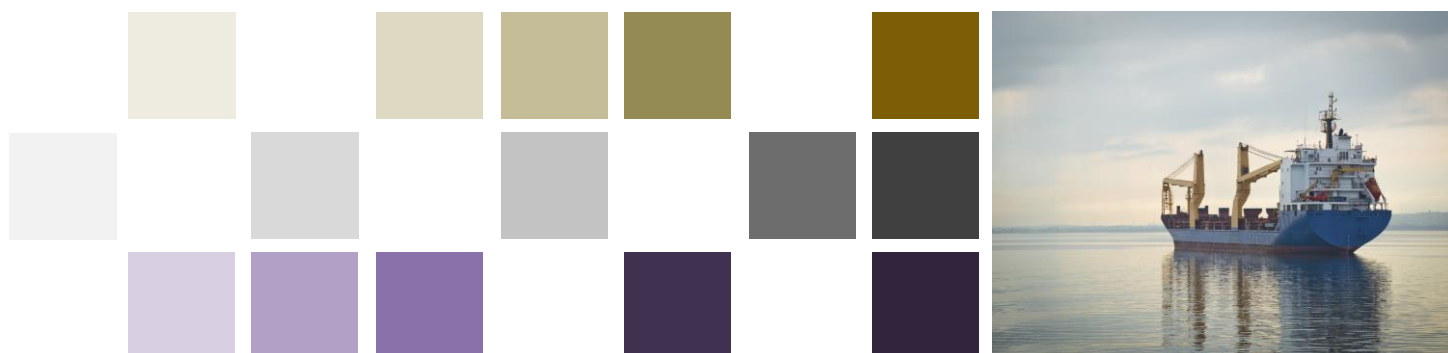
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Upper North Island Supply Chain Strategy

Incentives and Financial Implications

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June 2020



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Glossary

Abbreviation

Stands for

AC	Auckland Council
ACIL	Auckland Council Investments Limited
AES-2	AES-2 Independent Business Valuation Engagements
CAGR	Compound annual growth rate
Capex	Capital expenditure
CAPM	Capital asset pricing model
CBRE	CBRE Group
CFME	Capitalisation of future maintainable earnings
Cornerstone Partners	The various port companies and their owners
DCF	Discounted Cash Flow
EBIT	Earnings before interest and tax
EBITDA	Earnings before interest, tax, depreciation and amortisation
EBITDAF	Earnings before interest, tax, depreciation, amortisation, fair value changes and other gains and losses and excluding rental income
Enterprise value	The ungeared value for a business
Equity value	The value for all the shares in a company
FCFF	Free Cash Flow to the Firm
FY	Financial year
Ha	Hectare
JLL	Jones Lang LaSalle
LTM	Last Twelve Months
MMH	Marsden Maritime Holdings Limited
MOT	Ministry of Transport
Northport	Northport Limited
NPAT	Net profit after tax
NPH	Napier Port Holdings
NPV	Net Present Value
NTM	Next Twelve Months
NTOA / NOA	Net tangible operating assets / Net operating assets
NZX	New Zealand Exchange

PBT	Profit before tax
POAL / Ports of Auckland	Ports of Auckland Limited
POT / Port of Tauranga	Port of Tauranga Limited
PPE	Plant, property & equipment
PV	Present Value
Sapere Valuation	Sapere Research Group Limited
TEU	Twenty-foot equivalent units
UNISCS	Upper North Island Supply Chain Strategy
Valuation Date	The date of this report
WACC	Weighted average cost of capital
WCI	Working Capital Investments
Working Group	The UNISCS Working Group

Executive summary

In this report, we explore whether there is enough financial incentive for ports to take up options without Government intervention. This section summarises a detailed valuation report and financial model prepared in March 2020 by Sapere Valuation. Close examination of that report and model is recommended if the reader requires a full understanding of findings.

In undertaking this analysis, we have considered whether an investment in a new or expanded port is a worthwhile financial investment. We do this by comparing the present value (PV) of the costs associated with future port expansion to the marginal enterprise values (EV) achieved when a port captures Auckland's freight.

This section examines the commercial motivations of the shareholders of the Upper North Island ports; not their social motivations. The land values associated with alternative uses for the Port of Auckland are complex, for example, and many Aucklanders are motivated by the prospect of a different waterfront layout more than they are a dividend cheque. These non-market motivations (associated with changes in leisure amenity, for example) are not included here.

To calculate EV and PV of costs we have applied an appropriate nominal, post-tax discount rate with reference to POAL's weighted average cost of capital (WACC) of 5.2% to 6.1% (mid-point of 5.8%).

The Auckland port is worth almost \$1 billion to POAL if it remains in place

It is in the commercial best interests of POAL (and by extension its shareholder, Auckland Council) for the Port of Auckland to remain in place. Left alone, POAL will continue to invest in automation and future three-berth capacity. This will allow it to expand operational capacity and avoid congestion in the short or medium term.

Our enterprise value modelling has shown that displacing the Port of Auckland's freight creates a \$938 million financial disadvantage for POAL relative to remaining in place. This financial disadvantage is established by comparing enterprise valuations for POAL under two scenarios: cease or stay. The difference between them is \$938 million, as shown in the table below and assumes that Auckland Council can release the market value of POAL land, at full sales valuation.

Our estimate of the current market value for the entire business enterprise of POAL is tabled below based on the alternating assumptions that [a] the status quo is retained or [b] that POAL's exit is announced and implemented within eight years.

Based on our analysis, the enterprise value of POAL's port operations is approximately \$2.1 billion. If these operations are expected to cease in eight years' time, the current market value of the enterprise would be reduced to approximately \$353 million (this latter figure assumes a total cease of the port, including marine service and cruise ship operations, and is the amount associated with the remaining eight years of life of the port). This implies a foregone enterprise value of approximately \$1.765 billion (being \$2.1 billion less \$353 million).

If the port operation ceased, Auckland Council would be left with the land, which has an indicative market value of approximately \$827 million. This land value would partly offset the foregone enterprise value. The result is such that Auckland Council would be worse off by approximately \$938 million (being \$1,180 less \$2,118) if it ceased. We test all assumptions behind this conclusion in the main body of the report.

Table 1 Conclusions on market value for POAL

Conclusions	[a]	[b]
All amounts in \$'million	Status quo	POAL ceases
POAL: Enterprise Value as a seaport	2,118	353
Plus market value of the land if POAL continues as land-owner after 8 years		827
Sub-total for POAL	2,118	1,180
Difference between cease and stay	-938	

Source: Sapere Valuation analysis

POAL profit and dividend to Auckland Council

POAL profit can be established using publicly disclosed financial information. Dividend information can be tricky to establish as Auckland Council does not disclose the detail surrounding its investment in POAL but instead groups its investment in POAL with several other subsidiaries. POAL's comprehensive income is detailed in Table 2.

Table 2 POAL's comprehensive income which belongs to Auckland Council

POAL					
All amounts in \$'million	FY16	FY17	FY18	FY19	Average
Net profit after tax	84	60	77	54	69
Other comprehensive income	68	30	43	30	43
Comprehensive income	152	90	120	84	111
<i>Distributed as dividends</i>	42	54	50	46	48
<i>Retained in POAL</i>	109	36	70	38	63

Source: Sapere Valuation analysis, March 2020, using publicly disclosed financial information

The financial analysis highlights that:

- AC is the beneficial owner of POAL's annual 'comprehensive income'. Comprehensive income consists of (a) NPAT and (b) other income such as revaluation changes in POAL's assets or financial instruments that it is a party to.
- During FY16 to FY19, POAL's NPAT averaged \$68.8 million per year and other income averaged \$42.6 million per year resulting in an average comprehensive income of approximately \$111.4 million per year.
- From this comprehensive income, a portion is paid out as dividends and a portion is retained in POAL (but nevertheless remains AC's equity).

- During the last four financial years, AC received dividends from POAL of approximately \$48 million per year (or approximately 70% of NPAT and 42% of comprehensive income). This dividend payout is expected to reduce for the next two financial years as a larger portion of profit is expected to be retained within POAL for capital expansions.
- POAL retains the rest of the comprehensive income as AC's un-distributed equity (approximately \$63 million per year during FY16 to FY19). As at the end of FY19, the book-value of AC's equity (the amounts not distributed) was approximately \$800 million.¹
- The conclusions in the valuations commissioned for this report implies that the market value of Auckland Council's equity in POAL exceeds its book-value and instead ranges from \$1.656 billion to \$2.091 billion (\$1.854 billion at the mid-point).

If POAL's port operations cease, then it is reasonable to expect that the effect on Auckland Council's financial statements would include:

- a cessation of the dividend stream after POAL has vacated the land;
- a cessation of some of the other comprehensive income as it relates to port operations and port assets (excluding land);
- a continuation of some of the other comprehensive income as it relates to land assets; and
- recognising an impairment write-down of Auckland Council's investment in POAL. The magnitude of this write-down is still to be ascertained more precisely, but the valuation analysis approximates \$195 million, calculated as the difference between:
 - \$800 million book value of equity; and
 - \$605 million new value of equity calculated as the:
 - enterprise value of POAL under the assumption it would cease its port activities (i.e. the \$1.180 billion referred to above); less
 - non-current liabilities in POAL (estimated at \$574 million, and described more fully in the valuation report).

The present value of Auckland's freight is \$1.765 billion to another port company

We assess the present value of freight that would be moved from Auckland elsewhere as \$1.765 billion. So, for example, if Port of Tauranga captures the entirety of Auckland's freight, its enterprise value will increase by \$1.765 billion from its current assessed value of \$5.1 billion. And if, for example, Northport captures the entirety of Auckland's freight, its enterprise value will increase by \$1.765 billion from its current assessed enterprise value of \$314 million.

¹ As per paragraph 143.

Capitalised value of the infrastructure investment varies up to over \$4 billion

The \$1.765 billion value uplift associated with moving Auckland's freight can be compared with the present value (PV) of the costs associated with future port expansion to form a view on whether an investment in expansion is worthwhile.

The costs associated with building or expanding a port to take Auckland's freight were a key output of the infrastructure workstream. The infrastructure costs include the cost of dredging, landside port development and on-port moveable equipment. They do not include the cost of rail, bridge, tunnel or road infrastructure required to support the port. In the case of existing ports like Tauranga, the costs are adjusted so that they only reflect the additional investment required on top of what would likely have been spent anyway. The infrastructure costs provided were in real (today's dollar) terms.

We make a set of assumptions about when capital spend will happen and other assumptions to allow comparison across the port options. The result is set out in the table below and shows that the status quo, unsurprisingly, has the lowest PV of port infrastructure investment.

Table 3 Present Value of infrastructure investment required to handle Ports of Auckland freight

	Status quo	Tauranga	Northport	Northport -Tauranga split	Manukau Harbour (Central)	Manukau Harbour (Puhinui)	Firth of Thames
Total real cost of option	1,270	2,633	2,451	2,596	5,213	6,601	6,349
PV cost of option 2020s - 2050s at 5.8% WACC	608	1,031	1,176	1,253	2,930	4,435	4,092

Source: Sapere

New port options are not commercially viable

The cost of the new port options is substantially higher than the value uplift associated with taking Auckland's freight. That is, the expected PV cost is greater than PV benefit in the case of the Manukau Harbour options and the Firth of Thames. For example, the Puhinui site in Manukau harbour would cost PV\$4.4 billion while the value associated with the freight it would process is \$1.765 billion.

To justify an investment of approximately \$4.4 billion, a port at Manukau would need to handle approximately 1.9 million TEU annually (versus Ports of Auckland's current load of 940,000 TEU) and would still need to grow annually at 2.3%.²

²Crudely calculated as 940,000 TEU ÷ \$2.1 billion x \$4.4 billion. While there are some time-value considerations which would spread the investment-cost over three years, the benefits would also be delayed for three years before accruing to the project. As such, this estimate appears to be crude but conservative. We point out that this is based on the growth forecast and profitability performance observed at POAL. If another port had higher

The implication of this is a large proportion of Port of Tauranga's existing freight volumes of 1.2 million TEU would be required to run through the new port options – scaling back Port of Tauranga and making a regional monopoly.

Then there is the presence of uncertainty. Including uncertainty associated with the future freight flows - in relation to the realisable value of POAL's land in Auckland and in relation to land availability and social licence at each of the alternative locations – makes a voluntary decision less likely.

The implication is therefore that fully private port investment in the new port options is unlikely.

The two-port model can be mutually advantageous and commercially viable, under some conditions

The Working Group recommended the two-port model, splitting the freight load between Tauranga and Northport. Practically speaking, this would involve expansions to accommodate Auckland's load at Northport and letting Tauranga develop organically, as it would have done in any case. That would include Metroport continuing, but only at the rate it would otherwise have done.

When looked at as a stand-alone project, the two-port model is NPV-positive meaning the cost of expanding both ports is less than the benefit to be gained.³

- The infrastructure workstream found that operating capacity extension at the Northport and Tauranga port sites to support the two-port model will require investors to finance (in real terms) \$2.6 billion over the 60 years.
- The Northport expansion requires the lion's share of the two ports in this option: around three quarters of the investment.
- In present value terms, the investment required for both ports to expand in this option is \$1.3 billion.
- By this investment, the Northland and Tauranga ports will be able to handle similar freight volumes as Auckland would have beyond the 60-year term of analysis, but suffering constraints shortly thereafter.⁴
- The first phases of port development at Northport will require a total (real) investment of \$1.1 billion with approximately \$450 million required up-front for super-structures (Quay cranes, automated stacking crane and straddles).

growth forecasts or better profitability performance, then the required freight volumes could be lower. This calculation also disregards any other freight revenues such as freighting vehicles and marine services.

³ From a market perspective, investment in Northport may be considered high risk for investors as market sounding suggested that the distance to Northport from markets make it a relatively more expensive option than Tauranga and growth in markets was expected to occur more quickly in Waikato than North of Auckland.

⁴ If Northport was successful at capturing all of Auckland's freight volumes (and PoT took none) then operational capacity at Northport will be reached by the 2050s (Advisian, 2020); a more realistic scenario is that Auckland's freight load will be shared with PoT, and operational capacity will remain available at Northport until well beyond the 60 year forecast term.

A decision to make and subsequently stage the required capacity extensions at both ports relies on a co-operative solution between POAL, POT and Northport.

Is there a co-operative solution?

Whether a cooperative solution between POAL, POT and Northport is possible is a valid question to ask. The answer is, however, that it is unlikely. Key factors in this conclusion are -

- Only by staging capacity in a coordinated way – and agreeing to limit capacity expansions - will a cooperative solution be feasible. This degree of coordination is essentially a cartel and would be prohibited under the Commerce Act.
- Based on the PV of cost of \$1.3 billion, there is no configuration under which POAL, POT, Northport working together or separately would invest in a project to expand capacity at both or either of Northport and Tauranga. This is because the cost of expansion plus the amount needing to be paid to POAL is less than the value of the additional freight traffic that the parties would capture ($\$1.253 + \$0.938 \text{ billion} < \1.765 billion).
- Unless there is a subsidy and a direction provided by government, therefore, the parties will not agree to work together.
- Breakaway combinations of POT and POAL, or Northport and POAL will not work either. This is because expansion is uneconomic unless an external party pays to cease operations at the Port of Auckland.
- POT will not have incentive to make any investment at all - even assuming government agrees to incur the cost of paying to close the Auckland Port - unless POT is comfortable that it will achieve at least 60 percent (by value) of Auckland's freight; similarly Northport will not expand independently without 70 percent.
- POAL would need to be paid at least \$938 million to entice it to cease operations (a "pay-off"). The cease payment may need to be larger than \$938 million: if POAL was a strong negotiator, and there were other potential buyers for the port operations, it is possible that it could negotiate for a higher price to cease because it would know that the buyer of the port freight gains a benefit of \$1.765 billion for the value of the freight.

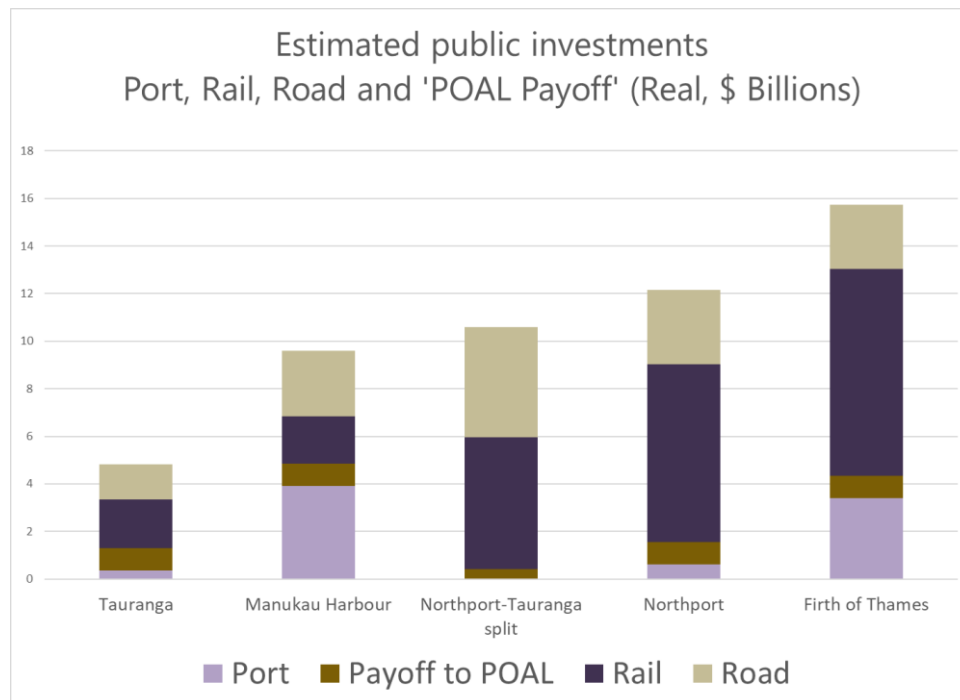
Public investment

In addition to ensuring that the owners of POAL are compensated for loss of value from the move public investment to support the two-port model would need to be given to:

- Public-good share of port investment
- Road
- Rail

The chart below provides a summary of the level of investment that might be expected to be made by the New Zealand Government and in the case of ports, Local Government. While Manukau is the most expensive location option in terms of Port capital investment, it is the second least expensive option overall. The Northport option is the second most expensive.

Figure 1 Public investments in port, rail, road and 'POAL payoff'



Source: Sapere analysis

Investment in the port itself is likely to come from a combination of public sources and private investment. This is because there is a shortfall between the cost of infrastructure and the expected value of freight. The public share can be estimated by considering the shortfall between the investment required and the freight value generated (on equivalent present value basis). This gives an idea of the percentage share of the enterprise the New Zealand Government may be required to subsidise. A port subsidy is the case for all options except the Northport:Tauranga split option, which despite facing challenging constraints can offer expected returns that exceed the expected cost. This option assumes that coordination can be achieved between the parties, which is not possible without government intervention.

The willingness to provide a public subsidy to a port rests on societal values: a wider set of costs and benefits than strictly commercial ones. Key outputs from the social and economic value workstream have indicated that investments to support port expansion in Northland are unlikely to be justified on the basis of the social and regional economic benefits it unlocks in the Northland region. This is because regional economic benefits will accrue to the wider Auckland and Waikato areas in addition to Northland. On this basis the Northport regional council might not be willing to fund the investment and most likely public funding source would be central government or perhaps a consortium of local governments from Auckland, Waikato and Northland. Such transfers from central government to local authorities and private shareholders may be politically unpopular or provoke claims of unfairness.

The value released to Auckland Council when it sells the land may be lower than expected

The working group estimated undeveloped POAL land to have a value of approximately \$1 billion (as set out in the Port Future Study of 2016). The value assessment in the analysis above is based on a conclusion from a valuation expert of a range of between \$701 million to \$911 million (midpoint \$827 million). This valuation is a present-day market valuation of 43 hectares of cleared, developable port land made available in eight years.⁵

The concluded mid-point of \$827 million land value does not provide an indication of the non-market values that Auckland Council or others might attach to the port land. It does not assume the identity of the buyer - only that there is a willing buyer and seller - although we are aware that there are entities that have expressed an interest in the land should it be made available for sale. The figure does not assume there is in fact a sale, only that the land has a residual value to POAL as an asset.

The mid-point value \$827 million is approximately \$447 million more than the value assessed by management and CBRE in their latest assessment of the market value of POAL's freehold land. The concluded mid-point is approximately \$173 million less than the \$1 billion assessment set out in the Port Future Study and referred to by the working group.

Planning analysis has also indicated that considerable uncertainty exists around the ability for Port of Auckland to quickly sell the ~43 hectares of available land under Port of Auckland to a development company. There is potential, for example, for legal challenge regarding the land's status which may mean a land sale is blocked while respective rights and interests are resolved.

Further, there are substantial development costs needing to be incurred before value in alternative use can be released. From Auckland Council's perspective,

- It will likely, as for Wynyard Quarter, pursue a sale by leasehold. Punuku's experience of this development is the cost of land remediation and preparation is substantial and equal to the value of the lease.
- Any costs involving a direct private benefit will, as much as possible, be funded by the developer not the Council.
- Any additional rating value will be offset in costs of delivery of services of a public good nature including three waters, establishing a new train station and other service delivery suited to an intensive, inner city suburb.

⁵ No reference is made in the working group's report of 9 August 2019 as to the net developable land expected to be available from the POAL site. JLL's report of 2016 assumed this would be approximately 34.1Ha, while CBRE assumed 43.0Ha. The valuation above adopts the 43.0Ha proposed by CBRE. The rest of the land (34.0Ha) is assumed to be converted to public spaces, roading and other assets owned by Auckland Council (AC).

In short, the land valuation will be seen by Auckland Council as spent already. Thus, with lower values attached to the land the difference between the cease and stay scenario is larger, and the “pay-off” required to compensate Auckland Council for a move might be \$1.8 billion.

Cooperation is not simple

Achieving a cooperative solution between the owners of the Upper North Island ports appears simple but is a challenging proposition. There is uncertainty (particularly around consenting) in addition to risk. The extensive analysis conducted in the Infrastructure workstream has indicated that a resource consenting process for extensions to the Port of Tauranga and the Port at Northport will take five to eight years and involve appeals despite there being port activities at those locations already. This makes financing much less likely.

Other barriers to voluntary cooperation between ports might include:

- potential for the arrangement to be challenged under the Commerce Act (this is subject to detailed analysis in a companion report)
- barriers in the rules for corporate control or takeovers making larger or smaller shareholdings unpalatable
- the administrative or political costs associated with the requirement in the Local Government Act that as a strategic asset, the sale or purchase of a port is subject to community consultation via a long-term plan
- perceived lack of political will or ‘short-termism’ as a result of corporate structure
- lack of mutually agreed basis for estimating the benefits of cooperation and the value available to be shared.

Complementary investments in road and rail

The infrastructure workstream concluded that substantial government investment in road and rail will be required to support the expansion in both Northland and Tauranga.⁶ Road and rail are complementary investments to a port, and as such, port companies and their shareholders rely on signals from the government about when and where road and rail investments will occur. Planning for complementary road and rail would need to run concurrently with the port planning, risking delays to opening. If road and rail cannot be provided to support the expanded port at Northport, no mutual arrangement will be able to be reached between Cornerstone Partners.

More detail on the configuration of road and rail options associated with moving freight by rail between the locations is provided in the infrastructure findings.

⁶ The working assumption behind this analysis is that local government and/or private investors finance the port infrastructure and consenting costs, and central government finances complementary rail and road infrastructure, and any other costs required to facilitate the investment. Central government would also shoulder any costs associated with preparing enabling legislation, if needed.

Motivating Auckland Council to release the port

It is clear to us that Auckland Council has the most to lose from any of the options posed, if only financial implications from its shareholding in the Port are taken into account. Also, it is clear that the capital required does not justify moving the port on commercial grounds alone. We have indicated that a financial incentive to move might be required in addition to social incentives.

Auckland Council is not solely focused on financials as it is as a public entity providing social outcomes for Aucklanders. There are social and economic values associated with achieving better public spaces when the Auckland port is redeveloped. These values are difficult to measure reliably and are ultimately assessed subjectively through the political process. Early indications are that the public amenity values appear to be small in comparison with the financial losses represented by moving the port. As such, public amenity values may not be enough on their own to motivate the Council to consider a move.

Estimating the amount that might be required is challenging. We established above that a move is associated with a loss for POAL of \$938 million (the financial difference between cease and stay, with staying meaning a port restricted to 2.1 million TEUs a year but operating in perpetuity). We also established that in the event that the land under the port is not easily realisable, the loss to Auckland Council might be as high as \$1.8 billion. In the other direction, Auckland Council might value the social benefits of moving the port so highly that it considers it has made no 'loss' at all from moving the port. The required payout could therefore be anything in the range of \$0 to \$1.8 billion. It might take the form of shares in the new port company, be paid in cash or in the form of other transfers.

Clearly, the social motivations of Aucklanders will ultimately determine what Auckland Council decides to do. One way to consider the motivations of Auckland's ratepayers is to consider what the move might cost a household. Let's say the financial 'loss' from closing the port is \$938 million. Auckland ratepayers, who own the port, can either

- Keep the \$938 million on the Council's balance sheet, or
- Have a developed park/apartment/waterfront area in ten years' time.

What proportion of Auckland ratepayers would choose the former, we cannot tell with certainty. But, in 2019 there were 592,864 ratepayers in Auckland Council. Financially, permanently moving the port costs each ratepayer an average of \$1582 and releases a perpetual stream of social benefits. When viewed over a long period, these social benefits are valuable. \$1582 is equivalent to an annuity over 60 years at a 4% discount rate of \$67 a year. If ratepayers value the waterfront amenity more than \$67 a year then the financial loss may be viewed as acceptable.

Background and context

Incentives framework

1. The purpose and scope of this workstream is to strengthen the analysis around the commercial incentives behind each of the options for the port companies and their owners (the **Cornerstone Partners**).

An incentive is something that motivates an individual or entity to perform an action.

2. The study of incentives is central to the study of economic activities. Economic decisions are determined as a function of the information that is known by the individuals or firms in the economy, and what they choose to do with that information. Incentive constraints should be considered coequally with resource constraints in the formulation of decisions. Incentives place constraints on economic systems just as much as the limited availability of skills, raw materials or complementary goods.

UNISCS Working Group report

3. Cabinet has asked officials to investigate aspects of the Upper North Island Supply Chain Strategy (**UNISCS**) Working Group's analysis (the **Working Group**), including the *"governance and commercial arrangements, including assessment of possible deal scenarios critical to all partners"*. We have been tasked with explaining a simple model for understanding how the commercial entities involved in the supply chain might organise themselves.
4. The Working Group's preferred option was the managed closure of the Ports of Auckland's freight operations, the development of Northport and the continued operation of the Port of Tauranga.⁷ The Working Group characterised this option as a "resilient two-port model". It was recommended after examining eight scenarios.
5. The Working Group recommended that New Zealand's proposed new two-port configuration should be supported by a rejuvenated North Auckland rail line and spur to Northport, and a new inland freight hub in northwest Auckland to complement and be connected to Metroport in the south.
6. The Working Group suggested that the proposal to develop Northport should be largely commercially driven, but noted that regulatory intervention may be needed if cooperation is not forthcoming. It noted that the ownership structures, particularly at Northport, may constrain implementation, and so regulatory options may be needed (such as legislation requiring the

⁷ UNISCS Working Group, 2019, Transforming Auckland; Transforming Northland: Final Report of the Upper North Island Supply Chain Strategy Working Group, November 2019, <www.transport.govt.nz>

divestment, purchase and consolidation of shareholdings in relevant ports), to enable growth at Northport.

7. The Working Group also noted that transition to a two-port model is not possible without Auckland Council's cooperation. Auckland Council, through its 100 percent ownership of Ports of Auckland Limited (**POAL**), is a Cornerstone Partner in any agreement to move. In the Working Group's final report, it was found that Auckland Council stood to gain if the port was closed, highlighting a \$6 billion uplift to Auckland City balance sheet from the port move.⁸
8. The Working Group suggested a period of grace for negotiations between the port companies before 'legislative solutions' are sought to implement their recommended option. This report tests whether there are adequate incentives to enter into such an arrangement.

Goals for the Upper North Island Supply Chain Strategy

9. The terms of reference for the UNISC review set out the government's interest in the future of New Zealand's ports, freight services and coastal shipping. That is:
 - a) an overall goal of lifting and securing the economic well-being of New Zealanders, and in promoting opportunities for regional development and employment;
 - b) developing an efficient and effective transport and logistics infrastructure that is resilient and works in the national interest; and
 - c) ensuring the best use of scarce resources, such as land, especially in metropolitan areas.

Main questions

10. This report asks:
 - a) Are there incentives for the port companies to self-organise into the two-port model envisaged by the UNISCS Working Group?
 - b) What, if any, are the likely commercial scenarios that might underpin the two-port model?
 - c) Are there incentives for the port companies to self-organise to undertake port development at the alternative locations, and what are the conditions required for this to occur?
11. A complementary report examines the competition implications from each of the location options.

No involvement from officials

12. The content of this report represents the work of the authors alone. Due to COVID-19, the intended close collaboration with officials has not been possible.

⁸ Advisors EY advised the Working Group that maintaining the port at its current location is costing Auckland ratepayers between \$5 billion and \$6 billion in lost value.

Reliance on valuations

13. The analysis relies on valuations of the port companies and their assets prepared in the period leading up to 15 March 2020. The indicative valuations rest on a combination of detailed assumptions and publicly available financial information. Notably, the valuations were undertaken using information gathered prior to the impact of coronavirus (Covid-19) on world freight and shipping. The assumption is that Covid-19 might represent a temporary disruption for shipping trade to, and from, New Zealand but by the medium term, when the cashflow impacts from a port move will start to be felt, the previous volumes will have been restored.

Reliance on assumptions about infrastructure spend

14. The analysis relies on assumptions about the infrastructure spend required to extend existing ports or construct new ports in each of the locations to a sufficient degree to handle the freight volumes currently handled at Port of Auckland. These, in turn, rely extensively on freight forecasts, with considerations of capacity and timing. The infrastructure spend assumptions are detailed meticulously in the key outputs from the infrastructure workstream, which included input from port planners Black Quay and Advisian.

The model: investment decisions under uncertainty

15. When making investment decisions, firms typically rely on capital budgeting tools such as net present value (**NPV**) analysis using Discounted Cash Flow modelling (**DCF**). NPV analysis is considered a formal, and useful, method that considers expected cash flows, risk and timing variables.

NPV decision rules

16. NPV analysis evaluates the cash flows forecasted to be delivered by a project by discounting them back to the present using information that includes the time span of the project (t) and an appropriate discount rate (r). Generally, if the result is positive, then the firm should invest in the project. If negative, the firm should not invest in the project.
17. NPV analysis gives rise to decision rules, including:

- Independent projects: If NPV is greater than \$0, accept the project.
- Mutually exclusive projects: If the NPV of one project is greater than the NPV of the other project, accept the project with the higher NPV. If both projects have a negative NPV, reject both projects.

18. These decision rules form the foundation of the model we use to evaluate the port companies' likely investment strategies.

Port ownership matters

19. Port ownership makes a difference to how entities apply these decision rules. When the share of the government or local authority increases, port economists have found that more is invested in port capacity, and earlier. This is because local economic and employment benefits are taken into account as quantified benefits (and NPV analysis is used as a cost:benefit analysis), which is translated into a lower investment threshold (Asteris, Collins, & Jones, 2012).

Real options as a driver of behaviour

20. Port capacity decisions contain considerable uncertainty.⁹ These decisions are generally expensive and irreversible. This means that, relying solely on the information that is available upfront, could be overly deterministic.

⁹ Uncertainty refers to a situation where an event is imaginable, but its probability is unknown—a 'known unknown' in the words of Donald Rumsfeld. In contrast, risk refers to a set of possible outcomes with known probabilities attached. The critical difference between risk and uncertainty is that risk can be insured against;

21. For this reason decision-makers behind a new port or large port would likely combine NPV analysis with some level of discussion around the project's "real options" (Dixit & Pindyck, 1994).¹⁰ Real options include the ability to (but not an obligation to) expand, downsize, defer, abandon or modify plans. Each of these options adds value to a project by allowing decision makers to exploit upside opportunities (e.g. project expansion) while limiting downside losses (e.g. abandon or downsize). Indeed, some projects that would fail an up-front NPV analysis may go ahead when real options are taken into account, where there is flexibility to manage the downside.
22. Formal modelling of the value of options has shown that these options can be more significant than the NPV value of the project itself. It is not always necessary to explicitly model real options but it can be useful to reflect on how they can change the economics behind whether to invest in a project or how to stage it.
23. There are four broad lessons from the options literature to keep in mind when considering commercial incentives. These lessons from the real options literature are explained in a collection of papers by Avinash Dixit and Robert Pindyck (summarised in (Dixit & Pindyck, 1994)). The Ministry of Transport's CBA methodology applies the findings from this literature, with detailed examples (Ministry of Transport, 2019).¹¹

- There is value in delay if it resolves uncertainty (and there are benefits in breaking down a project into sequential stages if that can increase the information available to decision-makers)
- However, delay can destroy valuable first-mover advantages.
- Firms are reluctant to abandon existing uneconomic decisions.
- Partial or full public ownership is likely to mean earlier and larger investments in port capacity.

whereas insurance is more difficult, if not impossible, with uncertainty (North, 1991). The inability to insure against uncertainty makes it more damaging from the point of view of the firm. More specifically, for valuation purposes we refer to Knightian risk and uncertainty, being that 'risk' is randomness with known probability distributions and 'uncertainty' is randomness with unknown probability distributions. (LeRoy, Stephen F., and Larry D. Singell. "Knight on Risk and Uncertainty." *Journal of Political Economy* 95, no. 2 (1987): 394-406)

¹⁰ The Real Options approach is recognised in the Ministry of Transport's analytical framework for decision-making. The framework acknowledges the usefulness of a real options approach for decisions with high uncertainty but where better information may become available, for irreversible investment opportunities with longer horizons, for projects that can be structured into multiple stages with opportunities after each stage to continue, alter or delay.

¹¹ The Ministry's real options papers can be found at <https://www.transport.govt.nz/multi-modal/keystrategiesandplans/strategic-policy-programme/real-options/>. The papers draw heavily from a paper by Arthur Grimes (2010) and a presentation by Grimes (2011).

Findings

Self-organisation into the two-port model needs POAL

24. It is in the commercial best interests of POAL (and by extension its shareholder, Auckland Council) for the Port of Auckland to remain in place. Left alone POAL will continue to invest in automation and future three-berth capacity. This will allow it to expand operational capacity and avoid congestion in the short or medium term. Our enterprise value modelling has shown that displacing the Port of Auckland's freight creates a \$938 million financial disadvantage for Auckland Council relative to remaining in place. This financial disadvantage will need to be offset by financial gain elsewhere, or social and economic benefits to Auckland.
25. This financial disadvantage is established by comparing enterprise valuations for POAL under two scenarios: cease or stay. The difference between them is \$938 million, as shown in Table 4 below.
26. Our estimate of the current market value for the entire business enterprises of POAL, POT, Northport, Firth of Thames and Manukau Harbour is tabled below on the alternating assumptions that [a] the status quo is retained or [b] that POAL's exit is announced and designed as detailed later in this report.

Table 4 Conclusions on market value for entire enterprises

Conclusions	[a]	[b]
All amounts in \$'million	Status quo	POAL ceases
POAL: Enterprise Value as a seaport	2,118	353
Plus market value of the land if POAL continues as land-owner after 8 years		827
Sub-total for POAL	2,118	1,180
<i>Column [b] reflects the result in the event that port is the elected alternative</i>		
POT	5,136	6,901
Northport	316	2,081
Firth of Thames	-	1,765
Manukau Harbour	-	1,765

Source: Beylefeld analysis

27. The results tabled in column [b] above are in the alternative. In other words, the market value in [b] for each port, other than POAL, is the result if that port alone is the beneficial recipient of POAL's ceased activities.
28. Based on our analysis, the enterprise value of POAL's port operations is approximately \$2.1 billion. If these operations are expected to cease in eight years' time, the current market value of the enterprise would be reduced to approximately \$353 million. This implies a foregone enterprise value of approximately \$1.765 billion (being \$2.1 billion less \$353 million).

29. POAL and thereby Auckland Council would, however, retain the land (with an indicative market value of approximately \$827 million) which would partly offset the foregone enterprise value. The result is such that Auckland Council would be worse off by approximately \$938 million (being \$1.180 billion less \$2.118 billion).

The present value of Auckland's freight

30. We assess the present value of freight that would be moved from Auckland elsewhere as \$1.765 billion. So, for example, if Port of Tauranga captures the Auckland freight, its enterprise value will increase by \$1.765 billion from its current assessed value of \$5.1 billion.
31. The \$1.765 billion gives a boundary to work with: it is the size of the pie to be shared between the Cornerstone Partners (Marsden Maritime Holdings (**MMH**), POAL, Port of Tauranga (**POT**)) achieve in a negotiated solution.
32. The size of the pie is fixed: there is no additional marginal benefit that is created by displacing an equivalent volume of trade to an alternative location.¹² Such a move creates costs, however, as capacity needs to be added in these alternative locations that was not required before.

Auckland Port to cease

33. The incentive challenge, therefore, is finding port investment arrangements that offer sufficient value to be simultaneously NPV positive, rewarding for individual investors and motivating to POAL to cease.
34. If POAL cannot readily sell the land under Port of Auckland - or if it achieves a fraction of the assessed development value of \$827 million – it will be more difficult to find a mutually beneficial solution meeting these criteria. The value of the port land is lost from the pie.
35. Thus, if commercial solutions are sought, certainty about the planning treatment and property status of the land under Port of Auckland is a crucial consideration.

Auckland operating capacity is enough until beyond 2050

36. Operating capacity¹³ at Port of Auckland was subject to review by port consultants and provided as key outputs from the infrastructure workstream. The views offered by the port

¹² It is probable that through a combination of better layouts, improved technology and better infrastructure connections the ports in locations outside central Auckland will offer efficiencies relative to the efficiencies available from improvements at the Port of Auckland. These efficiencies may change the share of the profits that each of the Cornerstone Partners, but how ever efficient the new ports might be, the size of the pie will not materially change. This is because the volume of trade from and to the Upper North Island will not increase; it will be shared differently.

¹³ Both set of port consultants agree on the need to differentiate between peak capacity (i.e. the technical maximum throughput), at which a port can operate for short periods, and an effective or sustainable operating capacity. The latter is the level at which a port can continue to operate reliably and economically, beyond which there are increasing risks from congestion for productivity, safety and profitability. Both sets of port consultants

consultants suggest a capacity planning assumption of 2.04m to 2.24m TEU p.a. for the future combined operations of the Fergusson Terminal and the Freyberg Wharf.

37. Table 5 summarises these views on operational capacity.

Table 5 Assessed operating capacity

TEU million (rounded)	Fergusson Terminal	Freyberg Wharf	Total
POAL 30-year plan	2.10	0.60	2.70
Advisian view	1.85	0.39	2.24
Black Quay view (range)	1.79	0.26-	2.04-
		0.46	2.24

Sources: Advisian report, 17 April 2020; Black Quay file note, 16 April 2020

38. The overall conclusion is that the planned developments will enable sufficient operating capacity at Ports of Auckland for approximately 30 years from 2020, with the range being 28 to 35 years of operating capacity, depending on the forecast scenario and the estimate of capacity. This conclusion assumes that other constraints, such as dredging to enable larger vessels to access the entrance, will be addressed (i.e. the necessary consents will be obtained).
39. Our modelling of the 'remain in place' enterprise value for POAL is based on a gradual increase in cashflows in line with freight growth to a operational capacity to 2.1 million twenty-foot equivalent units (**TEU**).¹⁴ Capex assumptions relating to capacity increases are outlined in paragraph 151.
40. Remaining capacity adds future profitability; where there is capacity, congestion does not create marginal costs for the port that exceed the revenue the port earns from servicing additional units of freight. Ergo, when there is capacity POAL generates a marginal net benefit from keeping the port operating.

recommend that the concept of operating capacity be adopted for port planning purposes. That is, it would be prudent to avoid using peak or best-case maximum capacities in planning for the long term.

¹⁴ This is within the range of 2.04- 2.24 suggested by port planners Black Quay and Advisian. Black Quay (2020) recommend that a 15% "capacity buffer" is considered "good practice". In effect, suggesting that operating capacity is 85% of peak capacity. Black Quay note that the size, shape and orientation of the Freyberg Wharf "is far from optimal" and that the triangular shape would have implications for berth productivity and the efficient movement of container freight to and from the yard area and the rail and road alignments. Black Quay conclude that the stated capacity "would be difficult to achieve" and recommend an efficiency reduction factor of -10% to -50% before determining operational capacity. The result suggests that operating capacity Freyberg Wharf would be between 43% and 77% of peak capacity.

In some cases, the investment costs more than it's worth

41. To evaluate whether an investment in a new or expanded port is worthwhile, we have generated estimates of the present value (PV) of the costs associated with future port expansion. The real costs were a key output of the infrastructure workstream.
42. A PV of costs enables for a comparison of the commercial profits associated with the freight business versus the capital investment required to service that volume of freight. A PV comparison is useful for it adjusts for differences in timing and commercial risk. If profits are greater than the capital investment required then there is a prima facie case for investment. That is, there is an NPV-positive project.
43. WACC is assessed at 5.8% in accordance with the proof contained at Appendix B, WACC.
44. The infrastructure costs include the cost of dredging, landside port development and on-port moveable equipment. They do not include the cost of rail, bridge, tunnel or road infrastructure required to support the port. In the case of existing ports like Tauranga, the costs are adjusted so that they only reflect the additional investment required on top of what would likely have been spent anyway.
45. The following timeframes are used in the modelling, following the principle of avoiding using best-case assumptions when planning for the long term.
 - a) Upfront costs for planning and approvals allocated to the 2020s. These are assumed to be incurred in 2025.
 - b) Construction costs allocated to the 2030s – these are assumed to fall in the first years of the decade with the assumption being that new port capacity (or a new port) is commissioned as early as possible but well prior to 2040.
 - c) Given the above timings, the avoided base case costs (i.e. in the counterfactual) are those that are scheduled to occur after the 2030s.
46. These assumptions are applied to all options, for modelling simplicity and to enable comparability.¹⁵ There may be a case for assuming that existing ports could happen slightly earlier, given the estimation of a shorter timeframe for the approvals process.

¹⁵ We note that the timing assumptions for the PV of investment costs have slight differences to those applied in the Cost Benefit Analysis workstream. These differences do not materially change the conclusions in this report. Our timing assumptions reflect the fact that the current site of Ports of Auckland could be disbanded as early as 2030 with quick investment decisions by the port companies, enabled by legislative change.

Table 6 Present Value of infrastructure investment required to handle Ports of Auckland freight

	Status quo	Tauranga	Northport	Northport-Tauranga split	Manukau Harbour (Puhinui)	Firth of Thames
	Million	Million	Million	Million	Million	Million
Total real cost of port development	1,270	2,633	2,454	2,596	6,525	5,970
Port development costs (2020 – 2050) expressed as a present value at 5.8% WACC	608	1,031	1,176	1,253	4,380	3,828
Is PV cost of option greater than value of freight (\$1.76 B)?	No	No	No	No	Yes	Yes

Source: Sapere analysis

The new port options are not viable without public subsidy

47. Table 6 shows that in the new port options the cost of the new port options is substantially higher than the value of freight that would be captured (i.e. the two Manukau Harbour options and the Firth of Thames). For example, the Puhinui site in Manukau harbour would cost PV\$4.4 billion while the value associated with the freight it would process is PV\$1.765 billion.
48. No private investor would invest in these new ports (at this scale) without a subsidy of some sort.
49. To justify an investment of approximately \$4.4 billion, the Puhinui port at Manukau would need to handle approximately 1.9 million TEU annually, while still growing at the same rates set out in paragraph 151.¹⁶ In comparison, the enterprise value of Ports of Auckland (which is approximately \$2.1 billion at the mid-point, as set out in paragraph 26) stems from its annual

¹⁶ Crudely calculated as $940,000 \text{ TEU} \div \$2.1 \text{ billion} \times \4.4 billion . While there are some time-value considerations which would spread the investment-cost over three years, the benefits would also be delayed for three years before accruing to the project. As such, this estimate appears to be crude but conservative. We point out that this is based on the growth forecast and profitability performance observed at POAL. If another port had higher growth forecasts or better profitability performance, then the required freight volumes could be lower. This calculation also disregards any other freight revenues such as freighting vehicles and marine services.

handling of approximately 940,000 TEU with that volume growing at the rates set out in paragraph 151.

50. The Manukau investment can be scaled-down or staged to make it cheaper. But reflecting on the scale of a \$4.4 billion investment is worthwhile: to justify an investment of this size, a large proportion of Port of Tauranga's existing freight volumes of 1.2 million TEU would be required to run through the port *as well as Auckland's freight*. The result might be a scaled-back Port of Tauranga and a large, dominant port at Manukau. Such an arrangement would result in lessening of competition (competition effects are explored in more detail in the companion competition analysis).¹⁷ The Working Group noted that a monopoly port is not in the best interests of New Zealand due to concerns about resilience (UNISCS Working Group, 2020).
51. The presence of uncertainty – including uncertainty associated with the future freight flows, in relation to the realisable value of POAL's land in Auckland, and in relation to land availability and social licence at each of the alternative locations – makes a voluntary decision less likely.
52. This indicates that fully private port investment in the new port options (Manukau and Firth of Thames) is unlikely. Government or local government investment on the basis that the port provides external social or economic benefits would be needed to make up the shortfall between present value costs and present value benefits. Compensation to entice POAL to cease its central Auckland freight load would be required. This might come in the form of shares in the new port entity.
53. If, despite the many obstacles, a site at Manukau or Firth of Thames is found to be the preferred location from a national cost benefit point of view then government investment in the port asset will be required in addition to the road and transport links. Securing a site and preserving transport links will reduce uncertainty and reduce the gap between costs and benefits for private investors. The port economics literature suggests that if more shares of the ports are publicly owned, the value associated with securing an option to develop a port will be larger (Asteris, Collins, & Jones, 2012) due to the role that social and economic benefits play in driving investment decisions.

Cooperation on the two port model is unlikely without Government participation

54. The Working Group recommended the two-port model, splitting the freight load between Tauranga and Northport and enabling expansion at each. It suggested the parties could work together to find a mutually beneficial solution. We have examined whether Port of Tauranga, POAL and Northport could find a way to cooperate to share the Auckland freight load.

¹⁷ In any event, a new port at Manukau or Firth of Thames would likely become a vigorous competitor for the Port of Tauranga. It may capture some or all of Port of Tauranga's existing Waikato-sourced business. Alternatively, Port of Tauranga Limited may take an ownership share of the new port. In either case, the new port would take on monopoly characteristics.

55. The two-port model is NPV-positive (that is, the NPV cost of expanding both ports is less than the benefit to be gained) so enquiring whether a cooperative solution is possible is a valid question to ask.
56. Competition analysis has indicated that a two-port model without divestment of the vast majority of POT's shareholding in Northport will result in a lessening of competition to monopoly. For simplicity, we assume that the shares are divested and that Northport and Port of Tauranga are corporately separate.¹⁸
57. The size of the investment required is the first consideration. We have been able to gather a detailed understanding of what the expansion would cost; the infrastructure workstream examined a shared scenario. The advisors found that operating capacity extension at the Northport and Tauranga port sites to support the two-port model will require investors to finance (in real terms) \$2.6 billion over the 60 years. In present value terms, the investment is \$1.25 billion, with the Northport expansion requiring the lion's share of investment: just under three quarters of this amount. By this investment, the Northland and Tauranga ports will be able to handle similar freight volumes as Auckland would have, well beyond the 60 year term of analysis (Advisian, April 2020).¹⁹
58. A voluntary solution would require the parties to pay POAL to cease operations at the Auckland port. We established earlier that POAL would need to be paid at least \$938 million to entice it to cease operations (paragraph 25 above). This is the 'payoff'. If POAL was a strong negotiator, and there were other potential buyers for the port operations, it is possible that it could negotiate for a higher price to cease because it would know that the buyer of the port freight gains a benefit of \$1.765 billion for the value of the freight.
59. Based on the PV of cost of \$1.3 billion, there is no configuration under which POAL, POT, Northport working together or separately would invest in a project to expand capacity at both or either of Northport and Tauranga. This is because

PV(cost to all parties) plus payoff > PV(benefit)

\$1.25 billion plus \$938 million > \$1.765 billion.
60. Similarly, if POT and Northport were to work independently to make an investment decision, they would not be able to independently invest in capacity and pay POAL to cease operations in Auckland. This finding holds true even if the parties were confident of attracting the entire freight load from Auckland's ceased operation.

¹⁸ The conclusion that a cooperative solution will not be found without government subsidy stands regardless of whether the current shareholdings remain the same, with POT having ownership of 50% of Northport's shares, and with POAL having a 9.9% share of Northport via Marsden Maritime Holdings. The complex ownership structure behind the ports is described and illustrated in paragraph 88.

¹⁹ If Northport was successful at capturing all of Auckland's freight volumes (and POT took none) then operational capacity at Northport will be reached by the 2050s (Advisian, 2020); a more realistic scenario is that Auckland's freight load will be shared with POT, and operational capacity will remain available at Northport until well beyond the 60 year forecast term.

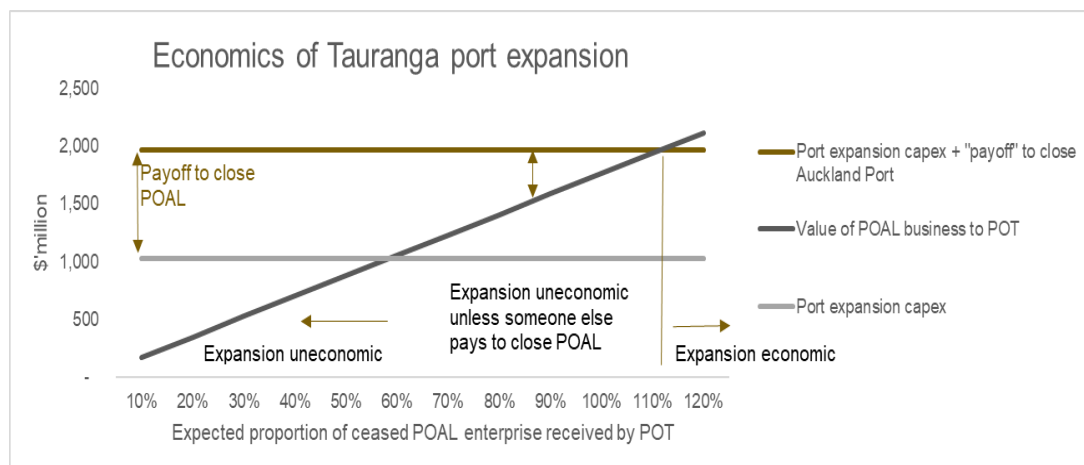
61. In the case of POT making the investment decision independently, the required expansion investment to house Auckland's freight is \$1.03 billion. Due to the size of this investment, a deal with POAL to cease Auckland freight will be infeasible even if POT captures the entire Auckland freight load. This is because

PV (cost to POT) plus payoff > PV(benefit to POT)

$$\$1.03 \text{ plus } \$938 \text{ million} > \$1.765 \text{ billion} \times \text{market share}$$

62. Graphically, the costs and benefits associated with POT's expansion are shown in Figure 2. Benefits are the increasing line: benefits to POT increase with its share of the POAL enterprise it captures.
63. The increasing (benefits) line crosses the horizontal (capex or costs line) when the port captures around 60 percent of POAL's enterprise. However, a cooperative solution is unlikely unless government or someone else comes 'to the table' and POAL is 'paid off' to incentivise it to cease. This is because it is in POAL's commercial interests to stay.
64. If no other party intervenes and POAL and POT have to come to a cooperative solution between themselves, the deal only becomes economic when the top line (which incorporates the "pay-off") is crossed. This occurs when the benefit to POT is 1.15 times of the value of Auckland's current freight. In other words, POT would have to capture *more than* POAL's entire enterprise. Alternatively, POT would have to capture all of POAL's enterprise *and* charge higher prices. By achieving a position of monopoly, Port of Tauranga could capture higher prices than in a competitive model. So there is a feasible scenario available in which POT pays POAL to cease operations in order to become a regional monopoly, and charges higher prices to cover the cost of that investment.

Figure 2 Economics of port expansion at Tauranga



Source: Sapere

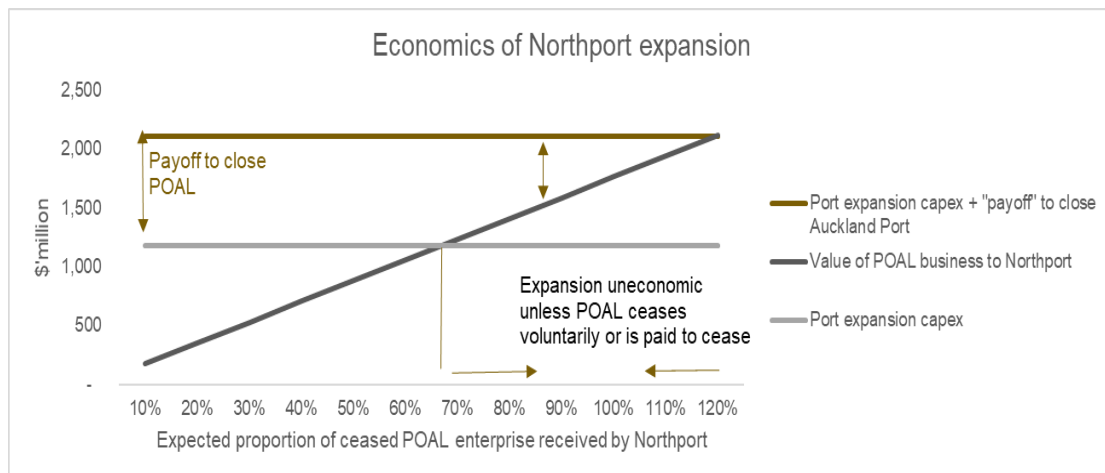
65. Similarly, a graphical representation of the Northport expansion is shown in Figure 3 below. Once again, no solution is possible unless POAL ceases voluntarily or is paid to cease, and Northport receives over 70 percent (by value) of Auckland's freight.
66. The chart illustrates that if Northport worked independently, the expansion investment to house Auckland's freight is \$1.176 billion. Once again, the value of freight is insufficient to justify this

investment plus the payoff. Investment in expansion will not occur. This holds regardless of the percentage of shares in Northport held by POT. Even if POT owned all the shares in Northport, it would not be rational for Northport to pay POAL to cease operations in Auckland.

PV (cost to POT) plus payoff > PV(benefit to POT)

\$1.176 billion plus \$938 million > \$1.765 billion x market share

Figure 3 Economics of port expansion at Northport



Source: Sapere

67. Only by POT and Northport staging capacity in a coordinated way – and agreeing to limit unilateral capacity expansions - will a cooperative solution be feasible. This degree of coordination is essentially, a cartel and would be prohibited under the Commerce Act.

The subsidy solution for the Northport-Tauranga split option

68. We have established that if local or central government enters to subsidise the Northport + Tauranga expansion deal, then a deal might happen. The minimum amount of government subsidy required to facilitate the deal is simply the shortfall between expected benefit and expected cost, for the parties as a whole. This is \$426 million.

PV (cost to all parties) plus payoff *less* PV (benefit to all parties)

\$1.253 billion plus \$938 million *less* \$1.765 billion

Equals, \$426 million

69. This level government investment is the minimum required; it means that the parties can negotiate over the share of the gain of \$1.765 billion between them, and the cost of \$1.765 billion between them. There is no possible net gain for any of the parties at this level of subsidy unless one party is prepared to pay more, and earn less than the freight share they receive.
70. Where the remaining parties end up in the negotiation depends on their expectations about what proportion of freight each port will respectively attract and, in the case of the public investment, what its expectations of social and economic benefits are. We know that Port of

Tauranga expansion activities are associated with \$330 million of the \$1.252 billion (present value) expansion cost associated with the split port model. (Northport is the more costly expansion of the two, requiring \$921 million).

71. Let's assume then that Port of Tauranga pays \$330 million toward the mutual expansion plans (roughly 26 percent of the combined investment required to expand both Port of Tauranga and Northport). At this level of investment, Port of Tauranga only has to be confident of achieving at least 18 percent of the freight flow currently going to the Auckland port. Let's assume government or local government pays the \$426 million required to establish the deal, as described above. Northport pays the remainder, and enjoys sufficient share of freight to make this deal worthwhile – at this level of investment, Northport is satisfied if it can achieve any share of the ceased Auckland freight more than 40 percent.
72. The political willingness to provide a public subsidy rests on societal values: a wider set of costs and benefits than strictly commercial ones. Key outputs from the social and economic value workstream have indicated that investments to support port expansion in Northland are unlikely to be justified on the basis of the social and regional economic benefits it unlocks in the Northland region. This is because regional economic benefits will accrue to the wider Auckland and Waikato areas in addition to Northland. On this basis the Northport regional council might not be willing to fund the investment and most likely public funding source would be central government or perhaps a consortium of local governments from Auckland, Waikato and Northland. Such transfers from central government to local authorities and private shareholders may be politically unpopular or provoke claims of unfairness.

Other considerations in the Northport-Tauranga two port model

73. The port infrastructure analysis established that the first phases of port development at Northport will require a total (real) investment of \$1.1 billion with approximately \$450 million required up-front for super-structures (Quay cranes, automated stacking crane and straddle).
74. In considering financing arrangements, the landlord port model provides for port operations to be readily separated from land. This arrangement means that super-structures could be independently financed by a commercial port operating company (which might be the existing operator, Northport Limited).

Cooperation is not simple

75. Achieving a cooperative solution (like the one outlined above) appears simple on paper but in reality is a challenging proposition. There is uncertainty in addition to risk.
76. The extensive analysis conducted in the Infrastructure workstream has indicated that a resource consenting process for extensions to the Port of Tauranga and the Port at Northport will take five to eight years, and involve appeals despite there being port activities at those locations already.
77. Planning analysis has also indicated that considerable uncertainty exists around the ability for Port of Auckland to quickly sell the land under Port of Auckland to a development company,

due to potential differences in understanding between Maori and Auckland Council about the status of the land.²⁰ This could invite legal challenge, or may mean a land sale is blocked while respective rights and grievances are resolved.

78. These sources of uncertainty work against the likelihood of a deal being met by the Cornerstone Partners and government. In particular, if sale of port land is blocked, the government subsidy to motivate POAL to cease at the Auckland site will need to be increased by \$827 million to make up the land sale shortfall.
79. The infrastructure workstream concluded that substantial government investment in road and rail will be required to support the expansion in both Northland and Tauranga. Planning for complementary road and rail would need to run concurrently with the port planning, risking delays to opening. If road and rail cannot be provided to support the expanded port at Northport, no mutual arrangement will be able to be reached between Cornerstone Partners.
80. Other barriers to voluntary cooperation between ports might include:
 - fear of the conduct being treated as a cartel, or otherwise anti-competitive, and subject to the Commerce Act;
 - barriers in the rules for corporate control or takeovers making larger or smaller shareholdings unpalatable;
 - the administrative or political costs associated with the requirement in the Local Government Act that as a strategic asset, the sale or purchase of a port is subject to community consultation via a long-term plan;
 - perceived lack of political will or 'short-termism' as a result of corporate structure;
 - lack of mutually agreed basis for estimating the benefits of cooperation and the value available to be shared.

Cooperation in a leader-follower game means earlier, and larger investments

81. Port of Tauranga has a market leading position, with excess operating capacity in its existing port (Black Quay , March 2020). Northport has very little excess capacity, and requires at least 8 years of planning before it can add more.
82. Therefore the investment decisions behind a two-port model can be characterised as a leader-follower game, with the Tauranga port the leader and the Northland port the follower. The investment strategies in such a game were considered in depth in (Balliauw, Kort, Meersman, Van de Voorde, & Vanelslander, 2019) in which they considered both the entry deterrence and accommodation strategies for the leader port. They set the leader role as an endogenous variable in a mathematical investment model. Uncertainty (real options) were included in the model, which allowed the authors to analyse the impact of growth in trade volumes and uncertainty (variability) independently. They found that higher growth, uncertainty and port customers' aversion to port congestion led to a larger project installed at a later moment.

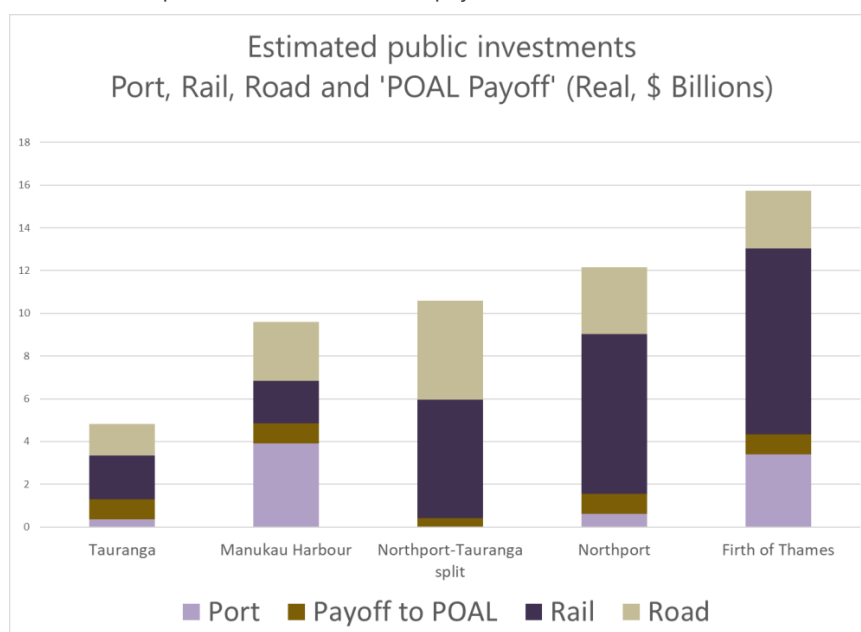
²⁰ Advice from Crown Law is being sought by officials in relation to these claims.

83. Entry deterrence is the optimal strategy for a leader with excess capacity (assuming no cooperation is possible). It is in POT's best interests to cooperate with Northport to incite the Auckland port to move and to capture its trade. Simultaneously, POT has excess capacity it needs to fill meaning it needs to deter Northport from moving too early to add capacity. It can do this by making its capacity investments early or credibly signalling that it intends to add capacity. When such capacity-signalling intensifies, the option value of waiting for the follower is reduced. The result is pressure on the follower port to make an earlier capacity investment decision than it otherwise would. Asteris, Collins and Jones (2012) found that this effect is heightened with public ownership: if more shares of the ports are publicly owned, the investment by the follower port will be larger and will take place earlier.
84. These dynamics being the case, it seems clear that if the two-port model is adopted as government's preferred option, the parties will begin planning and signalling capacity investment immediately.

Scoping public investment

85. In addition to ensuring that the owners of POAL are compensated for loss of value from the move public investment to support the two-port model would need to be given to:
- Public-good share of port investment
 - Road
 - Rail
86. The chart below provides a summary of the level of investment that might be expected to be made by the New Zealand Government and in the case of ports, Local Government. While Manukau is the most expensive location option in terms of Port capital investment, it is the second least expensive option overall. The Northport option is the second most expensive.

Figure 4 Public investments in port, rail, road and 'POAL payoff'



Source: Sapere analysis

87. Investment in the port itself is likely to come from a combination of public sources and private investment. This is because there is a shortfall between the cost of infrastructure and the expected value of freight, as described above at paragraph 47. The public share is the difference between pv cost and pv of freight value, represented as a proportion of the total cost. This gives an idea of the percentage share of the enterprise the New Zealand Government may be required to subsidise. A port subsidy is the case for all options except the Northport:Tauranga split option, which despite facing challenging constraints can offer returns from coordination (as described above in paragraph 71).
88. A table showing the assumptions underpinning this analysis is shown below.

Figure 5 Derivation of New Zealand Government cost estimate

	Port	Rail	Road	Payoff to POAL	Note
Construction cost of option, summed over 60 years					
Tauranga	2.63	2.02	1.49	0.94	[1]From infrastructure workstream
Manukau Harbour	6.53	1.97	2.77	0.94	[1]
Northport-Tauranga split	2.60	5.53	4.63	0.938	[1]
Northport	2.454	7.468	3.141	0.938	[1]
Firth of Thames	5.970	8.705	2.687	0.938	[1]
Public share of cost					
Tauranga	Up to 14%	100%	100%	22% to 100%	POT captures 50 to 100 percent of POAL's freight
Manukau Harbour	60%	100%	100%	100%	New port captures 100 percent of POAL's freight
Northport-Tauranga split	0%	100%	100%	45%	Combined entity captures 100 percent of POAL's freight
Northport	Up to 25%	100%	100%	37% to 100%	Northport captures 50 to 100 percent of POAL's freight
Firth of Thames	57%	100%	100%	100%	New port captures 100 percent of POAL's freight
Crown Cost					
	Port	Rail	Road	Payoff to POAL	TOTAL
Tauranga	0.37	2.03	1.49	0.94	4.83
Manukau Harbour	3.92	1.97	2.77	0.94	9.60

Northport- Tauranga split	0.00	5.53	4.63	0.42	10.58
Northport	0.61	7.47	3.14	0.94	12.16
Firth of Thames	3.40	8.70	2.69	0.94	15.73

Technical notes

89. The report entitled '*Economic Analysis of Upper North Island Supply Chain Scenarios*' dated 9 August 2019 conveyed a number of assumptions, approaches and conclusions reached by the Working Group. We address each of those in this section.

Assumption of a full move over time

90. Cabinet has noted that the Ports of Auckland is not viable as the Upper North Island's key import port in the long term. Therefore the options do not incorporate partial move options.
91. Companies will make their own choices about where to send their freight, so final outcomes may see a split in freight between Tauranga and a new port. The Working Group landed on a 'split' option whereby Upper North Island freight was split between a Northland port at the current Northport site and the Port of Tauranga.

Timing of the move

92. The enterprise valuations detailed in this report assume a period of eight (8) years before the Port of Auckland begins a process of disbanding. This assumes a decision to move is made immediately (with the eight years used to obtain consents, permits and plans for replacement operating capacity elsewhere, and to start work on complementary infrastructure). With sufficient capacity available elsewhere from the early 2030s onward, there is allowance for future capacity expansions at the ports continue to provide for freight growth. This timing assumption aligns with the suggestion from the Working Group that a decision be made as quickly as possible, with a year-long period of grace for negotiations between the port.
93. The business case for any investment in operating capacity at a port will be strongest when expected freight flows through the new facilities match their capacity. In our modelling the phasing of the investments in new capacity has been designed to align with expected freight growth. This achieves a close alignment between port revenue and cost.

The location options

94. The location options are consistent with the options that have been evaluated in the national Cost Benefit Analysis workstream. They are:
- Base Case: Maintaining the current status-quo, whereby the Upper North Island is serviced by Port of Tauranga and Ports of Auckland, and Northport to a lesser extent;
 - POAL freight moves to Northport ("Northport"): Managed closure of the POAL freight operations (excluding cruise ships), Northport develops to capacity equivalent to the Ports of Auckland, including appropriate levels of landside infrastructure and capacity to grow as levels of freight increase. Port of Tauranga continues its planned development.
 - POAL freight moves to Tauranga ("Tauranga"): Managed closure of the POAL freight operations, Port of Tauranga expands capacity to be able to accept the freight of the

Ports of Auckland in addition to its own, including appropriate levels of landside infrastructure and capacity to grow as levels of freight increase. No major development at Northport.

- A shared increase in capacity at both Northport and Port of Tauranga ("Northport-Tauranga split"): Managed closure of the POAL freight operations, both Northport and Port of Tauranga expand capacity to be able to accept the freight of the Ports of Auckland, in addition to their own, including appropriate levels of landside infrastructure and capacity to grow as levels of freight increase.
- A new port on the Firth of Thames, for all freight operations of the POAL and the Port of Tauranga ("Firth of Thames"): Managed closure of the POAL freight operations, a new port in the Firth of Thames is built that can handle the Ports of Auckland freight task and Port of Tauranga's, along with appropriate landside infrastructure and capacity to grow as levels of freight increase.
- A new port on the Manukau Harbour, for freight operations of the POAL ("Manukau"): Managed closure of the POAL freight operations, a new port in the Firth of Thames is built that can handle the Ports of Auckland freight task, along with appropriate landside infrastructure and capacity to grow as levels of freight increase.
- A new port on the Manukau Harbour, for all freight operations of the POAL and the Port of Tauranga: Managed closure of the POAL freight operations, a new port in the Firth of Thames is built that can handle the Ports of Auckland freight task, along with appropriate landside infrastructure and capacity to grow as levels of freight increase.

Available land

95. No reference is made in the Working Group's report of 9 August 2019 as to the net developable land expected to be available from the POAL site when it is decommissioned. There is an assumption that sufficient space is retained to operate a cruise ship terminal. As Mr Beylefeld notes in the annexed valuation opinion (Beylefeld, 2020), JLL's report of 2016 assumed this would be approximately 34.1Ha, while CBRE assumed 43.0Ha. He has adopted the 43.0Ha proposed by CBRE.
96. The rest of the land (34.0Ha) is assumed to be converted to public spaces, roading and other assets owned by Auckland Council (AC).

Land values – conclusions

97. The Working Group estimated undeveloped POAL land to have a value of approximately \$1 billion (as set out in the Port Future Study of 2016). We rely on a value assessment set out in the attached annex (**ANNEX 1**) – an indicative valuation opinion prepared by Marnus Beylefeld. Mr. Beylefeld concludes a market value for the land ranging between \$701 million to \$911 million (midpoint **\$827 million**).
98. Mr. Beylefeld's concluded mid-point of \$827 million is approximately \$447 million more than the value assessed by management and CBRE in their latest assessment of the market value of POAL's freehold land. His concluded mid-point is approximately \$173 million less than the \$1 billion assessment set out in the Port Future Study and referred to by the Working Group.

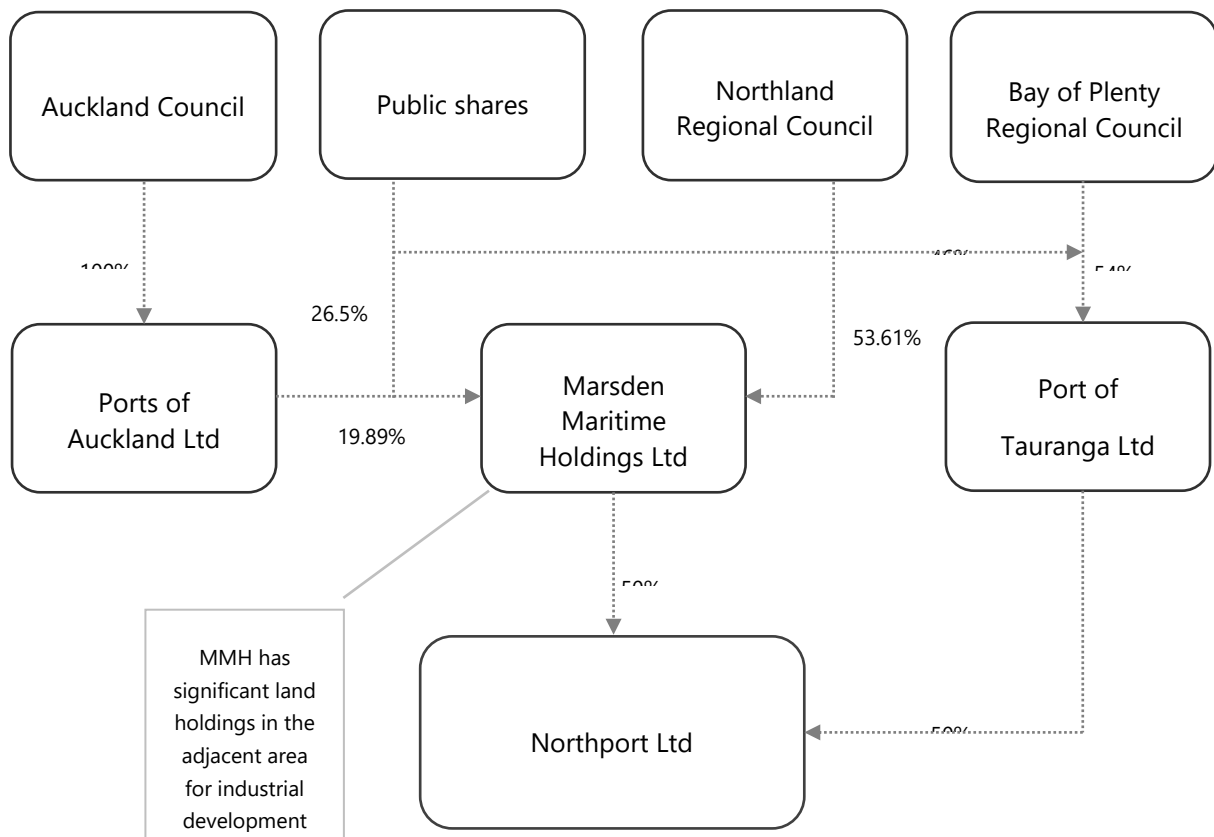
99. Mr. Beylefeld has assumed that the land can be cleared and developed starting in 2030. This valuation is applicable to considering the realisable value that Ports of Auckland would obtain from a decision to sell the land in the short term.
100. The assumed sale and development timeframe suggests that the land release will be well-signalled to the market. The valuation assumes mixed use development – streets, parks, residential, commercial. Detailed assumptions are set out in a separate Annex, POA Land Realisable Values (**ANNEX 1.**)

The ownership arrangements of the ports

101. The present ownership arrangements of the three ports qualify as core assumptions. The present ownership arrangements (as at June, 2019) are set out in

102. Figure 6 below.

Figure 6 Upper North Island Port Ownership Structure



Ownership and incentives

103. Based on these ownership relationships alone, it is apparent that the commercial incentives of the Port of Tauranga and Northport are aligned to a substantial degree (as Port of Tauranga controls 50 percent of Northport Ltd's shares). They operate under common ownership with a common strategy and are "one head in the market".²¹ The same cannot be said for Ports of

²¹ That the two entities are a corporate, "one head in the market" is the view reached in competition analysis prepared for the purposes of this project (Murray & McWha, 2020).

Auckland and Northport (Ports of Auckland Ltd exerts control on only 9.9 percent²² of Northport's shares via its ownership of MMH).

104. Since reform in the 1980s, all commercial ports in New Zealand have remained majority controlled by one or more local authorities. The Port of Tauranga, the largest port in New Zealand, also has the largest percentage of private ownership with 54% of shares held by the Bay of Plenty Regional Council through Quayside Holdings Ltd. Most of the minor ports have remained 100% local government-controlled since they were established.²³
105. Listed ports (including Port of Tauranga and Marsden Maritime Holdings) are subject to the listing rules of the New Zealand Exchange (**NZX**). The NZX regulates matters such as the requirement to continuously disclose information to the market and place restrictions on voting rights on material transactions involving related parties.²⁴
106. According to the industry specific legislation under which they were established and operate, the principal objective of every port company is to "operate as a successful business".²⁵
107. The legislation is not, however, helpful in defining exactly what this means, although presumably it requires, as a minimum, the company to be financially viable in the long term. In practice, New Zealand port companies vary slightly in the business models they have adopted.
108. Our assumption is that central government and local government will want the Upper North Island port authorities (and port land) to remain in majority public ownership, at the same time allowing an increased share of private ownership in port operations, with potential to publicly list shares in port operating companies. This is consistent with the Working Group's analysis.
109. We note that the Productivity Commission's report on international freight services published in April 2012, remarks that Councils should consider separation of land ownership from terminal operations.²⁶ This would maintain port land in public ownership while allowing for increased private investment in operations. This separation has occurred at Northport. The Working Group Final Report disagreed that separation of land from operations and privatising of some or all of a new operating company would be an effective intervention for Port of Auckland. The

²² 0.1989 of 50 percent.

²³ Deloitte, 2019, New Zealand ports and freight yearbook 2019.

²⁴ <www.nzx.com>

²⁵ Port Companies Act 1988, section 5. Some related observations:

- Port companies as per the Port Companies Act 1988 are not "Council-controlled organisations." See section 6(4)(c) of the Local Government Act 2002. The obligations to run port companies as businesses stem solely from the Port Companies Act 1988.
- Unlike PoT and POAL, Northport is not a port company as per the Port Companies Act. It is a "Port Operator"; the port company is Marsden Maritime Holdings Limited and Port of Tauranga, respectively. Northport is classified as a port operator because it operates a port related commercial undertaking.

²⁶ In April 2012, the Productivity Commission opined in its final report on the International freight transport services inquiry that the ownership and governance framework applying to council-controlled port companies was constraining ports. This, it felt, was due: lack of clarity of purpose of the companies; failure to properly manage conflicts of interest; and insufficient monitoring and transparency of performance information. It noted that there are convincing empirical and theoretical grounds to suggest that increased private capital participation in ports would improve their governance, and offer improved incentives for port efficiency, and the dynamic efficiency of the freight system in general.

Working Group stated that this would constitute “a ruse to maintain the port at its current location for as long as possible.”²⁷

110. For the purposes of considering incentives on the ports, we agree with that aspect of the Working Group’s analysis. We do not think that separation of ownership and operation would materially change POAL’s incentives to continue or expand port operations at its current site, although it might add to the port’s efficiency and profitability.²⁸

Investment in rail, road and inland ports

111. The analysis assumes that investment in rail, road and inland ports are external.

²⁷ UNISCS Final Report, page 19.

²⁸ See, for example, NZIER, Port Performance and Ownership An assessment of the evidence, Report to the Local Government Forum, 2010.

Enterprise valuations

112. The authors have assessed an indicative current market value for the port enterprises at POAL, POT, Northport, Manukau Harbour and the Firth of Thames. These valuations may be commercially sensitive and as such we recommend they are redacted in public communications.
113. This report is intended to be integrated with other deliverables from other work-streams under the same over-arching agreement.
114. The specific questions addressed by this section of the report are as follows:

Item	Reference in this report
<p>Answering how the location affects the value of a port company. This requires:</p> <ul style="list-style-type: none"> • first-cut, high-level indicative valuations of the individual port enterprises under different scenarios, involving either retaining, or moving the port of Auckland's operations; • considering the enterprise of each port operation as it currently exists (under the status quo) compared with the enterprise of each port operation if it is the beneficial recipient of Auckland's port closure (status quo + Auckland benefit); • the assessed values are to be 'market value'; • that the report will necessarily have to be 'indicative'; • that the valuation dates will be current; and • consider the 'Enterprise Values' 	<p>See below under "Ports of Auckland Limited", "Port of Tauranga Limited", "Northport Limited", "Firth of Thames and "Manukau Harbour"</p> <p>Paragraph 120</p> <p>Paragraph 117</p> <p>Paragraph 115</p> <p>Paragraph 122</p>

115. Our valuation conclusions are expressed as at 15 March 2020, being the date that our substantive procedures were completed (the **Valuation Date**). We necessarily rely on financial information prepared prior to the Valuation Date, such as the financial statements of POAL dated 30 June 2019 and market analysis in late February 2020. We have therefore assumed that, in those instances, there had been no fundamental changes to the financial position of the ports between their most recent financial year-ends and the Valuation Date.
116. Shortly before our analysis was completed, the first case of Covid-19 was reported in New Zealand. Our analysis proceeded on the assumption that any financial consequences from that

event will have no material long-term effects on the fundamental factors underlying the analysis.

117. Due to the various limitations in timing and access to financial information, this report constitutes an 'Indicative Valuation' as defined in 'AES-2 - Independent Business Valuation Engagements' and is not an 'Independent Valuation Report' as defined in that standard. No compliance with AES-2 is implied or asserted.

The alternative scenarios

118. There are five port operations considered in this report, and these are outlined in paragraph 112 above.
119. Insofar a move of POAL's port activities are concerned, we have made a series of assumptions as to what such a move would entail. Those assumptions are detailed further in paragraph 135.

Valuation conclusions

120. In assessing a market value for the different enterprises, we adopt the common definition of 'market value', which is *'the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion.'*²⁹
121. Such a basis assesses the market value of a business or an asset by reference to a likely sale transaction but does not consider the circumstances of any specific transaction. It does not reflect the strategic benefits or gains from synergies that might be inherent in an acquisition by any one specific party.
122. The term 'Enterprise value' refers to the total value of an entity's equity and debt-related liabilities. Those two components broadly equate the totality of the business' operative assets (both tangible and intangible).
123. This concept of value reflects the following significant matters:
- a. The expression of a value is as at a particular point in time. Accordingly, value may change over time. In this instance, we consider it necessary to consider the respective market value assessments as at the Valuation Date;
 - b. It must be assumed that, in the hypothetical market, the business or asset subject to valuation can be transferred. To the extent that there are limitations or restrictions on the ability to transfer the business or asset in the actual market, the definition accommodates that by temporarily lifting the restriction to allow the hypothetical market to exist, but then reflecting the actual existence of such limitations or restrictions by reference to the amount that may be agreed between the parties in recognition of

²⁹ See International Valuation Standards (IVS) Framework, IVS 2019 Edition

such impediments;

- c. Value is assessed having regard to the “highest and best use” of the business or asset, which takes into account any potential for a use that is higher than the current use; and
 - d. Value is a forward-looking concept. That is, purchasers in the hypothetical market, whom it is assumed by the definition to be informed and prudent, formulate their economic decisions based on what the business or asset is likely to generate under their ownership, not necessarily what it has historically generated for the selling owner.
124. Value is therefore determined by the future benefits to be gathered from the business or asset. These future benefits arise either from operation of the business or asset in some endeavour, or from the future sale of the business or asset, or a combination of both.
125. It follows from the above that value at a point in time necessarily requires expectations about future events to be assessed in order to establish the resulting amount attributed as the present value at the date of valuation of those future benefits.
126. Our estimate of the current market value for the entire business enterprises of POAL, POT, Northport, Firth of Thames and Manukau Harbour is tabled below on the alternating assumptions that [a] the status quo is retained or [b] that POAL’s exit is announced and implemented within eight years.

Conclusions on market value for entire enterprises

Conclusions	[a]	[b]
All amounts in \$'million	Status quo	POAL ceases
POAL: Enterprise Value as a seaport	2,104	352
Plus market value of the land if POAL continues as land-owner after 8 years		827
Sub-total for POAL	2,104	1,179
<i>Column [b] reflects the result in the event that port is the elected alternative</i>		
POT	5,136	6,888
Northport	314	2,066
Firth of Thames	-	1,752
Manukau Harbour	-	1,752

Further assumptions underpinning the enterprise valuations

127. The report entitled ‘Economic Analysis of Upper North Island Supply Chain Scenarios’ dated 9 August 2019 conveyed a number of assumptions, approaches and conclusions reached by the Working Group. The majority of the assumptions pertinent to the valuations are addressed above. Further assumptions pertinent to the valuation – but of too detailed a nature to be included above – are addressed below in the remainder of this Section.

Full-move or partial-move

128. The Working Group evaluated ‘partial-move’ scenarios for POAL as well as ‘full-move’ scenarios for POAL. We have only considered full-move scenarios on the understanding that POAL considers partial-move options would not be possible.

Cruise Liner and Maritime Services remain at POAL

129. The Working Group assumed that, under a 'full-move' scenario, POAL would retain its Cruise Liner operations. In the same report of the Working Group, it is noted that the working group assumed *'POAL would still provide tugs, berth space and shipping support, as well as a range of other maritime services.'*³⁰
130. It is not clear exactly how the Working Group arrived at its conclusion that POAL's Cruise Liner operations would result in POAL paying a dividend reduced to 1/5th (20%) of historical dividends.
131. We note that 17% of POAL's revenue is classified as being from 'Marine Services'. If that is the ratio which informed the Working Group's assumed dividends should POAL retain its Cruise Liner operations, we consider that assumption can only be sustained if:
- a. POAL's Cruise Liner operations are reported within the category of 'Marine Services';
 - a. all of POAL's 'Marine Services' revenue is retained; and
 - b. POAL's 'Marine Services' are at least as profitable as the rest of POAL's operations, without any loss in efficiency or profitability due to a reduction in scale.
132. More precise financial information from POAL would be required and a more detailed analysis would have to be performed to assess whether 17% of POAL's current Enterprise Value would remain, if POAL retained all of its 'Marine Services'.
133. A further complication is that, we are unable to predict how much of POAL's land, pavements and wharve-space, would be required to support such a residual operation. Any land required by POAL to support this operation would be unavailable for development and would have an offsetting reduction in the land value Mr. Beylefeld assessed in the Addendum report about POAL's land values.
134. For these reasons, we do not assess a separate Enterprise Value for any residual 'Marine Services' in our final conclusions.

³⁰ As issued by the International Valuation Standards Council (IVSC) – 2019

Other material assumptions for the enterprise valuation

135. During the valuation analysis, we made several assumptions. These assumptions are set out in the section of the report to which they relate and includes the following specific assumptions:

- a. There have been no material movements in the financial position or financial performance of any of the port companies between the date of their most recent annual financial statements (30 June 2019), and the Valuation Date;
- b. Shortly before our analysis was completed, the first case of Covid-19 was reported in New Zealand. Our analysis proceeded on the assumption that any financial consequences from that event will have no material long-term effects on the fundamental factors underlying our analysis;
- c. Cabinet has noted that POAL is not viable as the Upper North Island's key import port in the long-term.³¹ We have not assumed any partial move options, although recognising that a full move may nevertheless still occur in stages;³²
- d. Insofar a move of POAL's port activities are concerned, we have assumed that all POAL's port activities will be closed and moved over a period of eight years (see paragraph 163). This implies a complete closure of all POAL's revenue-lines, liquidating all its moveable assets at no material residual values, exiting its contracts and settling its liabilities assuming no penalties are applied;
- e. Insofar the identity of the beneficial recipient of Auckland's ceased port operations might be (if any), we recognise that importers and exporters will ultimately decide what that outcome will be. For the purposes of this indicative report, we have assumed that if a port has been designated as the preferred alternative to Auckland, that port alone will benefit from Auckland's ceased port operations;
- f. Detailed financial information about POAL's income from servicing visiting cruise-ships was not available during our analysis. While we expect this revenue may be classified within POAL's revenue-line described as 'marine services', it is unclear how much that revenue is likely to be. The same applies to any of POAL's other service operations. As we note at paragraph 158, we do not consider it possible to accurately isolate one segment of POAL's revenue from the rest of the enterprise;
- g. POAL's capacity is limited to approximately 2.1 million TEU.³³ This is not POAL's current capacity as at the date of this report, but rather the expected operational capacity once POAL's automation programme is finalised. As we note at paragraph 152, at the assumed volume growth for POAL's container terminal revenues, POAL will not reach this capacity limit during the 30 year period forecast; and
- h. As POAL's financial results are presented on a consolidated basis, any inter-group

³¹ CAB-19-MIN-0647

³² As per Workstream Plan (stakeholder incentives and competition implications v03)

³³ Black Quay, 2020, Advisian, 2020 and Davies, Blick and Moore, 2020.

profits are eliminated from those results on consolidation. We have assumed that a closure of POAL's activities would similarly cause a cessation of any external profits generated by the subsidiaries.

Valuation approach

136. In performing our valuation analysis, we considered the following three generally accepted approaches to estimate the market value of the different scenarios:

- The income-approach;
- The market-approach; and
- The cost-approach.

137. The general theory supporting the above valuation approaches is outlined in Appendix A. In any appraisal, all three valuation approaches should be considered, as one or more may be applicable to the assets' valuation. In some situations, elements of two or more approaches may be combined to reach a value conclusion.

Ports of Auckland Limited

The Company and its operations

138. All the shares in POAL are owned by Auckland Council (**AC**). Prior to AC's amalgamation with Auckland Council Investments Limited (**ACIL**) in 2018, the shares in POAL were held by ACIL.
139. In the financial year ending 30 June 2019, POAL's port terminals handled approximately 940,000 TEU of cargo. During early FY20, POAL acquired new cranes, straddles and automation equipment which, it expects, increased its operational capacity to approximately 1.65 million TEU per year.³⁴ A more current update from POAL and Black Quay Consulting estimates this at 2.1 million TEU with the completion of the Autostrads.³⁵

Financial performance

140. Extracts from the historical financial performance of POAL for the financial years ending 30 June 2017 (**FY17**) to 30 June 2019 (**FY19**) is tabled below.

TABLE 1 FINANCIAL PERFORMANCE - POAL

POAL			
All amounts in \$'million	FY17	FY18	FY19
Revenue	220	242	242
...			
Fair Value movements and other items	7	15	10
EBITDA	108	121	104
...			
Depreciation and amortisation	(24)	(23)	(24)
Interest expense	(12)	(13)	(18)
Profit before tax	72	86	62

Source: Audited annual financial statements

141. We make the following observations about the financial performance of POAL tabled above:
- POAL's revenue increased at a compound annual growth rate (**CAGR**) of approximately 4.9% between FY17 and FY19. This growth is in nominal terms;
 - POAL's normalised earnings before interest, tax, depreciation and amortisation (**EBITDA**) margins averaged 43% during the period tabled above; and
 - Profit before tax (**PBT**) averaged \$73 million during these same three years.
142. We further note that POAL's dividends to AC averaged approximately \$49.8 million per year during the same period. This level of dividend pay-out is expected to decline in FY20 and FY21 when dividends are expected to be only 20% of net profit after tax (**NPAT**).³⁶

³⁴ As per POAL's FY19 annual report

³⁵ As per Black Quay's 'North Island Long-Term Port Review'

³⁶ As per POAL's FY19 annual report, page 7, 'Chair's Statement'

TABLE 2 DIVIDEND PAY-OUT RATIOS AT POAL

POAL			
All amounts in \$'million	FY17	FY18	FY19
Net profit after tax	60	77	54
Dividend pay-out	(54)	(50)	(46)
Pay-out ratio	89%	65%	85%

Source: Beylefeld analysis of audited annual financial statements

Financial position

143. The historical financial position of POAL as at each financial year-end (30 June) from 2017 to 2019 is tabled below.

TABLE 3 FINANCIAL POSITION - POAL

POAL			
All amounts in \$'million	FY17	FY18	FY19
Current assets	105	62	109
Current liabilities	(53)	(61)	(57)
Non-current assets	998	1,211	1,322
Non-current liabilities	(366)	(455)	(574)
Book value of net assets	684	758	800

Source: Audited group annual financial statements

144. We make the following observations about the financial position of POAL as at 30 June 2019 tabled above:

- a. Current assets include assets held for sale (\$56 million) which is not used in the normal course of POAL's operations. This is understood to be the property at Pikes Point which has been sold after 30 June 2019;
- b. Non-current assets include fixed assets (at a book-value of approximately \$1.06 billion), investment properties not occupied by POAL (approximately \$143 million) and other equity securities and investments in associates (approximately \$46 million); and
- c. Non-current liabilities include loans classified as:
 - i. Other bank loans of approximately \$326 million payable pursuant to facility agreements with Westpac, ANZ, Commonwealth Bank of Australia and Bank of Tokyo Mitsubishi. These loans are subject to borrowing covenants and have an interest cost of approximately 2.1% (being 93 basis points above BKBM of 1.17%); and
 - ii. Fixed rate unsecured notes (with semi-annual coupons) of approximately \$170 million payable to Metlife Investments and Pricoa Capital Group. These notes

have a weighted average hedged interest cost of approximately 4.13% (due to an interest rate swap with a notional value of \$140 million).

145. Our analysis of the net operating assets (**NOA**) used by POAL is tabled below and estimates the NOA utilised by POAL to operate its port at approximately \$1.05 billion.

TABLE 4 NET OPERATING ASSETS - POAL

POAL	
All amounts in \$'million	FY2019
<i>Surplus assets that are excluded:</i>	
Investment in other entities	3
Equity securities	44
Non-current assets held for sale	56
Investment properties	143
<i>Net operating assets: Implied</i>	1,050
Reported book values of assets (before non-current debt)	1,295
Less: Non-current debt	(495)
Reported book values of net assets (after non-current debt)	800

Source: Beylefeld analysis. Table may not add due to rounding

Land holdings and other investments

146. POAL operates approximately 77 hectares (**Ha**) of land assets at its port location (64.44 Ha freehold land and 12.56 Ha wharves). An Addendum to this report is dated 15 March 2020 and separately details our assessed market value for the land owned by POAL.
147. Our forecasted earnings before interest, tax, depreciation, amortisation and other gains and losses (**EBITDAF**) exclude POAL's dividends from its associates and joint ventures (Longburn Intermodal Freight Hub Limited, North Tugz Limited and Port Connect Limited).
148. POAL also has five wholly owned subsidiaries. These are Bunker Shipz Limited, Seafuels Limited, Waikato Freight Hub Limited, Nexus Logistics Limited and Conlinxx Limited. As POAL's financial results are prepared on a consolidated group level, any inter-group profits are eliminated on consolidation. Insofar profits derived outside of the group is concerned, we cannot isolate the financial performance of those subsidiaries and we have assumed that, to the extent their financial performance results are included in the consolidated financial results, these too will end if POAL's operations cease.
149. Our EBITDAF forecasts further excludes the rental income that POAL derives from leasing it investment properties and other non-movable assets.

POAL's Enterprise Value under status quo

150. To assess a current market value for POAL's core business enterprise, under the status quo, we adopted a discounted cash flow (**DCF**) method to conduct our NPV analysis. In that regard, we estimated the following factors.

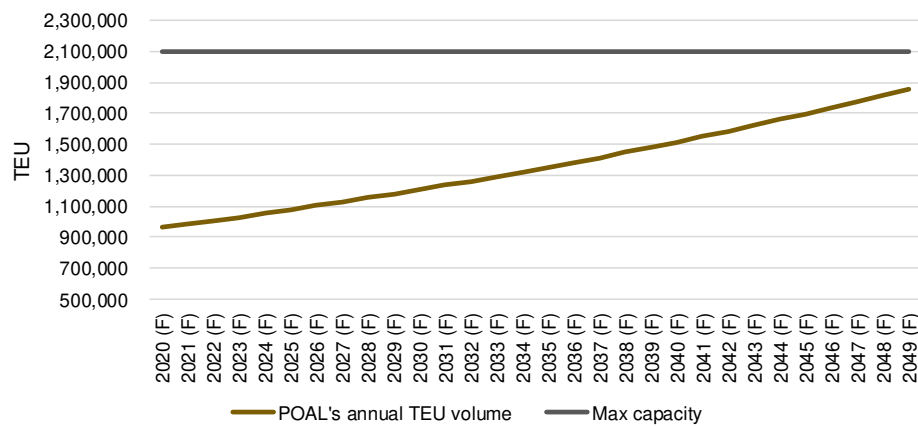
Forecasted cash flows

151. We prepared a long-term forecast for POAL's financial performance by making various assumptions, including that:³⁷
- a. POAL's revenue classified as 'container terminal', grows at a nominal CAGR of 4.35% per annum (consisting of 2.3% growth in volume and a 2.0% growth in price inflation) for the next 30 years.
 - b. POAL's revenue classified as 'multi-cargo', 'marine services' and 'container transportation' grows at a nominal CAGR of 4.04% per year (consisting of 2.0% growth in volume and a 2.0% growth in price inflation) for the next 30 years;
 - c. All operating expenses, excluding capital expenditures (**capex**), to grow at a nominal CAGR of 3.5% per year (consisting of 2.0% inflation and 1.5% growth in volume). This assumes a degree of efficiency and available scale exists within POAL to yield a lower growth in expenses than in revenue;
 - d. Capex spend would be approximately \$24.9 million per annum growing at 3% annually after 2020. In nominal terms this equates to capex of approximately \$470 million over the next 30 years. Our estimate is slightly higher than the estimate prepared by Advisian wherein the capex was estimated at \$455 million over the next 30 years ([reference to page 16 of Advisian report of 16 April 2020 entitled 'Analysis of Port Capacities and Infrastructure Requirements']); and
 - e. There will be no fair value movements or other irregular gains and losses. This means that for the purposes of our analysis, EBITDAF and EBITDA are assumed to be equal beyond FY19.
152. The 2.3% growth assumption in 'container terminal' revenue referred to at paragraph 151(a) implies that POAL would reach its capacity constraints of approximately 2.1 million TEU outside of our 30-year DCF forecast.³⁸

³⁷ A graphic depiction of this performance is set out at Appendix C.

³⁸ This is a rounded growth figure from calibrated growth forecast, which is 2.26%.

CHART 1: POAL'S ANNUAL VOLUME APPROACHING CAPACITY OF 2.1 MILLION TEU



Source: Sapere Valuation analysis

153. From the forecasted EBITDAF, we deducted capex, working capital investments (**WCI**) and tax to estimate the prospective free cash flow to the firm (**FCFF**) for POAL after FY20. On this basis, we projected POAL's FCFF. Our findings are set out at Appendix D.
154. In assessing the FCFF above, we consider it reasonable to assume that:
- historical depreciation and amortisation provide a sufficient proxy for capex under the status quo scenario. This expense is nevertheless increased by a 3.0% estimated cost escalation from FY20 onwards;
 - the tax expense (being that of a market participant and not AC specifically) can be estimated at the statutory tax rate of 28% on taxable income;
 - a terminal value at the end of FY49 can be estimated under a constant growth assumption of 2.0% applied to the FCFF of the next observation (i.e. FY50). The resultant calculation of the terminal value is determined as $FCFF(FY50) \div (\text{discount rate less } (-) \text{ long-term growth of } 2.0\%)$. Our terminal value growth assumptions beyond FY49 adopts a 2.0% inflation growth assumption and no growth in real volumes. This assumption reflects the effect of POAL reaching its capacity constraint outside FY49. The 2.0% growth rate is a nominal, post-tax CAGR.

Discount rate

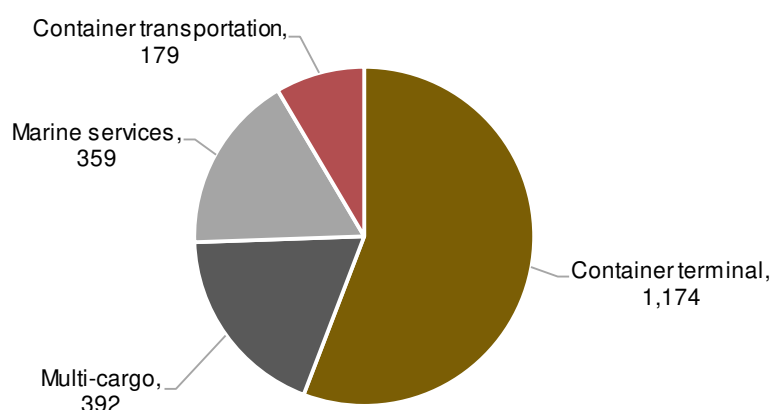
155. We estimated an appropriate nominal, post-tax discount rate with reference to POAL's weighted average cost of capital (**WACC**) of 5.2% to 6.1% (**mid-point of 5.8%**). The discount rate is then applied to the FCFF tabled above using a mid-year discounting convention. Our estimate of the discount rate is detailed further in Appendix B.

Enterprise Value

156. The resultant Enterprise Value for POAL's current operations, under the status quo assumptions, ranges from \$1.9 billion to \$2.3 billion (mid-point **\$2.1 billion**).

157. It is unlikely that POAL's profitability would be uniform across its revenue sources, or that POAL's profitability would remain fixed irrespective of its size. Nevertheless, if POAL's different revenue-lines are deemed reasonable proxies for its different revenue-sources, then POAL's Enterprise Value could be divided as depicted:

Figure 7 Enterprise Value if apportioned by revenue source (\$'million)



Source: Sapere Valuation analysis

158. As noted earlier in this report, we do not consider a pro-rata apportionment on this basis would be sufficiently accurate, as that would require too many unknown variables to remain unaffected.

Equity Value

159. The market value of AC's equity in POAL therefore, in our opinion, ranges from approximately \$1.66 billion to \$2.09 billion (**\$1.85 billion** at the mid-point) as tabled below.

TABLE 5 EQUITY VALUE - POAL

POAL			
All amounts in \$'million	Low	Mid	High
Enterprise Value	1,906	2,104	2,341
Less: external debt	(495)	(495)	(495)
Plus: surplus non-core assets	245	245	245
Equity Value	1,656	1,854	2,091

Source: Sapere Valuation analysis

Cross-check

160. As a cross-check we note that the valuation multiples implied by our analysis compares favourably with the valuation ratios of other port operations such as POT, MMH and Napier Port Holdings (**NPH**).

TABLE 6 COMPARATIVE ANALYSIS AT THE MID-POINT

POAL				
Multiples	POAL	POT	MMH	NPH
	<i>Implied</i>	<i>Reported</i>	<i>Reported</i>	<i>Reported</i>
Enterprise Value / Trailing EBITDA	20.3x	30.9x	28.9x	17.1x
Enterprise Value / Trailing Revenue	8.7x	17.0x	N/M	7.1x
Equity Value / Book Value of equity	2.3x	4.2x	2.0x	2.1x

Source: Sapere Valuation analysis and Bloomberg as at 24 February 2020 (N/M = Not Meaningful)

POAL's current enterprise value if decided that the port will be moved elsewhere

161. In the event of POAL's operations ceasing after a finite period, an indefinite life assumption for POAL's operations would no longer be relevant.
162. To assess a market value for POAL's business enterprise if one of the alternative scenarios are adopted, we consider the effect of such a move will be a consequence of the following factors:
 - a. The degree to which POAL's revenues and resultant profit declines; and
 - b. The period over which the decline occurs.
163. It is difficult to estimate these two unknown variables referred to above. However, for the purposes of modelling the possible impact of a move, we have assumed that:
 - a. POAL's revenue would grow at the rate of 4.35% (as referred to at paragraph 151(a)), during only the eight years from FY20 to FY28. We have assumed POAL would completely vacate the land after an eight (8) year period commensurate with our assumptions set out in the Addendum on land values;
 - b. No demolition costs, transaction costs, break-fees or other exit liabilities are expected to be realised as a consequence of the move;
 - c. Moveable assets are liquidated yielding no material residual values; and
 - d. The discount rate applicable to POAL does not materially change apart from a 40 basis point reduction to reflect the shorter duration of the revised investment outlook.
164. Our estimate of a market value for POAL's business enterprise at the Valuation Date, if it is expected that POAL will completely vacate the land in eight years' time, is approximately **\$352 million** at the mid-point.

TABLE 7 ENTERPRISE VALUE IF POAL ACTIVITIES MOVE ELSEWHERE IN EIGHT YEARS

Valuation workings				
Year	FCFF (\$'000)	Period	WACC	DCF (\$'000)
2020 (F)	41,092	0.5	5.4%	40,026
2021 (F)	42,771	1.5	5.4%	39,528
2022 (F)	44,940	2.5	5.4%	39,407
2023 (F)	47,186	3.5	5.4%	39,258
2024 (F)	49,565	4.5	5.4%	39,126
2025 (F)	51,971	5.5	5.4%	38,925
2026 (F)	54,576	6.5	5.4%	38,783
2027 (F)	57,272	7.5	5.4%	38,616
2028 (F)	60,127	8.5	5.4%	38,465
Enterprise Value (finite life)				352,135

Source: Sapere Valuation analysis (discount rate is 40 percentage points below the long-term investment outlook at Appendix B)

165. This outcome would likely require AC to record an impairment charge on its financial statements, thereby impairing its investment in AC down from its current carrying value to an impaired fair value for reporting purposes of approximately \$352 million.
166. The difference between the enterprise value under status quo (mid-point \$2.1 billion) and the enterprise value under the exit scenario (\$352 million) is approximately \$1.75 billion.
167. If the alternative ports are of reasonably similar efficiency and profitability, then this difference of \$1.75 billion could be expected to manifest as an increased enterprise value for the alternative ports, to the degree they share in the increased revenues and they possess the capital assets necessary to facilitate their respective increased workload.

POAL's effect on AC's financial statements

168. AC does not disclose the detail surrounding its investment in POAL but instead groups its investment in POAL with several other subsidiaries. AC's financial results are affected by POAL in the following areas tabled and discussed below.

TABLE 8 POAL'S COMPREHENSIVE INCOME WHICH BELONGS TO AC

POAL					
All amounts in \$'million	FY16	FY17	FY18	FY19	Average
Net profit after tax	84	60	77	54	69
Other comprehensive income	68	30	43	30	43
Comprehensive income	152	90	120	84	111
<i>Distributed as dividends</i>	42	54	50	46	48
<i>Retained in POAL</i>	109	36	70	38	63

Source: Sapere Valuation analysis (table may not add due to rounding)

169. We point out that:
 - a. AC is the beneficial owner of POAL's annual 'comprehensive income'. Comprehensive income consists of (a) NPAT and (b) other income such as revaluation changes in POAL's assets or financial instruments that it is a party to.

- b. During FY16 to FY19, POAL's NPAT averaged \$68.8 million per year and other income averaged \$42.6 million per year resulting in an average comprehensive income of approximately \$111.4 million per year.
 - c. From this comprehensive income, a portion is paid out as dividends and a portion is retained in POAL (where it nevertheless remains AC's equity).
 - d. During the last four financial years, AC received dividends from POAL of approximately \$48 million per year (or approximately 70% of NPAT). This dividend payout is expected to reduce for the next two financial years as a larger portion of profit is expected to be retained within POAL for capital expansions.
 - e. POAL retains the rest of the comprehensive income as AC's un-distributed equity (approximately \$63 million per year during FY16 to FY19). As at the end of FY19, the book-value of AC's equity (the amounts not distributed) was approximately \$800 million.³⁹
 - f. Our indicative valuation implies that the market value of AC's equity in POAL ranges from \$1.656 billion to \$2.091 billion (\$1.854 billion at the mid-point). This conclusion exceeds the accounting 'book-value' of POAL's equity (which is \$800 million).
170. If POAL's port operations cease, then we would expect the effect on AC's financial statements would include:
- a. a cessation of the dividend stream after POAL has vacated the land;
 - b. a cessation of some of the other comprehensive income as it relates to port operations and port assets (excluding land);
 - c. a continuation of some of the other comprehensive income as it relates to land assets; and
 - d. recognising an impairment write-down of AC's investment in POAL. The magnitude of this write-down is still to be ascertained more precisely, but under our current analysis approximates \$195 million, calculated as the difference between:
 - i. \$800 million book value of equity; and
 - ii. \$605 million new value of equity calculated as the:
 - enterprise value of POAL under the assumption it would cease its port activities (i.e. the \$1.179 billion referred to at paragraph 26); less
 - non-current liabilities in POAL (i.e. the \$574 million referred to at paragraph 143).

³⁹ As per paragraph 143.

Port of Tauranga Limited

Primary valuation approach

171. POT [NZX:POT] is a listed entity with a reasonable portion of its equity traded publicly.⁴⁰

Enterprise value under status quo

172. For that reason, it is reasonably simple to identify the current enterprise value of POT at approximately \$5.1 billion, as implied by the trading activity in its shares.⁴¹ POT's capital structure consists of approximately 9% debt and 91% equity.

TABLE 9 ENTERPRISE VALUE FOR NORTHPORT

POT	Current	Current
All amounts in \$'million	%	\$'m
External debt	9%	442
Market value of equity	91%	4,693
Total Enterprise Value	100%	5,136

Source: Bloomberg on 24 February 2020

Enterprise value if activities shifted to POT

173. To assess a market value for POT's entire business enterprise, if POT is expected to be the sole recipient of POAL's cessation, we made the following simplifying assumptions:
- POT incurs the necessary capital expenditure to handle all of POAL's additional revenue and activities. Our analysis of POT's increased enterprise value does not address the size of this capex, or the identity of the payer, but only that the requisite capex is incurred. We expect that, from a CBA perspective, any additional capex will need to be accounted for as a cost;
 - While we recognise that POAL's average EBITDA margin during FY17 to FY19 was approximately 47.4% and that POT's most recent EBITDA margin is approximately 55.1%, we have assumed that there is no difference in their relative profitability levels over the long-term. This means that the portion of POAL's Enterprise Value which moves to POT, remains unchanged in its size; and
 - All the revenue activities foregone by POAL's shift in eight years' time, moves to POT.

⁴⁰ Float is approximately \$300 million.

⁴¹ As per Bloomberg at 24 February 2020. We recognise that recent developments relating to Covid-19 have had an effect on this value but have assumed that these effects will be remedied over time. The effects Covid-19 had on the POT valuation are not fundamental to our conclusions.

174. Under this set of assumptions, we expect the current enterprise value of POT would be increased by the differential of \$1.75 billion (referred to at paragraph 167) from its current \$5.1 billion to **\$6.9 billion** (at the mid-point).

Northport Limited

Primary valuation approach

175. We have not had access to any detailed historical financial statements for Northport. We remain unable to accurately estimate a current value for Northport's enterprise under the status quo assumptions.
176. The nearest approximation we can locate is the reported book value of Northport's net assets as contained in the annual financial statements of POT. As POT is a 50% shareholder of Northport, and whom it treats as an equity accounted investee, the book value of Northport's net assets is visible in POT's annual financial statements as at 30 June 2019.

Enterprise value under status quo

177. Northport's net assets (equity) were recorded at approximately \$96 million as at 30 June 2019 and its revenues for FY19 are recorded as approximately \$43 million.⁴² On the assumption that the same valuation ratios observed for POAL in paragraph 160, are also applicable to Northport, then a current enterprise value for Northport can be estimated as between \$370 million and \$258 million (mid-point **\$314 million**), as tabled below.

TABLE 10 ENTERPRISE VALUE FOR NORTHPORT

Northport - comparative analysis			Northport
	Northport	POAL ratio	\$'million
Revenue	43		
Enterprise value / revenue x		8.7x	
Enterprise Value (High)			370
Net assets	96		
Equity value / net assets x		2.3x	
Equity value			223
Add back: Non current liabilities			35
Enterprise Value (Low)			258
Enterprise Value (Mid)			314

Source: Sapere Valuation analysis of Northport's results disclosed in POT's annual financial statements

Enterprise value if activities shifted to Northport

178. To assess a market value for Northport's entire business enterprise, if it is the sole recipient of POAL's cessation, we made the following simplifying assumptions:
- Northport incurs the necessary capital expenditure to handle all POAL's additional revenue and activities. Our analysis of Northport's increased enterprise value does not address the size of this capex, or the identity of the payer, but only that the requisite

⁴² As per POT's annual financial statements for FY2019 at note 14.

capex is incurred. We expect that, from a CBA perspective, any additional capex will need to be accounted for as a cost;

- b. We have assumed that there is no difference in the relative profitability levels between Northport and POAL over the long-term. This means that the portion of POAL's Enterprise Value which moves to Northport, remains unchanged in its size; and
 - c. All the revenue activities foregone by POAL's shift in eight years' time, moves to Northport.
179. Under this set of assumptions, we expect the current enterprise value of Northport would be increased by the differential of \$1.75 billion (referred to at paragraph 167) from its current \$314 million to **\$2.1 billion** (at the mid-point).

Firth of Thames and Manukau Harbour

Primary valuation approach

180. We have not sighted any financial information relating to either of these two operations and expect their respective enterprise values to be \$nil. We understand that there are no significant seaport operations at either of these locations.

Enterprise value if activities shifted to Firth of Thames or Manukau Harbour

181. To assess a market value for a seaport business enterprise at Firth of Thames or Manukau Harbour, if either is the sole recipient of POAL's cessation, we made the following simplifying assumptions:
- a. Either Firth of Thames or Manukau Harbour incurs the necessary capital expenditure to handle all of POAL's additional revenue and activities. Our analysis of either location's enterprise value does not address the size of this capex, or the identity of the payer, but only that the requisite capex is incurred. We expect that, from a CBA perspective, any additional capex will need to be accounted for as a cost;
 - b. We have assumed that there is no difference in the relative profitability levels between POAL and a port at either of those locations, over the long-term. This means that the portion of POAL's Enterprise Value which moves to either of these locations, remains unchanged in its size; and
 - c. All the revenue activities foregone by POAL's shift in eight years' time, moves to one of these locations.
 - d. Under this set of assumptions, we expect the current enterprise value of either of these locations would be increased by the differential of \$1.75 billion (referred to at paragraph 167) from its current \$nil to **\$1.75 billion** (at the mid-point).

References

182. Over the course of our analysis, we have relied upon financial, operating and other information obtained from various public, financial and industry sources. Our conclusions are dependent on such information being complete and accurate in all material aspects.
183. The principal sources of information used in performing the financial DCF analysis include:
- a. Audited annual financial statements of POAL for FY17 to FY19;
 - b. Audited annual financial statements of POT for FY17 to FY19;
 - c. Bloomberg;
 - d. Black Quay consulting's capacity estimates (Black Quay , March 2020); and
 - e. CAB-19-MIN-0647;
 - f. Workstream Plan (stakeholder incentives and competition implications v03); and
 - g. Workstream Plan write-up 7 January 2020.

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Engagement scope, purpose and independence

1. To the best of our knowledge, neither the authors nor Sapere Valuation has any relationship with, or interests in, any of the port companies referred to in this report which would create a possible conflict of interest.

Limitations

2. This document has been prepared solely for the instructing client, MOT, for the purposes stated herein and should not be relied upon for any other purpose. Unless required by law it shall not be provided to any third party without our prior written consent. In no event, regardless of whether consent has been provided, shall we assume any responsibility to any third party to whom this report is disclosed or otherwise made available.
3. While our work has involved an analysis of financial information and accounting records, our engagement does not constitute an audit, review, due diligence or any form of assurance on the financial records of any of the port companies. Accordingly, we assume no responsibility and make no representations with respect to any information provided by and on behalf of these port companies. We are not tax experts and nothing in this report should be construed as tax advice.
4. Budgets, projections and forecasts relate to future events and are based on assumptions which may not remain valid for the whole of the relevant period. Consequently, this information cannot be relied upon to the same extent as that derived from audited accounts for completed accounting periods. We express no opinion as to how closely the actual results of the port companies will correspond to those projected or forecast.
5. No responsibility is assumed for matters which are legal in nature. No investigation has been made of the title to, or any liabilities against, the assets valued. We have assumed that the owners' claims are valid, rights held are good and marketable, and there are no encumbrances that cannot be cleared through normal processes, unless otherwise stated in the report.
6. Valuations are not a precise science and the conclusions arrived at in many cases will, of necessity, be subjective and dependent on the exercise of individual judgement. There is, therefore, no indisputable single value and we normally express our estimates of value as a rounded number or range.
7. We reserve the right to alter our conclusions, should any information that we were not aware of at the time of preparing this report come to light, that has a material impact on the conclusions herein.
8. The person responsible for producing the valuation aspects of this report is Marnus Beylefeld. Marnus Beylefeld (BAcc(Hons), MCom, CFA, CA, BV Specialist) has over 16 years of experience in the analysis of financial information for the purpose of audits, due diligence, investigations, reviews and the valuation of businesses, assets, liabilities, equities, options and other derivative instruments.

Appendix A Valuation principles and methodology

The value of any business or asset is determined by the expected future earnings or cash flow (that is the future net economic benefits) that can be obtained from its use or sale. There are three broad approaches that are generally used to value a business or asset, being:

- a market-based approach, which values a business or asset by reference to market comparable transactions, for example the sale or purchase of comparable assets in the market;
- an income-based approach, which values the business or asset by reference to the present value of the cash flows or profits of the business or asset; and
- a cost or asset-based approach, which values the business or asset by reference to the costs of replacing the assets of the business or the asset.

These approaches are also identified as the three principal valuation approaches in various valuation source references, see for example:

- the International Valuation Standards “IVS Framework”; and
- Valuing a Business, the Analysis and Appraisal of Closely Held Companies, by Shannon P Pratt and Alina V Niculita.

In practice a primary valuation approach is selected having regard to the particular circumstances of the valuation engagement. Where appropriate, the primary valuation approach would be cross-checked to other secondary methods.

Market approach

The market approach values a business or asset by considering comparable transactions in the market either by reference to transactions involving comparable businesses or to the market price of transactions in its securities. As noted, we do not consider there to be sufficiently comparable businesses to allow for a practical use of the market-approach as a primary valuation method.

Income approach

Income approaches require an estimate of the future cash flows likely to be derived by the business or the asset, and the conversion of those cash flows to a present value either by:

- discounting future cash flows using a discount rate. This is known as the DCF methodology; or
- applying a capitalisation rate (or multiple) to an estimate of future maintainable cash flows. This is known as the CFME methodology.

These methodologies combine elements of the income approach (through reference to future cash flows or earnings streams) and the market approach (to the extent they apply market-based discount rates or earnings multiples).

Discounted cash flow

A DCF valuation commonly comprises two elements:

- the present value of estimated cash flows for the period covered by projections for the operation of the business; and
- the estimated present value of the cash flows anticipated to be received after the discrete period covered by the business projections (generally referred to as the “residual value” or terminal value).

DCF methodologies have a sound theoretical base and are preferred where future cash flows can be estimated with reasonable accuracy for an extended period. The DCF will also be the most appropriate methodology where future annual cash flows are anticipated to be subject to significant variation from period to period. This is because the DCF approach will take into account the timing aspect of variable cash flows in a more reliable manner than any other approach.

In applying DCF methodologies, the principal areas of judgement are the estimation of likely future cash flows and the derivation of discount rates consistent with both market parameters and the forecast cash flows.

A DCF valuation is both an income-approach, as it relies on the estimation of the income of a business, and a market-based approach, as it relies on the determination of a discount rate by reference to market comparables.

Theoretically the DCF approach is the most appropriate methodology as it directly values the future cash flows of the business. However, where reliable cash flow projections are not available, there are practical difficulties in adopting this approach.

Capitalisation of maintainable earnings

The main elements in applying CFME methodologies are the assessment of an estimated level of future maintainable earnings and the determination of an appropriate capitalisation multiple.

A CFME approach is partly based on a market approach, as capitalisation multiples are estimated by reference to multiples for transactions involving similar businesses or the multiples implied in stock exchange prices for listed companies with similar businesses (typically after adjustment to reflect the minority nature of share interests traded on stock exchanges).

CFME methodologies have the advantage of being closely aligned with observable market parameters. For example, historical earnings multiples are published for companies listed on any stock exchange. However, this advantage is partly negated where a company or its peers are projecting significant movements in earnings, adopt different accounting policies or are not generating positive earnings as at the valuation date.

The principal areas of judgement in applying a CFME methodology are the assessment of likely future maintainable earnings and the identification of comparable public companies and transactions for the purpose of deriving capitalisation multiples.

Like DCF, a CFME valuation is both an income-based approach, as it relies on the estimation of the income of a business, and a market-based approach, as it relies on the determination of a multiple by

reference to market comparables.

The CFME method is particularly relevant for mature businesses with stable and recurring profits. A CFME method is unlikely to be appropriate for relatively new businesses without a history of profitable trading. In addition, CFME methods are less suited to businesses where the earnings fluctuate.

Cost or asset-based approach

A cost or asset-based approach is based on the premise that a buyer will pay no more for an asset or business than the cost to obtain an asset of equal utility, whether by purchase or by construction. It relies upon the premise that the cost of acquiring an asset of similar utility can be identified. A cost approach is rarely of use for the purpose of valuing a business as a going concern as cost is fundamentally the product of historical activity whereas value is the product of future cash flows. A cost or asset-based approach is often the primary valuation technique where:

- businesses are not currently making profits. The cost approach might then assume the orderly realisation of the net assets of a business to determine if its highest value is in liquidation instead of as a going concern;
- the capitalisation of profits (or cash flow) yields a lower value than that of the net assets; or
- the value of the business is in its assets, and not in its operating cash flows. For example, a business with only cash assets or substantial property holdings would value the assets using an asset approach.

An asset-based approach is commonly used in conjunction with some other valuation approach to determine the value of a business' goodwill, by subtracting from the value of the business as a whole (commonly assessed under some other approach) the values of its composite assets to determine a residual value.

Other approaches (rules of thumb)

Some businesses are valued by reference to standard industry benchmarks, which are often referred to as rules of thumb. For instance:

- certain types of retail businesses may be valued on the basis of a multiple of gross sales plus stock;
- hotels may be valued as a multiple of the average room rate and the number of rooms; and
- gold mining assets may be valued as a multiple of the number of ounces of mineral reserves or resources.

Such methods do not usually represent rigorous valuation methodologies and are therefore not usually adopted as a primary valuation methodology.

Appendix B WACC

Projected operating cash flows of a business or an asset are discounted at an appropriate discount rate in order to determine their present worth. For the operating cash flows of a business, it is common to use the WACC, whereas operating cash flows deriving from specific assets may demand use of a discount rate that is greater to or lesser than the WACC, depending on the risks attached to the asset and its cash flow generating capabilities.

WACC is an estimate of the overall after-tax rate of return required for equity and debt holders of a business. The WACC is computed by calculating a company's cost of equity and after-tax cost of debt. These two calculations are then weighted based on the company's target capital structure to arrive at the WACC.

Cost of equity

We estimated the post-tax cost of equity (K_e) using the simplified Brennan-Lally version of the capital asset pricing model, modified to include a specific risk premium as follows:

$$K_e = R_f + TAMRP + SRP \quad \text{where:}$$

K_e =	Rate of return on equity capital (post-tax)
R_f =	Risk free rate of return (post-tax)
$TAMRP$ =	Tax adjusted market risk premium; the expected return on a broad portfolio of stocks in the market $E(R_m)$ above the risk-free rate (R_f) and allowing for the tax impact of imputation in New Zealand
SRP =	Specific risk premium (post-tax)

Risk free rate

The income approach is based on a long-term investment horizon. Therefore, an appropriate estimate of the risk-free rate is generally represented by the yield on long-term government securities. On this basis, we consider a long-term risk-free rate of approximately 2.1% (pre-tax) with reference to spot rates for 2050 as published by the New Zealand Treasury.

Tax adjusted market risk premium

The equity risk premium (**TAMRP**) measures the return of the market over the return on the risk-free rate. Measures of equity risk premium typically consider the returns on the market over the risk-free yield curve.

We recognise that the TAMRP cannot be precisely measured. In selecting an appropriate estimate of TAMRP, we have considered historical third-party research such as the work performed by Lally and Marsden (2004) and the New Zealand Commerce Commission. For the purposes of our analysis, we consider a long term TAMRP estimate for New Zealand of 7.5% is appropriate at the Valuation Date.

Equity Beta

A key sensitivity for the cost of equity within the CAPM, and an important determinant in the valuation of a business, is the equity beta. Practical application of the CAPM relies upon the ability to identify publicly traded companies that have similar systemic risk characteristics to the subject company or business, in order to derive meaningful measures of beta.

Beta is a measure of a security's systematic risk. Systematic risk is that component of total risk which is due to economy-wide factors and cannot be eliminated by diversification. Beta reflects the tendency of a security's expected returns to swings in the broad market.

An equity's beta reflects the risk of the cash flows generated from the firm's assets (the business risk) and the risk associated with the gearing of the company (the financial risk).

From a screening of four listed seaports, as at the Valuation Date, we observed an average unlevered asset beta of approximately 0.45 as tabled below (as at 24 February 2020):

Beta			
Company Name	TEV	5Y Be	(Ba) Practitioners method
Port of Tauranga	5,136	0.87	0.80
Marsden Maritime Holdings	292	0.39	0.37
Napier Port Holdings	667	0.35	0.35
South Port	190	0.26	0.26
Simple mean		0.47	0.44

Company Name	Tax rate	Debt	Equity	D/E
Port of Tauranga	28%	9%	91%	9%
Marsden Maritime Holdings	28%	4%	96%	4%
Napier Port Holdings	28%	NM	NM	NM
South Port	28%	3%	97%	3%
Simple mean				6%
Harmonic mean				4%
Median		4%	96%	4%

Source: Bloomberg & Sapere Valuation analysis

Target D/TEV for POAL	10%
Target E/TEV for POAL	90%
Target D/E for POAL	11%

Re-levered under:

Brealey-Meyers / Practitioners $Be = Ba \times (1 + (D/E))$
 Say

Ba	Be
0.44	0.49
0.45	0.50

Based on our analysis of the data, we conclude an appropriate asset beta at 0.45 and an equity beta of between 0.45 and 0.55 (mid-point of 0.50).

Asset specific risk premium / other factors

The specific risk premium (SRP) includes asset specific risks.

After-tax cost of debt

We have assumed a pre-tax cost of debt for POAL of 4.5%. This yield was tax effected using the assumed effective tax rate of 28%, in order to determine the after-tax cost of debt (kd).

Target capital structure

The target capital structure applied to POAL in the calculation of the WACC is derived from our expectation of an appropriate target capital structure of 15% debt and 85% equity.

WACC

The WACC is built up by applying the concluded cost of equity and after-tax cost of debt within the target capital structure as follows:

$$WACC = (k_d \times w_d) + (k_e \times w_e)$$

A summary of the inputs used to determine the WACC for POAL is summarised in the table below.

Table 7 Weighted average cost of capital

TABLE 11 WEIGHTED AVERAGE COST OF CAPITAL

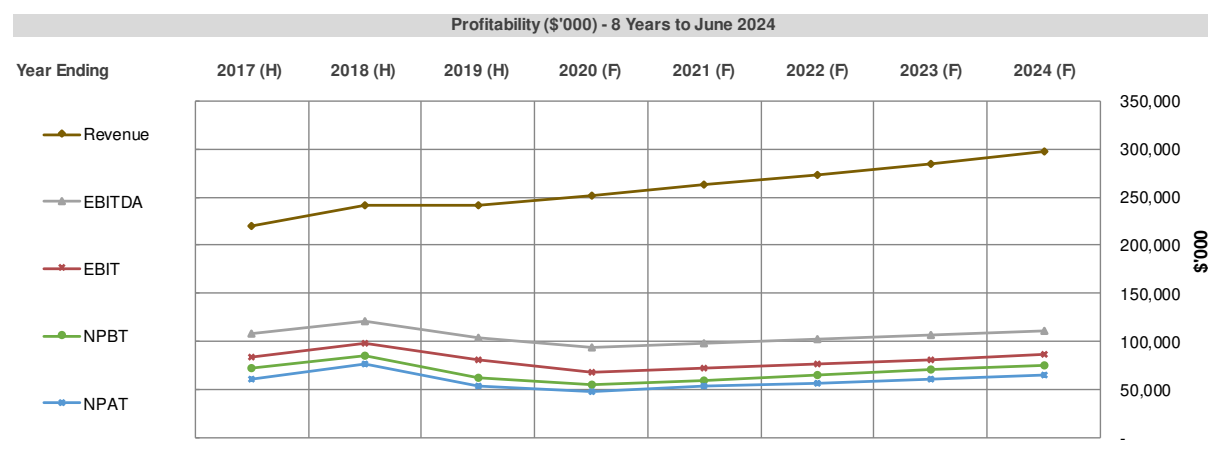
CAPM		
Risk Free Rate (2050 spot rate: Treasury)	R_f	2.1%
Marginal Tax Rate for Investors	T_m	28.0%
Debt / Capital	W_d	15.0%
Equity / Capital	W_e	85.0%
Debt / Equity	D/E	17.6%
Asset Beta	β_a	0.45
Equity Beta	β_e	0.50
Tax Adjusted Market Risk Premium		7.5%
Cost of Debt	K_d	4.5%
Tax Shielded Cost of Debt		3.2%
Unsystemic Risks not in the FCFF	RP_u	1.0%
Cost of Equity	K_e	6.3%
Weighted Average Cost of Capital	WACC	5.8%

Source: Sapere Valuation analysis

Appendix C Projected financial performance under status quo for POAL

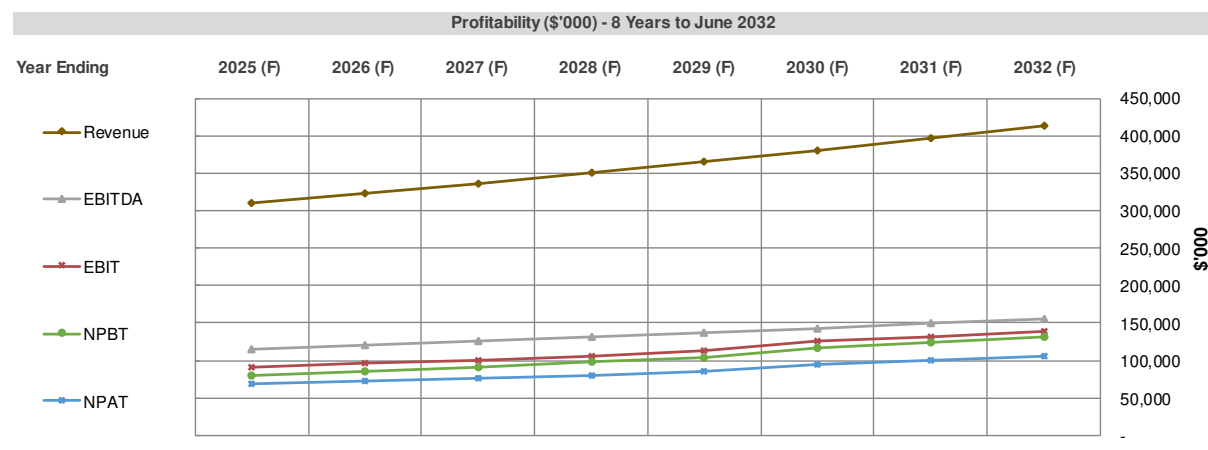
Tabled below is our projected financial performance for POAL under the status quo assumptions.

CHART 3: FINANCIAL PERFORMANCE FOR POAL (FY17 TO FY24)



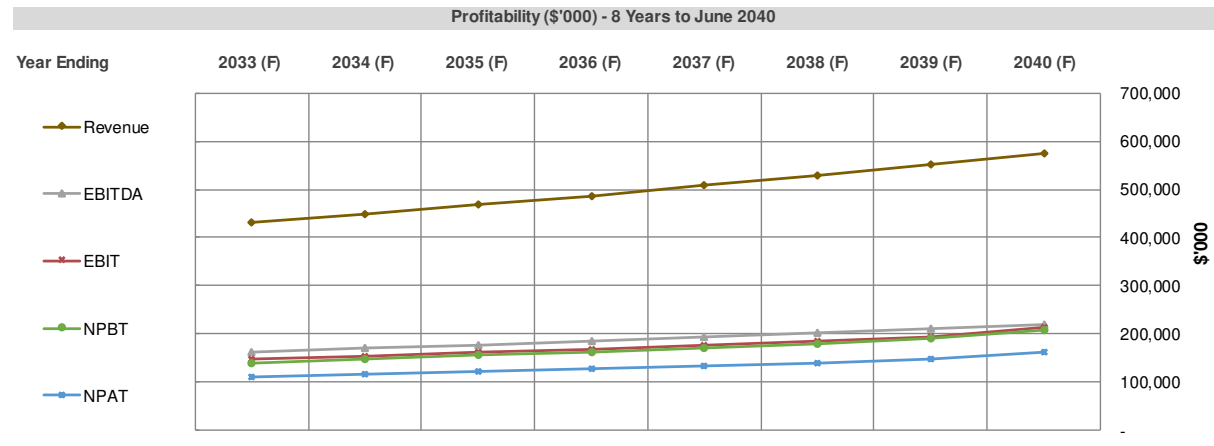
Source: Beylefeld analysis

CHART 4: FINANCIAL PERFORMANCE FOR POAL (FY25 TO FY32)



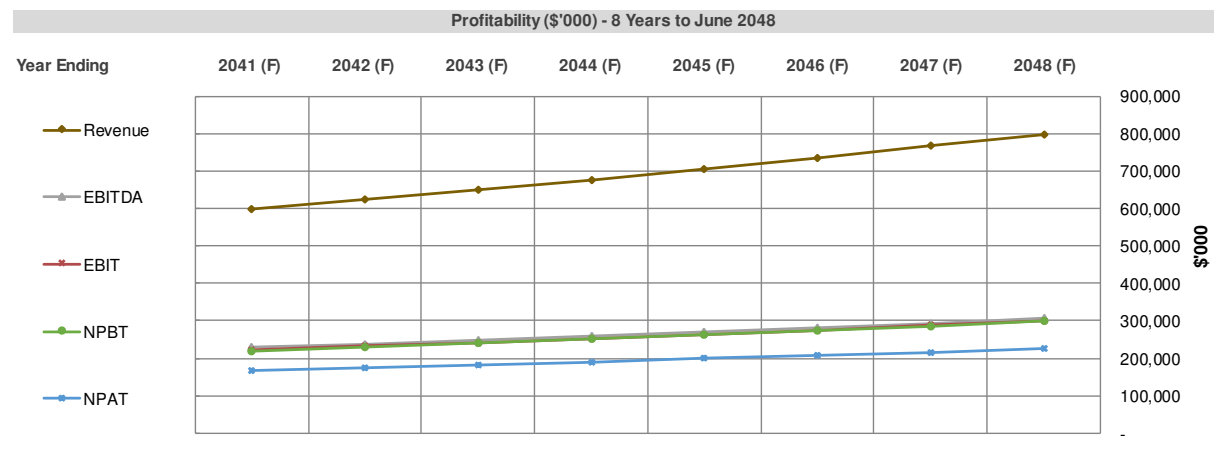
Source: Beylefeld analysis

CHART 5: FINANCIAL PERFORMANCE FOR POAL (FY33 TO FY40)



Source: Beylefeld analysis

CHART 6: FINANCIAL PERFORMANCE FOR POAL (FY41 TO FY48)



Source: Beylefeld analysis

Appendix D Detailed DCF calculations

Tabled below are our detailed calculations of the enterprise value for the port operations at POAL as under the status quo.

TABLE 12 POAL DCF CALCULATIONS

Valuation workings				
Year	FCFF (\$'000)	Period	WACC	DCF (\$'000)
2020 (F)	41,092	0.5	5.8%	39,945
2021 (F)	42,771	1.5	5.8%	39,290
2022 (F)	44,940	2.5	5.8%	39,012
2023 (F)	47,186	3.5	5.8%	38,709
2024 (F)	49,565	4.5	5.8%	38,424
2025 (F)	51,971	5.5	5.8%	38,073
2026 (F)	54,576	6.5	5.8%	37,782
2027 (F)	57,272	7.5	5.8%	37,468
2028 (F)	60,127	8.5	5.8%	37,172
2029 (F)	63,015	9.5	5.8%	36,814
2030 (F)	73,015	10.5	5.8%	40,310
2031 (F)	77,349	11.5	5.8%	40,354
2032 (F)	81,931	12.5	5.8%	40,393
2033 (F)	85,668	13.5	5.8%	39,912
2034 (F)	89,692	14.5	5.8%	39,488
2035 (F)	93,856	15.5	5.8%	39,048
2036 (F)	98,253	16.5	5.8%	38,629
2037 (F)	102,708	17.5	5.8%	38,159
2038 (F)	107,504	18.5	5.8%	37,744
2039 (F)	112,466	19.5	5.8%	37,314
2040 (F)	130,736	20.5	5.8%	40,990
2041 (F)	136,436	21.5	5.8%	40,424
2042 (F)	142,551	22.5	5.8%	39,912
2043 (F)	148,876	23.5	5.8%	39,390
2044 (F)	155,540	24.5	5.8%	38,890
2045 (F)	162,303	25.5	5.8%	38,349
2046 (F)	169,555	26.5	5.8%	37,859
2047 (F)	177,058	27.5	5.8%	37,359
2048 (F)	184,961	28.5	5.8%	36,880
2049 (F)	192,982	29.5	5.8%	36,362
Terminal Value	5,151,645	30.0	5.8%	943,621
Exit FCFF				196,841
Long-term growth (nominal)				2.0%
Capitalisation multiple at exit				26.2x
Enterprise value				2,104,078

Source: Beylefeld analysis

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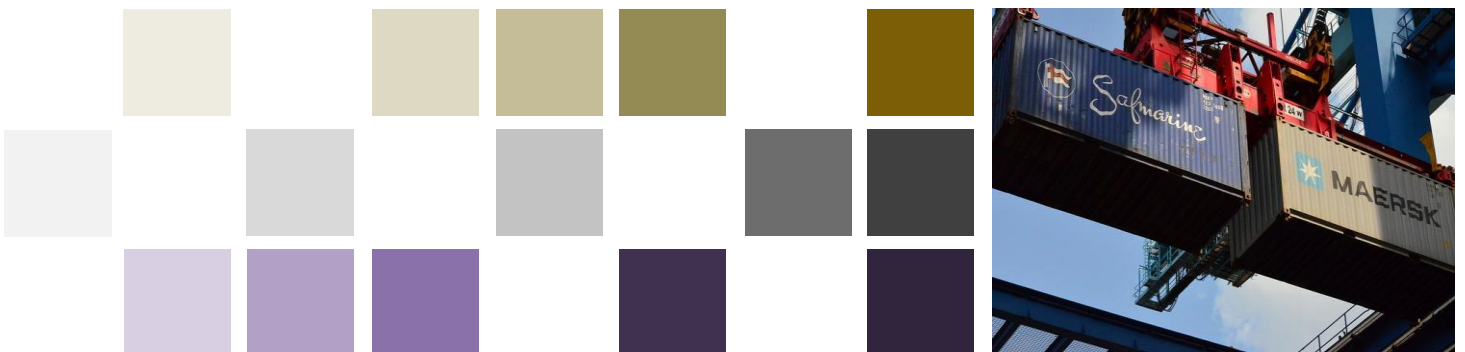
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ANNEX 1: Indicative realisable value of Auckland port land

Marnus Beylefeld

15 March 2020



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Glossary

Abbreviation	Stands for
AC	Auckland Council
CAGR	Compound annual growth rate
CBRE	CBRE Group
CCO	Council Controlled Organisation
EBIT	Earnings before interest and tax
EBITDA	Earnings before interest, tax, depreciation and amortisation
EBITDAF	Earnings before interest, tax, depreciation, amortisation, fair value changes and other gains and losses
Enterprise value	The ungeared value for a Business
FAR	Floor to Area Ratio
FY	Financial year
JLL	Jones Lang LaSalle
MOT	Ministry of Transport
NPAT	Net profit after tax
NTOA	Net tangible operating assets
Panuku	Panuku Development Auckland, a CCO of AC
POAL	Ports of Auckland Limited
Sapere Valuation	Sapere Research Group Limited
UNISCS	Upper North Island Supply Chain Strategy
Valuation Date	The date of this report

Executive summary

1.1 Overview

1. The Ministry of Transport (**MOT**) engaged Sapere Research Group Limited to comment on the alternatives for locating the port of Auckland under five alternative scenarios. This report is intended to be integrated with other deliverables from other work-streams under the same over-arching agreement.
2. My valuation conclusions are expressed as at 15 March 2020, being the date of this report (the **Valuation Date**).
3. This addendum responds to specific questions about the value of the land currently owned by Ports of Auckland Limited (**POAL**). The scope, limitations and terms set out in my primary report of 15 March 2020 applies to this Addendum.
4. I am not an expert property valuer and, due to the limitations in timing, have not been able to engage the services of any external property valuers. While my analysis has been prepared in accordance with *IVS400 Real Property Interests*¹, this report does not assert compliance with the reporting requirements of the Property Institute of New Zealand.
5. I have reviewed the earlier property valuation reports prepared by CBRE and JLL and re-constructed their respective analyses (to the extent information was disclosed). My own analysis considers the resultant outcome, based on changes to the assumptions made by CBRE and JLL.
6. This executive summary should be read together with the remainder of this report. Important information concerning the scope of work undertaken and limitations thereon is set out at Section 2 of this report.

1.2 The assumptions and approach of the working group

7. The report entitled '*Economic Analysis of Upper North Island Supply Chain Scenarios*' dated 9 August 2019 conveyed a number of assumptions, approaches and conclusions reached by the working group. I address each of those in the remainder of this Section 1.2.

Full-move or Partial-move

8. The working group evaluated 'partial-move' scenarios for POAL as well as 'full-move' scenarios for POAL. I have only considered full-move scenarios on the understanding that POAL considers partial-move options would not be possible.

¹ As issued by the International Valuation Standards Council (**IVSC**) – 2019

Land values – approaches

9. The valuation reports of CBRE and JLL assumed that, if the land at POAL becomes available for development, there would be a specific mix of buildings and capital assets developed. Each of these property valuers proffered a different estimate of the final mix of buildings that would be constructed on the land.
10. In contrast, I do not consider such an approach to be necessary and I have assumed that the land would be developed by whatever mix of buildings and land use is considered most optimal at the time the land is being developed. I have assumed that the most desired mix of buildings, at the time of development, would result in the most competitive price for the land.
11. On that basis, I project current land prices (which is also assumed to be presently competed for) based on the growth assumptions I set out in my Section 2.4.

Available land

12. No reference is made in the working group's report of 9 August 2019 as to the net developable land expected to be available from the POAL site. As I note later in my report, JLL's report of 2016 assumed this would be approximately 34.1Ha, while CBRE assumed 43.0Ha. I have adopted the 43.0Ha proposed by CBRE.
13. The rest of the land (34.0Ha) is assumed to be converted to public spaces, roading and other assets owned by Auckland Council (**AC**).

Land values – conclusions

14. The working group estimated undeveloped POAL land to have a value of approximately \$1 billion (as set out in the Port Future Study of 2016). My own assessment is set out in the remainder of this Addendum and concludes a range of between \$701 million to \$911 million.

1.3 The different perspectives

Enterprise value with capital asset allocation

15. I prepared an indicative valuation report setting out my assessed current market value for the operating business of POAL, including its tangible and intangible assets (the **Enterprise Value**). My conclusions in that regard are detailed further in my indicative valuation report, dated 15 March 2020, enclosed with this Addendum.
16. Based on my analysis, the Enterprise Value of the port operations owned by POAL ranges from approximately \$1.9 billion to \$2.3 billion (mid-point of approximately \$2.1 billion). After recognising the recorded book value of net operating assets as approximately \$1.05 billion,² this implies an un-recorded intangible asset value (colloquially referred to as 'goodwill') of approximately \$856 million to \$1.29 billion (mid-point of \$1.05 billion).

² Indicative Valuation Report dated 15 March 2020

17. I have not been able to comprehensively investigate which of POAL's assets contribute the most to this intangible asset value, if any. However, it seems probable to me that the location of the port would be the primary driver of that goodwill value. Absent its location, the port would cease to be the same seaport. I expect POAL's location to be the single largest contributing factor to its risk-adjusted profits.
18. POAL's freehold land is recorded in its annual financial statements at a value of approximately \$380 million.³ If all the intangible asset value is entirely ascribable to the location of the port, which appears probable to me, then the value of the land being used as a port by POAL, has a value at the mid-point of approximately **\$1.43 billion** as tabled below.

TABLE 1 VALUE OF THE LAND AS CURRENTLY USED BY POAL

POAL			
All amounts in \$'million	Low	Mid	High
Enterprise Value	1,906	2,104	2,341
Book value of operating assets	1,050	1,050	1,050
Un-identified intangible asset values	856	1,054	1,292
<i>If all the intangible asset value ascribed to POAL's location:</i>			
Book value of the freehold land	379	379	379
Plus: intangible asset allocation	856	1,054	1,292
Value of the land in POAL's port operations	1,235	1,433	1,671

Source: Beylefeld analysis. Table may not add due to rounding.

Market value of the land under development and sale assumptions

19. Several expert property developers have prepared valuation opinions as to the market value of the freehold land, under the assumption that the land would be developed for (i) sale or (ii) long-term leases.
20. I have separately analysed the land's market value, assuming the land is sold, as detailed more fully in Section 2.1 of my report. As noted at Section 2.5, I estimate the market value of the land in a range of \$701 million to \$911 million (mid-point **\$827 million**) as tabled below.

TABLE 2 MARKET VALUE OF THE FREEHOLD LAND AT POAL

POAL	
	\$'million
Low	701
Mid	827
High	911

Source: Beylefeld analysis

21. My concluded mid-point of \$827 million is approximately \$447 million more than the value assessed by management and CBRE in their latest assessment of the market value of POAL's freehold land. My concluded mid-point is approximately \$173 million less than the \$1 billion assessment set out in the Port Future Study and referred to by the working group.

³ As per the annual financial statements of POAL for FY2019

Land values at POAL

2.1 The current valuation opinions

22. As at 30 June 2019, POAL's reported financial position reflected the following assessment of the market value of its land assets.

TABLE 3 SPECIFIC ASSET VALUES (POAL)

Reported values as at 30 June 2019		
Description	Note	\$'million
Freehold land	[a]	379
Pavement	[b]	94
Operative land assets		473
Wharves	[c]	313
Freehold buildings	[c]	54
Other operative fixed assets		368
Investment properties	[d]	143
Non-current assets held for sale	[e]	56
Non-operative land assets		199
Total		1,040

Source: Annual financial statements of POAL (FY2019)

23. I note the following about the items tabled above:
- Freehold land* is carried at fair value for financial reporting purposes.⁴ These assets are valued on a regular basis and some of the assets were formally valued in 2019 by CBRE and some in 2018 by NHI Harcourt. Freehold land includes:
 - Port operations land (i.e. land required to be held for POAL's core operations); and
 - Other operations land (being land held for other operational purposes).
 - Pavement* refers to the pavement / roading assets on the land. The composition of this asset is not detailed, but assumed to be carried at its historical cost;
 - Wharves and freehold buildings* are carried at fair value for financial reporting purposes and were last valued at 30 June 2018 using a depreciated replacement cost method.
 - Investment properties* are carried at fair value for financial reporting purposes and were last valued at 30 June 2019 by Colliers International. These are properties not held for port operations. Instead, these properties derive a rental income. In their analysis, Colliers's valuation assumptions include capitalisation rates of between 4.25% and 6.75% and land sales at \$190/ m² to \$620/m².

⁴ Pursuant to IAS16 and IFRS13. For the purposes of my analysis, I consider 'fair value for financial reporting purposes' sufficiently approximate to 'market value'.

- e. *Non-current assets held for sale* refers to the property at Pikes Point which was sold subsequent to the most recent financial year-end. I therefore expect this property to have been de-recognised at the date of my report.
24. POAL's location at the Auckland Waterfront includes 64.44 hectares (**Ha**) of land classified within 'Freehold Land' and 12.56Ha of land classified within 'Wharves'.⁵
25. As the Freehold land of POAL is carried at fair value for reporting purposes, these assets are implicitly valued by external valuers under an assumption of the land's 'highest and best use'.⁶ The annual financial statements of POAL set out some of the assumptions used by these land valuers. Those valuations assume that the land would be developed and sold to property developers (if it was a stand-alone asset).
26. In other words, the value of Freehold land recorded in POAL's annual financial statements (approximately \$379 million) reflects management and CBRE's assessed value of the land on the assumption that the land is developed and sold to property developers.
27. In the remainder of this section, I discuss the valuation opinions prepared by the various property valuers. I have only been able to access a limited amount of information about their respective valuation reports. Some information therefore remains unknown and, absent an opportunity to interview these valuers, I am unable to comment on all their respective assumptions.

2.2 CBRE's valuations

28. I reviewed an earlier valuation report by CBRE dated June 2013.⁷ That report is now likely dated and may be less relevant at the present stage of analysis.
29. POAL's annual financial statements for FY2019 identify CBRE as the external valuers consulted in that financial year and I comment on the assumptions reflected in POAL's annual financial statements for FY2019.
30. I note that CBRE and management's assumptions in FY2019 included the following (as tabled overleaf):

⁵ UNISCS Interim progress report on the Upper North Island Supply Chain Strategy (Released by the Associate Minister).

⁶ Including paragraphs [27] and [28] of NZ IFRS 13 *Fair Value Measurement*

⁷ *Ports of Auckland Limited Indicative alternative use land value analysis*, June 2013, <https://www.poal.co.nz/about-us/Documents/Value%20of%20Port%20Land.pdf>

TABLE 4 CBRE AND MANAGEMENT'S ASSUMPTIONS

CBRE Assumptions	2019
Current sales price (per m ²) if land was developed	
Port operations land	\$5,900
Other operations land	\$5,050 to \$5,900
Long-term growth rate in sales price of the land	2.5%
Costs to bring sites to development stage	Undisclosed
Long-term growth rate in costs	3.0%
Holding income (net)	Undisclosed
Discount rate (presumably pre-tax, nominal)	10.6%
Sold in five stages of 80,000m ² each over:	
Planning and consenting phase (years)	12
Sell-down period of the land (years)	19
Total realisation period (years)	31

Source: POAL's FY2019 AFS

2.3 JLL's valuations

31. I reviewed an earlier report by JLL dated March 2016.⁸ JLL's detailed calculations have not been disclosed. I note that JLL's disclosed assumptions included the following:

TABLE 5 JLL'S ASSUMPTIONS

JLL Assumptions	2016
Current sales price (per m ²) if land was developed:	\$5,500
Long-term growth rate in sales price of the land	3.0%
Costs to bring sites to development stage	Undisclosed
Long-term growth rate in costs	3.0%
Holding income (net)	Undisclosed
Discount rate (presumably pre-tax, nominal):	
For holding period	6.0%
For development period	15.0%
Sold in five stages of 80,000m ² each over:	
Planning and consenting phase (years)	5
Sell-down period of the land (years)	37
Total realisation period (years)	42

Source: JLL's commentary letter dated March 2016

2.4 My comments and assumptions

32. The valuations prepared by the property valuers are sensitive to the assumptions they each made. In the remainder of this section I comment on the most salient of these assumptions.

The Realisation Income (Net)

33. The logic underpinning the net realisation income is that the land's owner would incur a certain amount of costs to develop the land in a manner making it fit for sale or entering long-term leases. After this cost has been incurred, the owner of the land would sell (or long-term lease) the land in parcels as the demand for the land would allow. The realisation income stems from the following assumptions detailed below.

⁸ Ports Future Study – alternative land use analysis

Sales price if land was sold today

34. JLL's 2016 assumptions are that the land's density could be developed to a floor area ratio (**FAR**) of 6:1, whereby JLL then adopts a starting sales price for land at that density at **\$5,500/m²**.
35. CBRE's 2013 assumptions were that the land's density could be developed to a FAR of 3.75:1. CBRE's 2019 FAR assumptions are not disclosed but they disclose their expected starting sales price for land at a range of **\$5,050/m² to \$5,900/m²**.
36. My analysis assumes a tiered sales pricing structure for the land ranging as below and assuming a FAR of 6:1:
 - a. **\$8,000/m²** for the 1st ranked tier of land;
 - b. **\$6,500/m²** for the 2nd ranked tier of land; and
 - c. **\$5,000/m²** for the 3rd ranked tier of land.
37. These sales prices are highly subjective and perfect comparable transactions for comparable locations are difficult to identify. I nevertheless note that JLL and CBRE refer to the following transactions to which they have had insight (I have no access to the underlying transactions, other than what has been disclosed by JLL and CBRE):
 - a. Goodman purchased waterfront land in Wynyard Quarter from Viaduct Harbour Holdings at \$4,000/m²;
 - b. POAL sold Queens Wharf in 2010 at approximately \$1,379/m²;
 - c. Wynyard Quarter sales ranging from \$4,000/m² to \$4,500/m² during an unknown period;
 - d. Sales prices (per JLL) in the Auckland CBD ranging from \$4,000/m² to \$10,000/m²;
 - e. Sales prices (per CBRE in 2013) in the Viaduct Harbour region of between \$2,200/m² to \$4,000/m²;
38. The firm CoreLogic NZ, formerly Quotable Value New Zealand, (**QV**) records selected property transactions in New Zealand. In the most recent data release from QV dated 30 September 2019, the average sales price for improved land in Auckland City was \$1,686/m² across 33 transactions. The information from QV does not identify whether any of these sites are located at the Auckland city waterfront.
39. This component of the analysis is difficult to estimate and depends on the demand for land in the area, the number of developers able to develop the most efficient combination of assets, the term over which such developers would be able to acquire the land, the eventual FAR which would ultimately be allowed and the potential, public and political factors in allowing this FAR.
40. Many of these factors will not be known until the planning and consenting phase of any development takes place. Until then, I expect the remaining uncertainty will translate into lower values.

41. Land sales prices are likely to be dynamic and the presence of preceding developments will influence the sales price of land for subsequent developments.

Growth in sales price for land

42. JLL (2016) assumed land sales prices would grow at 3.0% per annum. CBRE (2019) assumed the same growth would be 2.5% per annum. As a baseline for the modelling, I have assumed that the sales price for the land would grow at a nominal compound annual growth rate (**CAGR**) of 2.5%, being approximately 50 basis points above long-term inflation expectation for New Zealand.⁹

Land available for sale

43. In modelling the land available for sale (once developed), I have adopted the 430,000m² identified by CBRE as their assessment of the net developable area. I have therefore adopted the same ranking tiers of the land, as follows:
- a. Tier 1st ranked: 152,000m²
 - b. Tier 2nd ranked: 182,000m²
 - c. Tier 3rd ranked: 96,000m²

44. JLL's 2016 report assumed 45% of the 77Ha of land at POAL as being in the net developable area, being approximately 350,000m².

Capital expenditure to prepare land available for sale

45. CBRE (2013) estimated the costs necessary to develop the land for sale at approximately \$261 million. This was estimated on a real present value basis as at 2013.
46. JLL (2016) and CBRE (2019) do not disclosed their respective estimates of the development costs.
47. Panuku estimates the costs to remediate and clear the land at POAL to be approximately \$1,600/m² to \$2,500/m². Even at the bottom of that range, this equates to approximately \$688 million (\$1,600/m² x the developable land area of 430,000m²). If, alternatively, the land would be 'capped and covered', the remediation costs would be less but would prohibit the build of certain basement-structures on the land.
48. For baseline modelling assumptions I have assumed a present value of capital expenditure to remediate and clear the land for sale at \$500 million including all 'make-good' costs to rehabilitate the land for that purpose. This assumption remains uncertain without detailed input from external experts.

⁹ IMF World Economic Outlook forecast for New Zealand beyond October 2019. This is before any effects from the recent corona-virus outbreak globally.

Growth in capital expenditure to prepare land available for sale

49. JLL (2016) and CBRE (2019) assumed that the capital expenditure costs would grow at 3.0% per annum. As a baseline in my modelling, I have assumed that the costs of this capital expenditure would grow at a nominal CAGR of 2.0%, being approximate to long-term inflation expectations for New Zealand.

Planning and consenting periods

50. JLL (2016) assumed that the planning and consenting phase of the development would take approximately five years. CBRE (2019) assumed the same process would take approximately 12 years. As a baseline in my modelling, I have assumed that planning and consenting phase would take **eight years** from today, i.e. from 2020 to 2027.
51. It should also be borne in mind that the planning and consenting period is constrained by the period to establish the infrastructure for the alternative port location. In other words, even if the land could be cleared and made ready for sale this year, this would not be practical until the infrastructure at the alternative locations are completed.
52. There is some uncertainty as to how long it will take to sell the land in parcels to developers over time. This is, in part, because there is limited transactional evidence for what the land would yield to POAL, under such a course of action. In contrast, there is more transactional evidence as to what POAL ordinarily yields as a seaport.

Sell-down and development periods

53. JLL (2016) and CBRE (2019)'s development-period assumptions are not detailed. I have assumed that the development costs would precede the sell-down of the land by one year. I.e. the sell-down periods lag their corresponding development periods by one year.
54. JLL (2016) assumed that the sell-down period would be 37 years, CBRE (2019) assumed it would be 19 years. As a baseline in my modelling, I have assumed that the sell-down would take **28 years** (i.e. from 2027 to the end of 2054). I have assumed that the sell-down would take place gradually and evenly over this period. (as has CBRE and JLL).
55. Panuku Development Auckland (**Panuku**) noted that, in their experience with developing Wynyard Quarter, a 'build-out' on POAL's land will probably take 30 years, if not longer.

The Holding Income (Net)

56. The logic underpinning the net holding income is that the land's owner can be expected to earn a rental income from the land before the land is sold (or long-term leased to developers). There are two distinct periods during which the holding income could conceivably be earned, namely:
- a. before POAL vacates the land (i.e. during the planning and consenting stage); and
 - b. after POAL has vacated the land (i.e. during the gradual sell-down stage).
57. It should be apparent that any changes in the term over which the planning, consenting and sell-down takes place, will affect the holding income attributable to the land.

Holding income (starting point and growth)

58. JLL (2016) and CBRE (2019) have not disclosed all their detailed holding income assumptions. As a baseline in my modelling, I have assumed that the holding income could be earned in the forms of:
- Leasing the land to a single occupant during the planning and consenting phase (proxied by POAL) at a rate of \$30/m². This equates to a lease charge from POAL to the landowner (assuming POAL was not the landowner) of approximately \$13 million in the first year. This charge equates to approximately 25% of POAL's annual free cash flow; and
 - Leasing the land to several occupants during the development and sell-down phase at a rate of \$15/m². Such occupants would have to be satisfied with leasing space with the surrounding development-works taking place. I note that this rate (\$15/m²) is approximately equal to the rate assumed by CBRE (2013) when they estimated the same at \$25/m² x 65% occupancy = \$16.25/m².
59. I have assumed that this lease income during the holding periods would increase at a CAGR of 2.5% per annum.

Holding costs

60. During this period the owner of the land would invariably have to incur costs in managing the property, negotiating the terms of these leases and generally maintain the role of a landowner. Neither CBRE's 2019 assessment, nor JLL's 2016 assessment sufficiently detail their calculations to allow a detailed review. I have assumed that a property management fee of 5% of the holding income would be a sufficient proxy for these costs.

Discount rate

61. An appropriate risk-adjusted discount rate is required to assess the present value of the prospective cash flows to the landowner. CBRE (2019) adopted a blended discount rate of 10.59% to their prospective cash flows.
62. JLL (2016) adopted a discount rate of 6% to the holding period and 15% to the development period. If weighted on a temporal basis, this implies a blended discount rate of 13.9%. I consider an appropriate pre-tax, nominal discount rate to these cash flows to range from 8% to 12% (**10% at the mid-point**).

2.5 My indicative assessment

63. Based on the assumptions set out in this Addendum, and the calculations set out in my enclosed electronic workbook, I estimate the market value of the freehold land at POAL ranges from \$701 million to \$911 million (mid-point **\$827 million**).
64. The lower and upper bounds of my assessment are calculated as the median values implied by performing the same valuation using the range of assumptions set out in Appendix A.

References

65. Some of the information referred to in this Addendum include:
- a. CBRE *Ports of Auckland Limited Indicative alternative use land value analysis*, June 2013;
 - b. JLL Memorandum *Port Future Study – Alternative Land Use Analysis*, March 2016
 - c. Audited annual financial statements of POAL for FY2019;
 - d. *IVS400 Real Property Interests*, IVSC 2019;
 - e. Working group's *Economic Analysis of Upper North Island Supply Chain Scenarios*
 - f. UNISCS' *Interim progress report*

Appendix A: Sensitivity of assumptions

The following sensitivities are implied by varying the assumptions, respectively and individually:

Land values at today	Assumption boundaries			Land value			Range of sensitivity	
	Lower	Middle	Upper	\$'million	\$'million	\$'million		
				Low	Mid	High		
Sales price if land sold today (\$/m ²) (average tier)	\$5,500	\$6,500	\$7,000	676	827	866	(151)	39
Growth in land values beyond today	1.5%	2.5%	3.5%	638	827	1,071	(189)	24
Capital expenditure (\$'million) if incurred today:	700	500	300	779	827	876	(49)	49
Growth in capital expenditure beyond today:	3.0%	2.0%	1.0%	806	827	845	(21)	17
Planning and consenting period (years)	12	8	5	668	827	980	(160)	15
Sell-down period (years)	37	28	19	730	827	947	(97)	12
Annual net holding income (\$'million) if leased today:	-	12	20	726	827	872	(101)	44
Discount rate (pre-tax)	12%	10%	8%	612	827	1,150	(215)	32
Median market value of the land				701	827	911		

Some of the salient assumptions observed in this matter are:

Sales price if land sold today (\$/m ²)	\$	Planning and consenting period:	Years
CBRE (2013) (average)	\$3,513	CBRE (2013)	10
JLL (2016)	\$5,500	JLL (2016)	5
CBRE and POAL (2019) (upper limit)	\$5,900	CBRE and POAL (2019)	12
Beylefeld (average)	\$6,500	Beylefeld	8
Growth in land values beyond today:	%	Sell-down period:	Years
CBRE (2013)	5.0%	CBRE (2013)	46
JLL (2016)	3.0%	JLL (2016)	37
CBRE and POAL (2019)	2.5%	CBRE and POAL (2019)	19
Beylefeld	2.5%	Beylefeld	28
Capital expenditure (\$'million) if incurred today:	\$'million	Annual net holding income (\$'million) if leased today:	\$'million
CBRE (2013)	\$261	CBRE (2013)	Unknown
JLL (2016)	Unknown	JLL (2016)	Unknown
CBRE and POAL (2019)	Unknown	CBRE and POAL (2019)	Unknown
Beylefeld (QS Inputs [])	\$500	Beylefeld	\$12
Growth in capital expenditure beyond today:	%	Discount rate (pre-tax)	%
CBRE (2013)	2.5%	CBRE (2013) (average)	17.9%
JLL (2016)	3.0%	JLL (2016) (blended)	13.9%
CBRE and POAL (2019)	3.0%	CBRE and POAL (2019) (upper limit)	10.6%
Beylefeld	2.0%	Beylefeld	10.0%

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