NEW ZEALAND EQUITY RESEARCH | TECHNOLOGY | APPLICATION SOFTWARE

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Trade Window Holdings
The Front Line of Trade

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Global trade and commerce complexities cry out for modern solutions to streamline supply chains. TradeWindow's (TWL) solutions replace time-consuming, manual, paper-based processes with secure, digital solutions. This digitalisation of trade information is inevitable. TWL users can provide their supply chain partners, such as shipping lines, freight forwarders, ports, terminals, government authorities, border agencies, insurance companies, and banks, with secure access to data pertinent to their needs. Given the truly disruptive nature of the product suite, against current manual processes, clients are seeing 70–90% cost savings upon implementation. TWL is building an interconnected ecosystem of partners and already has 450+ customers across 30+ sectors. Our spot valuation is NZ$0.96, with upside if revenue growth eventuates above our forecasts or via further accretive acquisition arbitrage opportunities.

NZX Code	TWL
Share price	NZ$0.91
Spot Valuation	NZ$0.96
Risk rating	Medium
Issued shares	86.0m
Market cap	NZ$78.3m
Avg daily turnover	30.9k (NZ$57k)

Financials: Mar/	22A	23E	24E	25E
NPAT* (NZ$m)	-10.8	-15.8	-10.3	-4.2
EPS* (NZc)	-12.6	-18.4	-11.6	-4.7
EPS growth* (%)	89.0	-46.1	36.7	59.6
DPS (NZc)	0.0	0.0	0.0	0.0
Imputation (%)	0	0	0	0
*Based on normalised profits				

Valuation (x)	22A	23E	24E	25E
PE	n/a	n/a	n/a	n/a
EV/EBIT	n/a	n/a	n/a	n/a
EV/EBITDA	n/a	n/a	n/a	n/a
Price / NTA	19.4	n/a	n/a	n/a
Cash div yld (%)	0.0	0.0	0.0	0.0
Gross div yld (%)	0.0	0.0	0.0	0.0

TradeWindow provides secure and innovative digital solutions to the large 'TradeTech' market

TWL is an early-stage software company providing cloud-based solutions to drive productivity, increase connectivity and enhance visibility across supply chain processes while enabling interoperability between required partners. Longer-term, TWL intends to expand geographies and sectors, and we envisage it building a cross-border ecosystem, firstly in Australia, Asia and South America, and then globally. We see TWL as part of a new set of Web 3.0 companies driving disruptive change to 'old world' trade processes.

Valuation

Our FY23 operating revenue estimate is NZ$7.6m (+95% on pcp), including NZ$0.8m from the recently announced acquisition of Rfider. Relative to management's trading revenue range of between NZ$5.5m and NZ$7m, which we consider conservative, our non Rfider trading revenue estimate is NZ$6.7m (+73%). Using a blended multiple of peers, we believe a fair trading range of 10.5x to 12.5x EV/Sales multiple is applicable. This translates into a range of NZ$0.85 and NZ$1.02 per share for TWL with our spot valuation of NZ$0.96. We forecast an organic-only five year revenue growth rate (CAGR) of +50%. We understand the company is looking to raise around NZ$10–NZ$15m shortly and will likely raise additional capital within twelve months. Our base assumption is that these raisings are successful. The next company update will be during the capital raise and then at its AGM, planned for 6 September 2022.

Trade Window Holdings (TWL)

Market Data (NZ$)	
Priced as at 09 Jun 2022	**0.91**
52 week high / low	2.80 / 0.85
Market capitalisation (NZ$m)	78.3

Spot valuation (NZ$)	**0.96**
EV/Sales comparative value	0.96

Key WACC assumptions	
Risk free rate	4.00%
Equity beta	1.50
WACC	12.2%
Terminal growth	2.5%

Profit and Loss Account (NZ$m)	2021A	2022A	2023E	2024E	2025E
Sales revenue	2.3	4.9	8.0	15.7	23.3
Normalised EBITDA	**(5.9)**	**(9.5)**	**(13.2)**	**(7.2)**	**(1.4)**
Depreciation and amortisation	1.1	1.7	3.1	3.6	3.1
Normalised EBIT	**(6.9)**	**(11.2)**	**(16.3)**	**(10.8)**	**(4.5)**
Net interest	(0.1)	(0.2)	(0.1)	(0.1)	(0.0)
Associate income	0	0	0	0	0
Tax	0.5	0.6	0.6	0.6	0.3
Minority interests	0	0	0	0	0
Normalised NPAT	**(6.6)**	**(10.8)**	**(15.8)**	**(10.3)**	**(4.2)**
Abnormals/other	0	0	0	0	0
Reported NPAT	**(6.6)**	**(10.8)**	**(15.8)**	**(10.3)**	**(4.2)**
Normalised EPS (cps)	(114.1)	(12.6)	(18.4)	(11.6)	(4.7)
DPS (cps)	0.0	0	0	0	0

Growth Rates	2021A	2022A	2023E	2024E	2025E
Revenue (%)		>100	64.6	95.8	48.3
EBITDA (%)		n/a	n/a	n/a	n/a
EBIT (%)		n/a	n/a	n/a	n/a
Normalised NPAT (%)		n/a	n/a	n/a	n/a
Normalised EPS (%)		n/a	n/a	n/a	n/a
Ordinary DPS (%)		-100.0	n/a	n/a	n/a

Cash Flow (NZ$m)	2021A	2022A	2023E	2024E	2025E
EBITDA	**(5.9)**	**(9.5)**	**(13.2)**	**(7.2)**	**(1.4)**
Working capital change	0.1	(0.5)	2.0	(0.4)	(0.5)
Interest & tax paid	0.3	0.4	0.8	0.5	0.2
Other	0.8	1.2	(0.2)	(0.1)	(0.1)
Operating cash flow	**(4.6)**	**(8.5)**	**(10.5)**	**(7.2)**	**(1.8)**
Capital expenditure	(0.1)	1.5	(0.2)	(0.5)	(0.7)
(Acquisitions)/divestments	0.0	(1.6)	(2.5)	0	0
Other	4.5	(1.5)	(0.5)	(0.6)	(0.5)
Funding available/(required)	**(0.2)**	**(10.1)**	**(13.7)**	**(8.2)**	**(3.0)**
Dividends paid	(0.0)	0	0	0	0
Equity raised/(returned)	6.8	15.0	0	0	0
(Increase)/decrease in net debt	**6.6**	**4.9**	**(13.7)**	**(8.2)**	**(3.0)**

Balance Sheet (NZ$m)	2021A	2022A	2023E	2024E	2025E
Working capital	(0.2)	0.3	(1.7)	(1.2)	(0.7)
Fixed assets	0.2	0.3	0.4	0.6	1.0
Intangibles	3.9	6.8	14.3	11.5	9.3
Right of use asset	0.0	1.4	1.9	1.4	2.1
Other assets	0.1	0.3	0.3	0.3	0.3
Total funds employed	**3.9**	**9.1**	**15.3**	**12.5**	**12.0**
Net debt/(cash)	7.1	(3.7)	9.5	17.1	19.5
Lease liability	0	0.9	0.9	0.3	1.1
Other liabilities	0.2	1.0	8.5	4.8	1.0
Shareholder's funds	(3.3)	10.8	(3.6)	(9.6)	(9.6)
Minority interests	0	0	0	0	0
Total funding sources	**3.9**	**9.1**	**15.3**	**12.5**	**12.0**

* Forsyth Barr target prices reflect valuation rolled forward at cost of equity less the next 12-months dividend

Valuation Ratios	2021A	2022A	2023E	2024E	2025E
EV/EBITDA (x)	n/a	n/a	n/a	n/a	n/a
EV/EBIT (x)	n/a	n/a	n/a	n/a	n/a
PE (x)	n/a	n/a	n/a	n/a	n/a
Price/NTA (x)	n/a	19.4	n/a	n/a	n/a
Free cash flow yield (%)	-6.0	-8.9	-13.7	-9.7	-3.1
Net dividend yield (%)	0.0	0.0	0.0	0.0	0.0
Gross dividend yield (%)	0.0	0.0	0.0	0.0	0.0

Capital Structure	2021A	2022A	2023E	2024E	2025E
Interest cover EBIT (x)	n/a	n/a	n/a	n/a	n/a
Interest cover EBITDA (x)	n/a	n/a	n/a	n/a	n/a
Net debt/ND+E (%)	-9.1	-51.8	163.9	231.3	199.1
Net debt/EBITDA (x)	n/a	0.4	n/a	n/a	n/a

Key Ratios	2021A	2022A	2023E	2024E	2025E
Return on assets (%)	-113.0	-67.9	-92.7	-71.6	-30.8
Return on equity (%)	185.8	-100.3	427.4	105.7	43.8
Return on funds employed (%)	-188.8	-99.8	434.0	106.4	44.1
EBITDA margin (%)	-250.2	-195.8	-164.1	-45.5	-6.0
EBIT margin (%)	-295.8	-229.9	-202.7	-68.5	-19.3
Capex to sales (%)	5.1	-31.4	2.8	2.9	3.0
Capex to depreciation (%)	-38	267	-33	-62	-76
Imputation (%)	0	0	0	0	0
Pay-out ratio (%)	0	0	0	0	0

Segment Revenue (NZ$m)	2021A	2022A	2023E	2024E	2025E
Transactional	0.6	1.3	3.1	5.9	10.5
Subscription	0.4	1.6	3.3	7.2	9.2
Service	0.1	0.2	0.2	0.3	0.5
Installation	0.2	0.4	0.6	1.5	2.3
Other	0.7	1.0	0.5	0.4	0.3
Total revenue	**2.3**	**4.9**	**8.0**	**15.7**	**23.3**

Segment Revenue ARPC (NZ$)	2021A	2022A	2023E	2024E	2025E
Transactional (per month)	-	703	1300	1700	2000
Subscription (per month)	-	341	586	963	992
Service (per month)	-	42	43	43	44
Total revenue per sub / month	**1,022**	**712**	**1,212**	**1,805**	**1,939**
Installation (per new customer) *	14,030	16,699	15,000	15,000	15,000

Segment costs as % of revenue	2021A	2022A	2023E	2024E	2025E
Cost of goods sold as % of revenue	64%	50%	41%	22%	21%
R&D as % of revenues	190%	126%	117%	62%	42%
S&M as % of revenue	63%	65%	48%	26%	19%
G&A as % of revenues	183%	130%	74%	39%	27%
Total expenses as % of revenue	**500%**	**372%**	**281%**	**149%**	**108%**

*Transactional customers

Investment thesis

1. Valuation

Using a blended multiple of peers, we believe a fair trading range of 10.5x–12.5x EV/Sales multiple is applicable in valuing TradeWindow (TWL). This range translates to a per-share valuation of between NZ$0.85 and NZ$1.02 for TWL, using fully diluted shares. We include the value of cash on the balance sheet, net of debt, less our assessment of the capitalised value of leases. **Our spot EV/Sales driven valuation is NZ$0.96**. We recognise that there are a wide range of potential outcomes given TWL's early stage of development, the enormous scope of the industry TWL operates in, and that M&A opportunities could materially alter the size of the business in the future. We believe there to be a clear arbitrage opportunity for TWL to acquire private TradeTech businesses at significantly lower multiples than the market is willing to pay, as seen with Wisetech (WTC.AX) and Descartes (DESG.CN).

2. The complexity of global trade

Cross border trade is complicated, with a myriad of different rules and regulations, and often many parties involved. As government agencies and intermediaries recognise the need to improve the flow of goods across borders, instruments used to control trade will become more standardised and digitalised. This digitalisation of trade information is a question of when, not if, it occurs. As particular countries and key exporting companies push for progress, there will be a tipping point where other parties will need to transition to digital trade facilitation. Once implemented into customer processes, we see the product set as extremely sticky, leading to very high retention rates. Perversely, the disruptions of the COVID-19 pandemic have likely expedited the move to digitise trade processes, and we see TWL as somewhat unique in being a beneficiary of supply chain disruptions.

TWL's platform works across various essential export industries and offers an attractive market opportunity with TWL operating in ten countries, albeit its exposure to freight importing is in its infancy. TWL's NZ operations have provided a proving ground, with an impressive list of clients, and it now looks to redirect efforts towards expansion in its Australia and Singapore operations. From there we believe it will look further afield. TWL is working with the Digital Economy Partnership (DEPA) and the Pan Asian E-commerce Alliance (PAA) partnerships as a development partner to enhance technology adoption across trade infrastructure.

The digitalisation of trade documentation raises significant cybersecurity issues. Data privacy and protecting intellectual property (IP) when sharing data are highly relevant in global supply chains. TWL tackles this issue with a suite of security systems. Blockchain underpins TWL's digital trade platform with its specialist software solutions sitting on top to improve end-to-end integrity and security. Security is a significant part of TWL's value proposition; the product is ISO27001 certified (information security).

3. Large, total addressable TradeTech market

Our assessment of the total addressable market (TAM) for the trade documentation market with value-added services overlaid on top of the transactional revenues is significant, a multiple billion TAM, flowing to a **NZ$1.9 billion serviceable addressable market (SAM)** globally. As part of this market, we see a **NZ$150m–NZ$250m serviceable and obtainable revenue market opportunity (SOM)** for TWL over ten years, with potential for longer-term growth from introducing a further layer of value-added services.

4. Acquisition strategy to supercharge growth

TWL is ambitious about its growth plans. In addition to organic growth, the company is highly likely to seek growth via acquisitions to expedite its progress into markets, gain capable staffing resources and obtain relationships with key customers in new markets. We see a land grab has already commenced amongst global competitors. This is in addition to our view of a heavy programme of research and development (R&D) to enhance the product offering and continuously improve connectivity, thereby amplifying the network effect. Management execution of these factors will be critical to TWL's future.

5. TradeWindow to outgrow its peers

We recognise TWL is in the very early stages of its growth cycle but should display significantly higher growth rates than peers. We forecast trading revenue growth in FY23 of +95% and an organic only five year revenue growth rate (CAGR) of +50%, including Rfider. Key to TWL's success will be its ability to: 1) Add new customers and partners; 2) Increase usage and penetration from existing customers of value added services, improving average revenue per customer (ARPC); 3) Improve the product offering via development and innovation through a heavy programme of R&D; 4) Expand organically in Australia, Singapore and beyond; and 5) Seek out value accretive acquisitions and successfully integrate.

1. Valuation and sector comparables

Performance since listing

TWL's compliance listing occurred on 22 November 2021, at the height of markets at the back end of 2021. The Listing Profile used the same NZ$0.92 per share value as the NZD$15m pre-listing equity raise. There are now 86m shares on issue. Since then, the stock market has been weak, particularly in technology names; however, TWL trades around similar levels. TWL is an early-stage business, and the lack of history displaying its growth and track record contributes to uncertainty. Its long-dated cash flows are more susceptible to movements in interest rates. Management has developed the business and made progress, with several key new partnerships announced (MasterCard/PortConnect/Vero Marine) along with Regional Comprehensive Economic Partnership (RCEP) Agreement participation on 16 February 2022. The poor start to the year for financial markets reflects market concerns regarding rising inflation, the war in Ukraine and the flow-on effects of significantly higher interest rates. TWL is investing heavily in R&D, with a monthly cash burn of around NZ$1m, and has ambitions to progress with additional M&A opportunities; as such, additional capital will likely be sought multiple times over the coming years.

Valuation methodology

In valuing TWL, we have undertaken a four-pronged approach in assessing the business:

1. **Sector M&A activity**. We have reviewed 47 takeovers undertaken by competitors in the segment over the last four years and analysed the multiples at which these transactions occurred. Many of these transactions did not disclose either the purchase price or revenues of the acquired company. Those that did have been at an average EV/Sales multiple of 4.3x with a range of 1.8x to 8.9x. We consider this a good reflection of the arbitrage opportunity ahead for TWL, utilised successfully by its peers through acquiring unlisted companies and being a listed entity.
2. **Discounted cash flow (DCF) valuation**. Given the company's early-stage development, the wide range of possible outcomes, and the likely heavy influence of acquisitions in scaling the business, we do not consider DCF the best valuation measure for TWL currently. In saying this, our spot DCF valuation for TWL, with Rfider included and only as an organic story, is NZ$0.82. This ascribes no value to the significant and accretive M&A arbitrage opportunities available to TWL.
3. **Assessing our terminal revenue assumptions against our calculation of the total addressable market**. Given how large the markets for global trade are, and how complex, TradeTech solutions provided by TWL have high return on investment (ROI) outcomes for customers, and thereby the market potential is enormous. Based on the long-term penetration into these markets globally, we assess a NZ$150m to NZ$250m potential serviceable and obtainable revenue market opportunity (SOM) for TWL. Held against our current terminal revenue assumptions of NZ$70m in FY32, this appears to provide plenty of scope for TWL's management to grow into the opportunity.
4. **EV/Sales comparison to relevant sector stocks**. We reviewed a selection of comparable companies in our analysis. We consider comparing EV/Sales multiples as the most insightful for the sector with an overlay of each company's relative growth and risk. The median of FY22 EV/Sales multiples of TWL's three closest peers is 13x, with the broader group on a similar multiple. Weighing up the factors we see TWL experiencing higher growth but also relatively higher risk, see Figure 1. Using a blended multiple of peers, we believe a fair trading range of 10.5x to 12.5x EV/Sales multiple is applicable for TWL on FY23 revenues. This translates into between NZ$0.85 and NZ$1.02 per share for TWL, with us settling on a **NZ$0.96 spot valuation**.

Figure 1. TWL - weighing up the factors

Factors driving higher multiple	Factors driving lower multiple
■ Operating across large markets	■ Relatively new to market against some large competitors
■ Significantly higher growth than peers due to size	■ Scale effects on fixed R&D costs
■ High profile partnership wins (e.g. with Mastercard/PortConnect)	■ Lack of earnings
■ Acquisitions could see the company scale quickly	■ Completion of the software stack is still 12–18 months away
■ API first method making interoperability easier	■ Negative cash flow for several years
■ Innovative offering with Blockchain backed security, leading many peers on the technology stack	■ Predominately NZ/AU base for revenues (~95%) with higher risk on new market entries
■ A solid presence across large New Zealand trade enterprises is likely to initiate network effects in the region	
■ Appears to be significant scope for value-added services layered over trade products	

Source: Forsyth Barr analysis

The table below provides a range of revenue outcomes in a matrix for a range of EV/Sales multiples to assess the scope of value outcomes. See Figures 5 and 6, below, for our estimates of FY23 trading revenues.

Figure 2. EV / Sales matrix on a range of FY23 trading revenue outcomes

		EV / Sales Multiple					
		10x	11x	12x	13x	14x	15x
FY23 Trading revenue range (NZ$m)	$5.50	$0.58	$0.64	$0.70	$0.76	$0.83	$0.89
	$6.00	$0.63	$0.70	$0.77	$0.84	$0.91	$0.97
	$6.50	$0.69	$0.76	$0.84	$0.91	$0.99	$1.06
	$7.00	$0.75	$0.83	$0.91	$0.99	$1.07	$1.14
	$7.50	$0.80	$0.89	$0.97	$1.06	$1.14	$1.23
	$8.00	$0.86	$0.95	$1.04	$1.13	$1.22	$1.31

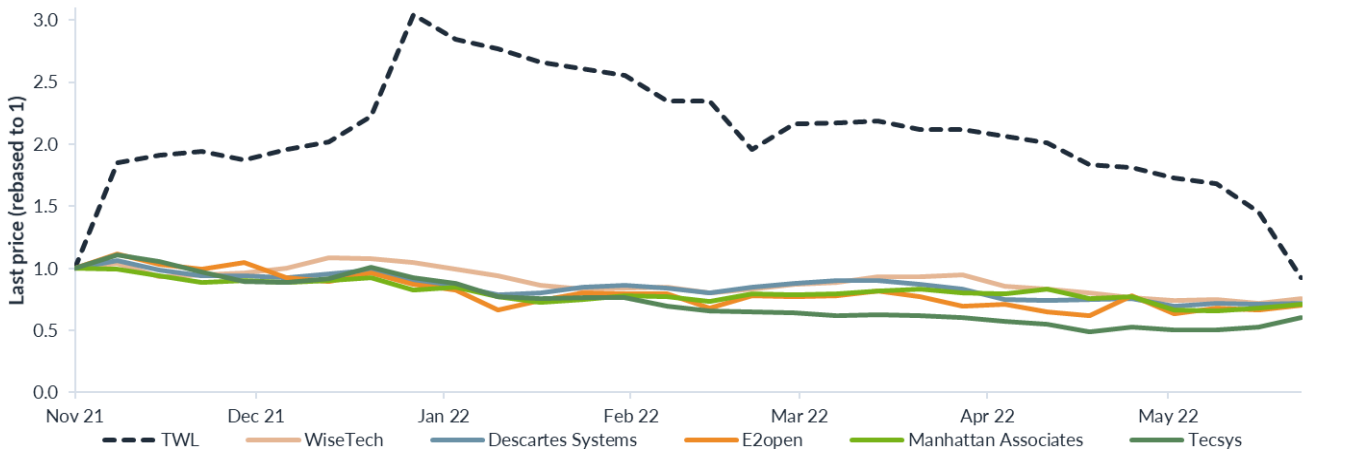
Source: Forsyth Barr analysis * We adjust for cash, our analysis of capitalised lease and use 88.2m shares for this calculation partially attributing revenues and shares issued from Rfider

Figure 3. Comparable valuations (as at 7 June 2022)

Company	Inception	Head Office	Market capitalisation (NZ$m)	Gross profit margin	EBITDA margin	R&D / Sales	EV / EBITDA (x)	EV / Sales (x)
WiseTech	1994	AU	14,417	83%	41%	25%	64.9x	26.5x
Descartes Systems	1981	CA	8,413	76%	40%	15%	32.9x	13.0x
E2open	2000	US	4,364	48%	-	19%	-	6.9x
Manhattan Associates	1990	US	12,414	55%	21%	15%	59.8x	12.8x
Tecsys	1983	CA	593	49%	12%	15%	34.7x	4.2x
SAP SE	1972	DE	190,826	71%	23%	19%	17.9x	4.1x
ServiceNow	2003	US	157,153	77%	12%	24%	147.6x	18.3x
Kinaxis	1984	CA	4,710	65%	8%	23%	169.6x	13.6x
Total peer group median				**68%**	**21%**	**19%**	**59.8x**	**12.9x**
Total peer group average				**66%**	**22%**	**19%**	**75.3x**	**12.4x**

Source: DataStream, Bloomberg, Company data, Forsyth Barr analysis

Figure 4. TWL and comparable companies' price index since TWL's listing

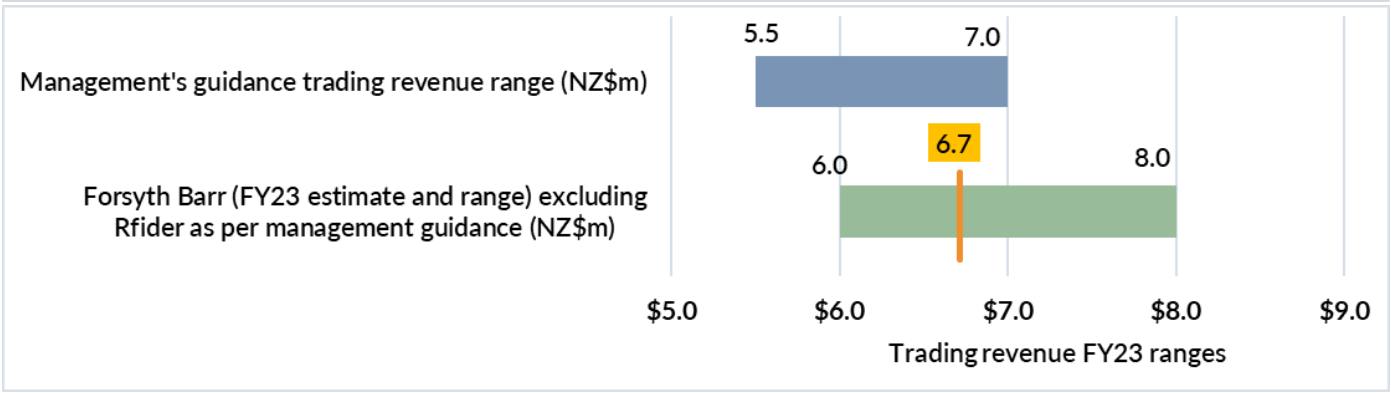


Source: Refinitiv, Forsyth Barr analysis , TWL starting price has been set at its compliance listing price of $0.92.

FY23 Outlook

We consider management's FY23 trading revenue guidance of between NZ$5.5m (+29% on pcp) and NZ$7m (+80%), excluding Rfider, as conservative, given given our view of potential uplift in ARPC. We have incorporated Rfider into our core forecasts; however, when adjusting for this, our trading revenue estimate, without Rfider, is NZ$6.7m, at the top end of management's range. We consider a more likely range for trading revenues, excluding Rfider, to be between NZ$6m (+55%) to NZ$8m (+106%) over FY23, see Figure 5 below. Our forecast of TWL's total revenues for FY23 is NZ$8.0m, made up of non-Rfider operating revenues NZ$6.7m, NZ$0.8m of revenues from Rfider and NZ$0.5m from Other income (mostly R&D grants), see Figure 6.

Figure 5. TWL - FY23 Revenue forecast ranges (Company and Forsyth Barr)



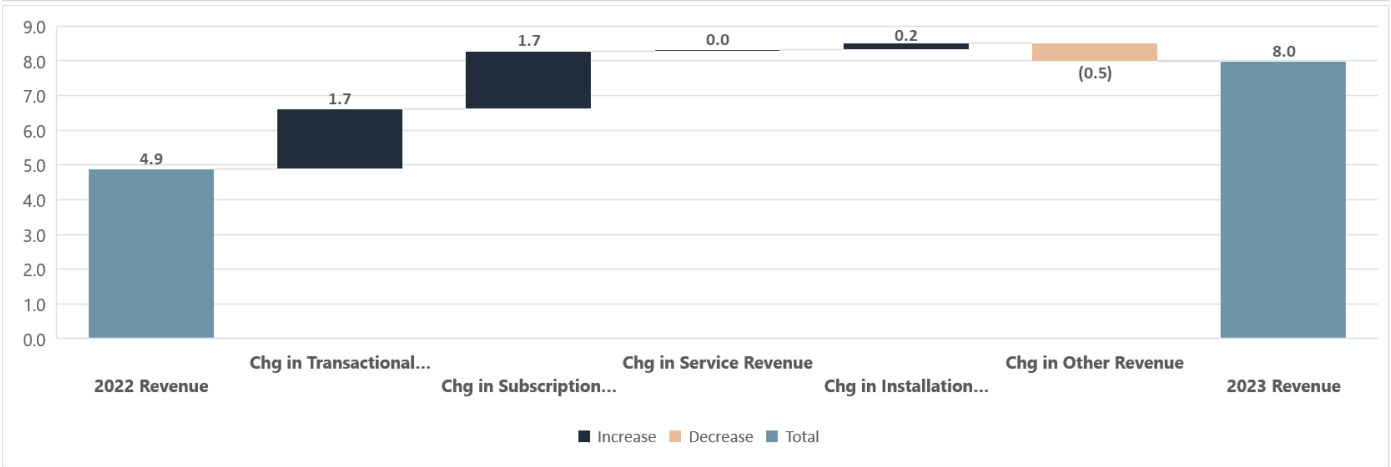
Source: Company, Forsyth Barr analysis

Figure 6. TWL - FY22 actual to FY23 estimates (NZ$)

	FY22 Actual	FY23 Estimate	Change
Revenue	**3,877,617**	**7,554,258**	**+95%**
Other income	999,330	471,266	-53%
Total Revenues	4,876,947	8,025,524	+65%
Employee benefits expense	(10,830,303)	(17,057,727)	+58%
Depreciation and amortisation	(1,666,826)	(3,097,692)	+86%
Other expenses	(3,593,903)	(4,140,176)	+15%
Total operating expenses	(16,091,032)	(24,295,595)	+51%
Operating profit / EBIT	(11,214,085)	(16,270,071)	-31%
Operating EBITDA	**(9,547,259)**	**(13,172,379)**	**-28%**
Net financing costs	(169,673)	(157,209)	-7%
Profit before income tax	(11,383,758)	(16,427,280)	-31%
Income tax benefit	560,000	560,000	
Net Profit (Loss) for the Year	**(10,823,758)**	**(15,867,280)**	**-32%**

Source: Company, Forsyth Barr analysis

Figure 7. TWL - Revenue bridge FY22 to FY23 ($NZm)

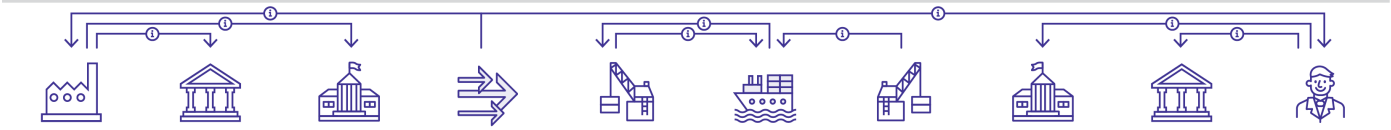


Source: Forsyth Barr analysis

2. The complexity of global trade

When goods and services cross borders in global trade information needs to be passed between relevant parties, including suppliers, logistics providers, customs services, regulatory agencies, sellers and buyers. The current communication methods between parties are often inefficient and burdened by paper-based processes.

Figure 8. The global supply chain ecosystem



Exporter (i.e. shipper)	Exporter's bank / insurer	Export customs/ Bio-security	Forwarder	Export port	Carrier (air, ocean)	Import port	Import customs	Importer's bank / insurer	Importer (i.e. consignee)
Typical documentation issued									
Sales contract and trade terms	Letter of credit	Certificate of origin	House bill of landing / House airway bill	Port declaration	Master bill of landing / Airway bill	Port declaration	Customs clearance	Letter of credit procession	Purchase order
Commercial invoice	Insurance policy	Customer value declaration	Delivery note	Manifest	Shipment status (e.g. booking confirmation arrival notification)	Manifest	Import licenses / certificates		
Packing list		Export licenses / certificate	Shipment status	Shipment status		Shipment status			
		Sanitary and phytosanitary certificates							

Source: Company, Forsyth Barr analysis

A single transaction may involve over 20 entities, 20 paper documents and 5,000 data field exchanges. Paper-based trade can lead to bottlenecks, delays, and extra costs as information may be missing, incorrect or in the wrong form.

Paperless trade can now enable businesses to move beyond this. Digitalisation is increasing the scale, scope and speed of trade. It enables businesses to adapt and evolve continuously to meet changing customer demand. Digital tools can help them overcome barriers to growth, facilitate payments, enable cross-border collaboration, avoid investment in fixed assets through cloud-based services and alternative funding mechanisms.

Specifically, digitalisation can aid the movement of goods and services in the following ways:

- Eliminating waste (time and resources) when back office staff have to manually enter data at each point in the supply chain
- Rapid amendment of errors or omissions, data that has been entered manually presents an opportunity for error and, if undetected, the impact can compound as goods are shipped.
- Processing of declarations electronically pre-arrival
- Better cooperation amongst border agencies
- Usage of electronic documents instead of paper documents
- Building system resilience against shocks
- Online certification
- Online payments
- Expediting shipments

Now, and in the future, convenient, flexible and transparent fulfilment of shipments is a source of competitive advantage, blurring traditional distinctions between sales, operations and manufacturing. Businesses will need to compete to deliver superior customer experiences by utilising digital platforms like TWL's Cube solution to collect, integrate and interpret data from across the enterprise. They will also need to harness advanced analytics to convert data points into actionable insights.

Figure 9. TWL's Cube solution

Source: Company, Forsyth Barr analysis

Technology in itself is insufficient to enable digitalisation efforts to scale and thrive. Given the myriad of technologies, actors, standards, rules, regulations and legal jurisdictions, effective trade digitalisation also requires legal harmonisation, standardisation and interoperability. Successful businesses will need to exploit opportunities arising from digital disruption while facing new regulatory challenges in today's interconnected world.

A beneficiary of supply chain disruption

Several external factors have created a ripple effect across global supply chains and underlying global trade markets over the past few years. In an already complex interconnected network for trade, COVID-19 has introduced many additional factors into the environment, influencing all parts of the network, including insurers, bankers, exporters, distributors, freight forwarders and transport firms.

These COVID-19 disruptions include:

- **Staff shortages across global supply networks —** many trucking, logistics, port and shipping companies are operating with lower levels of staff, affecting capacity through absenteeism.
- **Production delays and shortages of products** on shelves and the flow-on effects on inputs into companies' supply chains.
- **Diminished shipping capacity** affecting delivery timeframes and network reliability.
- **Spikes and volatility in commodity prices and shipping costs** increasing both manufacturer and customer uncertainty.

While these are not materially influencing TWL's short-term growth, and at first glance may have been thought to be having a dampening effect on the company's prospects, we consider them to be having a long-term positive influencing factor on the outlook for TWL. We consider current supply chain disruptions as a critical driver to companies wanting to:

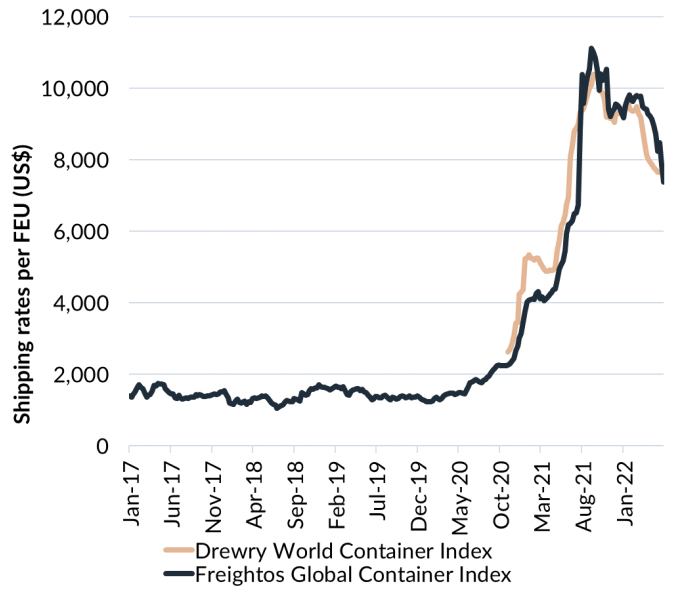
1. Double down on technology investment to aid whole of system management
2. Seek ways to take out costs
3. Implement solutions to re-design and de-risk the supply chain
4. Speed up exports and input supply timeframes
5. Improve security
6. Implement systems to streamline the flow of information while providing visibility
7. Reduce errors and be more adaptable, allowing for different countries documentation requirements
8. Use data to make better decisions on the monitoring of risk
9. Seek collaboration and partnerships with other parties

As companies seek to de-risk their supply chains and consider the above, they may see significant benefits of building network resilience by implementing solutions such as TWL.

Global growth or global shipping rates impacting?

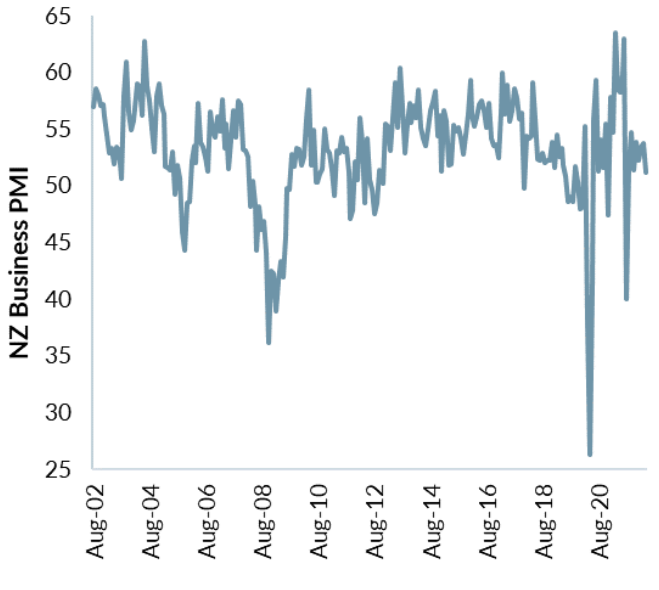
In theory, slowing economic growth, and as such global trade volumes, could be a headwind to TWL's outlook and growth. We consider other factors to be much more important to the company's success. We would consider a small fraction of TWL growth reliant on changes to export volumes from NZ and Australia. There have been significant increases in global shipping rates (see Figure 10 below) and this has pressured the costs of many exporters. This may drive those companies to expedite their efforts to save costs elsewhere by implementing supply chain improvements just like the software offered by TWL.

Figure 10. Global shipping rates



Source: Drewry/Freightos, Forsyth Barr analysis

Figure 11. NZ PMI



Source: BNZ - BusinessNZ PMI, Forsyth Barr analysis

The NZ Purchasing Managers Index (PMI) is an excellent longer-term measure of the prevailing direction of economic trends in manufacturing. However, we would not consider it as a good measure for TWL's new customer wins or penetration into existing customers. The NZ Business PMI can be seen in Figure 11, above.

Global trade tailwind

Global export volumes from NZ have grown at a compound annual growth rate of +4.8% for many decades, providing a supporting tailwind for TWL into the future. See Figure 12 below. Similar trends have been seen from Australia while inter-Asian trade has grown faster. These trends, while supportive, are not considered as a material driver of TWL volumes or the ultimate chances of success for many years to come.

Figure 12. NZ export value (seasonally adjusted quarterly data NZ$ billions)

Source: Stats NZ, Forsyth Barr analysis

Trade Partnerships

TWL is working with several partnerships and trade alliances to help speed up trade digitisation. These have included the Digital Economy Partnership (DEPA), the Pan Asian E-commerce Alliance (PAA), the World Trade Organisation (WTO) and Asia-Pacific Economic Cooperation (APEC), all having programmes on developing international digital trade. All aim to see the adoption of new technology across the region and into trade infrastructure. More recently, TWL has been authorised to issue trade certificates of origin for NZ to the Regional Comprehensive Economic Partnership (RCEP) agreement partners. TWL was presented as part of the NZ contingent at the most recent APEC conference. More information on New Zealand's efforts for trade digitalisation can be found on the New Zealand Foreign Affairs and Trade website here: https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-in-force/

Digital Economy Partnership (DEPA)

A partnership between New Zealand, Chile, and Singapore aims to assist New Zealand exporters and SMEs in taking advantage of opportunities from digital trade. The three countries who collectively set the scene for the Trans-Pacific Partnership Agreement (TPP) and then the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) agreements have similar thinking on many trade policy issues. The agreement is looking at all aspects of the digital economy to support the new world of trade. DEPA is open to any World Trade Organisation (WTO) members that can meet a set of standards.

Pan-Asian E-commerce Alliance (PAA)

The Pan-Asian E-Commerce Alliance is a consortium of trade single window operators and supply chain software companies. The aim is for participating companies to be allowed uninterrupted cross-border trading that readily accepts digital cross-border approvals and certifications to enable secure and reliable paperless trading. The scope of the alliance is enormous, with some 350,000 organisations represented and now comprises eleven member countries (including Korea, China, Japan, Malaysia, Macau and Thailand).

World Trade Organisation (WTO)

New Zealand and WTO members started in January 2019 to negotiate ways of deploying e-commerce across its members. Key areas of focus are:

- Enabling digital trade/e-commerce
- Creating openness
- Ways of building trust and protecting IP
- Solutions for closing the gaps and digital divides

Regional Comprehensive Economic Partnership (RCEP) Agreement

TWL is authorised to issue certificates of origin for 15 trading partners under the RCEP Agreement dated 16 February 2022. TWL is the first third-party company to be recognised as a designated certification body by NZ Customs Service to issue certificates of origin under the enabling regulations for the Agreement. The first RCEP certificates of origin are already being produced, and offered through TradeWindow Origin Ltd or TWL's Prodoc and Cube integrated digital trade platforms. RCEP, ratified by New Zealand in late 2020, came into force last month and is the world's largest free trade agreement (FTA), encompassing 15 countries, with 2.3 billion people, that together account for US$12.7 trillion of trade in goods and services, or around a quarter of total global trade. The 11 countries already active under the Agreement are Australia, Brunei, Cambodia, China, Japan, Lao PDR, New Zealand, Republic of Korea, Singapore, Thailand and Vietnam. Four other countries, Indonesia, Malaysia, Myanmar, and the Philippines, are still ratifying the Agreement.

Asia-Pacific Economic Cooperation (APEC)

The New Zealand Government asked TWL to present at a February 2021 APEC regional economic forum conference. TWL's presentation, "Towards Super Connectivity", covered its thoughts on seamless connectivity through the permissioned flow of information across the four data silos (commercial, finance, logistics and government) of global trade.

3. Large, total addressable TradeTech market

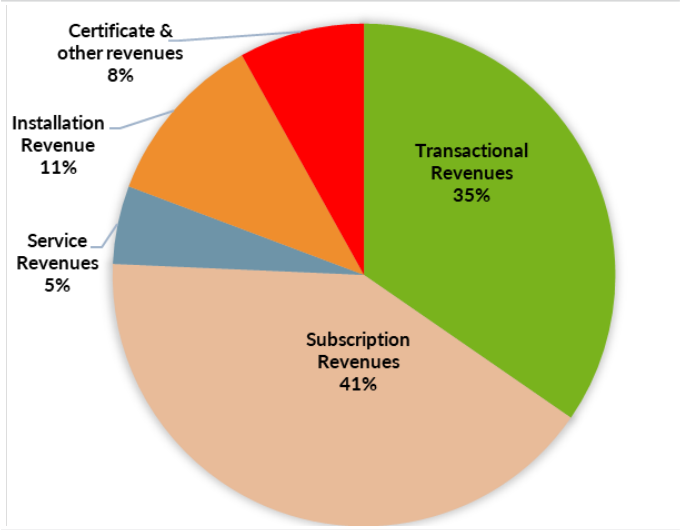
TWL operates in the rapidly growing digital trade segment of the TradeTech market. TradeTech solutions provide supply chain participants with the tools to transform manual processes to digital ones at each point of the chain. TradeTech's total addressable market equates to 10–15% of global trade, being the monies spent within the sector on technology solutions. Given some reports that TradeTech solutions have the potential to reduce trade costs by 14% and boost global trade by up to US$1 trillion per year, there is increasing interest in implementing these solutions. TWL itself evaluates its serviceable available markets to select market expansion opportunities and chooses new geographies for focus. This involves calculating the value of the whitespace of the market throughput multiplied by relevant trade costs. The TradeTech market can be divided into seven segments: 1) Supply chain finance, 2) Trade finance, 3) Know Your Customer (KYC), 4) Insurance, 5) Digital trade, 6) Shipping and logistics and Other.

Large, total addressable market

We have undertaken a top-down assessment of industry sizing and market potential using industry data, research studies, and market reports to quantify the total addressable market (TAM) associated with the trade documentation market. While we see large volumes of bulk commodities using the TWL product, we understand that circa 99% of current billings are related or linked directly with containerised movements to and from markets. TWL has several distinct revenue streams:

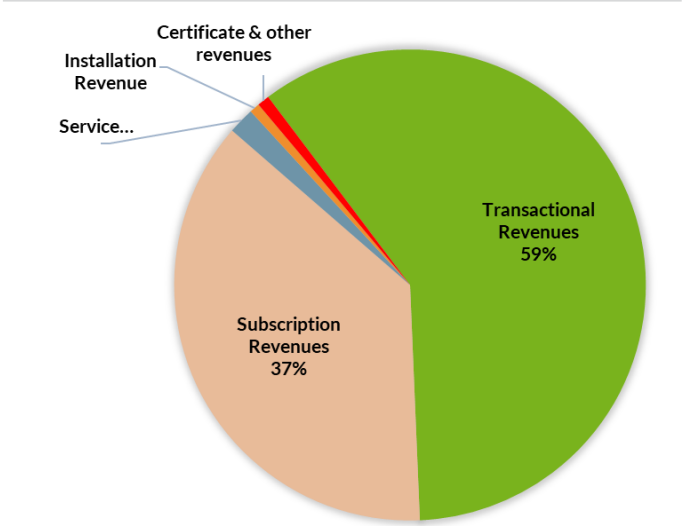
- Long-term, we believe the most significant proportion of revenues will come from revenues associated with **Transactional** behaviour, which is closely linked with TEU movements. We estimate this to represent around two-thirds of TWL's revenues in the long run.
- **Subscription** revenues, which the vast majority of the customer base will utilise, do not necessarily have a direct link with trade volumes. We envisage Subscription services, the value-added layer, to drive significant additional revenues on top of the trade-related layer. In this assessment we take into account these value-added services by way of increasing the average revenue able to be achieved on each container.
- The third, fourth and fifth revenue streams of **Service** revenues for ad-hoc customisation or enhancements; **Installation** revenues, depending on the level and complexity of installation; and trade **Certificates** and other revenues. Cumulatively, these represent around 3% of our assessment of revenues in our terminal year estimates. Service and Installation revenues are highly related to customer numbers and not trade and, for our purposes, have been excluded for this assessment whereby Certificates & other revenues have an obvious link to trade.

Figure 13. TWL — Revenue by Line (FY22)



Source: Company, Forsyth Barr analysis

Figure 14. TWL — Revenue by Line (terminal year estimate)



Source: Company, Forsyth Barr analysis

Total Addressable Market (TAM)

Given the link with containerised trade, we utilised global industry trade reports to assess the Total Addressable Market or TAM based upon the global movement of container port traffic or TEU, being a 20-foot equivalent unit. The total theoretical maximum market demand for a product or service is TAM. With trade documentation, we assume that billable trade documentation would be required for every four TEU moved. This TAM is the improbable level of revenue achievable across all industry participants. Using World Bank data, we capture 759 million global movements in TEUs, possibly needing trade documentation. This, multiplied by the documentary costs on each container, creates that potential total market demand for the product, albeit unrealistically large. Using the most recent data available as an estimate, we see global TEU movements by country and region as follows:

Figure 15. World Bank assessment of TEU movements

Country or region	World Bank assessment of TEU movements
New Zealand *	2,135,950
Australia	8,656,995
Singapore	36,870,900
South and East Asia (excluding Singapore)	416,230,840
South America	26,927,148
United Kingdom	8,692,260
Canada	6,196,600
United States	54,963,689
Europe	115,286,754
Rest-of-the-world (ROW)	82,772,884
Total	**758,734,020**

Source: World Bank, Stats NZ, Forsyth Barr analysis * For NZ data we have utilised Stats NZ movements of TEUs

Flowing this into more realistic terms requires the following stage identifying the Serviceable Addressable Market within the TAM.

Serviceable Addressable Market (SAM)

There are, in fact, limitations of any business model, be it geographic limitations, local differences of use, or language barriers. Therefore, the Serviceable Addressable Market is more helpful in assessing businesses to objectively estimate the portion of the market they could acquire in the most optimistic of outcomes.

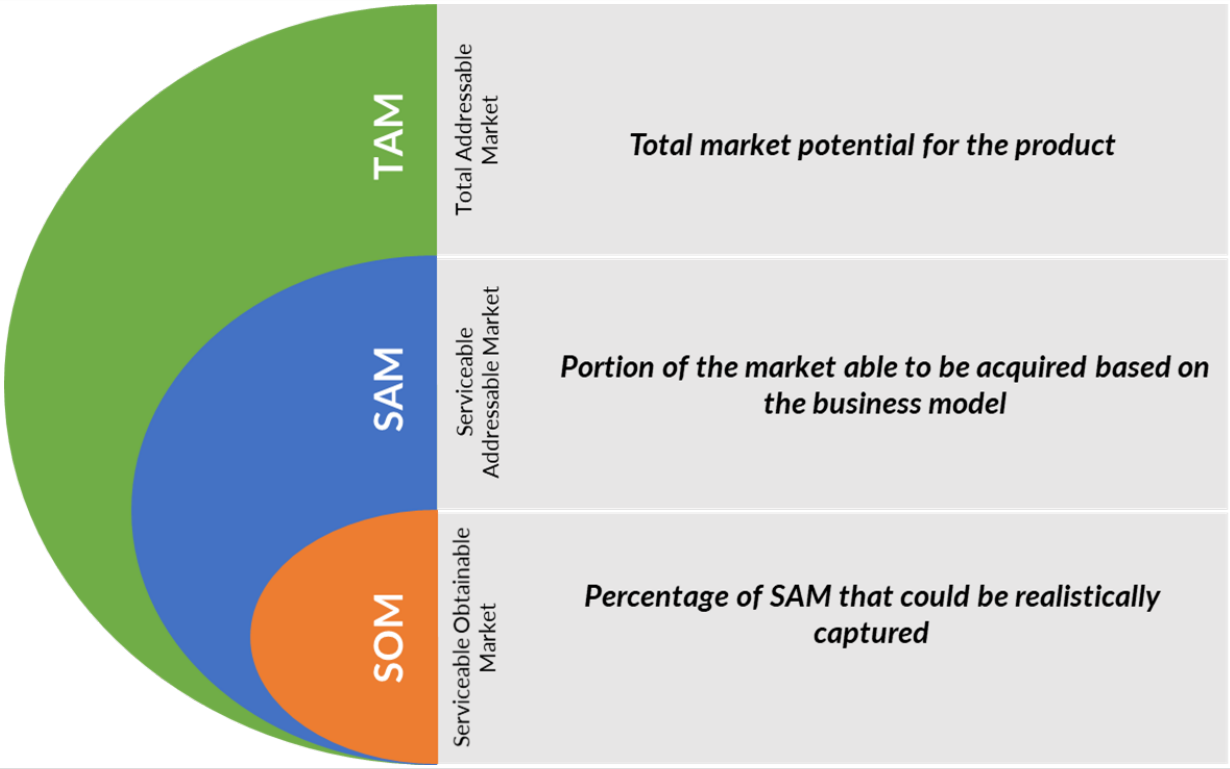
The third stage of assessing the market size is to make this more realistic and calculate the Serviceable Obtainable Market as a part of the SAM.

Serviceable Obtainable Market (SOM)

Given market share limitations, it is unlikely that any business could practically capture 100% of a market. Additionally, given that TWL cannot enter the trade documentation market in every market at once, competitors will likely adapt and replicate the service offering, making achieving high market shares in markets entered years later much harder. Further, it is often extremely difficult or impossible to convince all potential customers in a market, no matter how compelling the network effect and product benefits are, to utilise a company's service. Given this, an important additional measure is to calculate the serviceable obtainable market, or SOM, to determine how many customers would realistically benefit from buying TWL's services. We have used our assessment of SAM to determine a level of achievability in our distinct period revenue estimates.

This can be seen visually in Figure 16 below:

Figure 16. Our TAM/SAM and SOM Framework for assessing market potential



Source: Forsyth Barr analysis

Focusing the TAM/SAM and SOM assessment onto TWL

While we have undertaken this assessment globally, looking more closely at TWL in its home market of New Zealand may be descriptive of the longer-term potential.

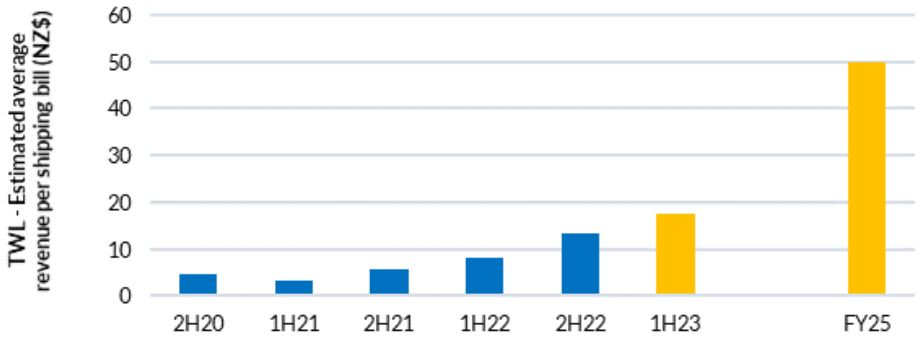
The New Zealand example

There are around 2.1m TEU movements in NZ annually. TWL has a strong presence in export customers but a currently un-developed market for imported TEUs. Whilst we consider capturing the import TEUs market as likely inevitable, as the network effect and staged market entry occurs, this will take time. Our analysis suggests that the total addressable market (TAM) for trade documentation compliance in New Zealand is NZ$16m for both import and export movements, with current service and pricing options. This implies TWL's current market share is ~23%, given that in FY22 TWL generated NZ$1.2m of transactional revenue in NZ and $0.4m of subscription revenues. We consider this to underestimate the potential, given TWL's ability to layer on value-added services. Our assessment of TWL's customers and product profile into the future see this TAM developing to NZ$27m when these additional service layers are added on. This, we consider, is more reflective of the potential for the product. In New Zealand, a reasonable level of the revenue uplift is coming from new services already in the process of being rolled out.

Bringing the TAM back to the SAM and then SOM sees the **potential revenue stream from New Zealand of NZ$7.0m to NZ$12.0m (4x to 7x current total NZ revenues).** The range and timing is reflective of how quickly new value added services can be implemented and adopted by customers.

In the medium term, on the higher end of these estimates a SOM from New Zealand of NZ$12m (7x FY22 revenues) appears achievable, with a full suite of value-added services like insurance, finance, AI analytics, etc., being offered across the customer base. Our expectations of average revenue per shipping bill grow, over time, as shown in Figure 17 below.

Figure 17. TWL — estimated average revenue per shipping bill and medium term added-value potential (NZ$)



Source: Company, Forsyth Barr analysis

Future revenue add-ons

TWL's current solutions can and will unlock future market opportunities. We consider the trade compliance documentation market as only the tip of the iceberg. We believe these opportunities are real and significant but several years out before providing any material revenue uplift. Given the vast quantities of data being collected on trade timing, processes, and volumes and developments in AI and big data, we envisage TWL offering data insights (without exposing trade secrets of individual customers) as a service in the reasonably near future. This could allow partner organisations to better manage their own networks, processes and costs by enabling better data-driven decision making and outcomes.

Global assessment — Total Addressable Market (TAM)

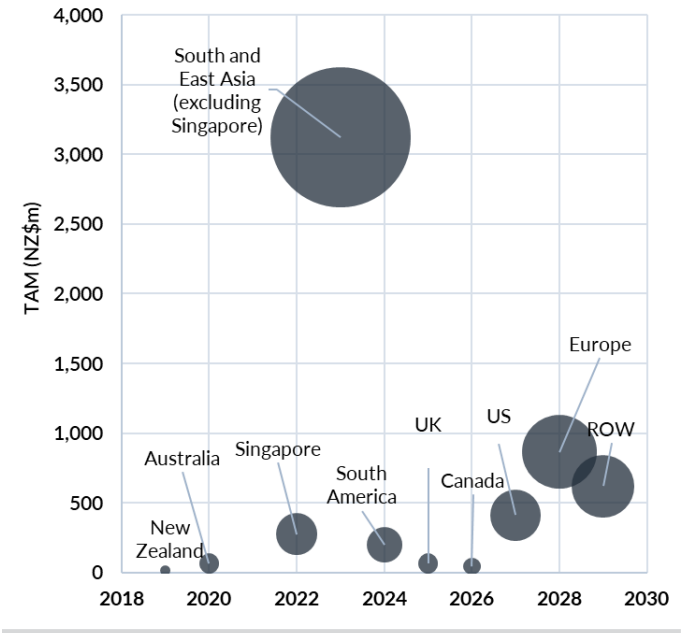
Our TAM calculation utilises global TEU data, segmented by geographies, and assumes a staggered penetration by TWL. Our forecasted market entry by geographies aligns with TWL's strategy to build a cross-border ecosystem in New Zealand, Australia, throughout Asia, South America and then globally. The current market focusses are on acquiring customers in New Zealand and Australia.

Today's current trade document solutions are a stepping stone to unlocking future market opportunities. TWL operates across some large markets, providing customers with a high level of benefit relative to cost, a key driver of customer acceptance and utilisation. Given this, and as the network effects start taking effect, we consider that the business model will build momentum over time. We assume that TWL will eventually achieve entry into most global markets, either organically or via acquisition, with varying degrees of success. In particular, we view it will have a significant, active presence in New Zealand and Australia and a growing, visible presence in Asia, South America and the United Kingdom.

Looking forward ten years, **we assess TAM as a global multibillion opportunity** as companies develop suites of value-added services for global trade participants. We expect this will yield higher average revenue per customer (ARPC). We consider the transactional trade compliance documentation market as the tip of the iceberg. As value-added services are incrementally added to the platform, such as trade finance, insurance, compliance, traceability, insights and other innovations, the potential value of ARPC grows on the trade ecosystem platform. These will drive substantial benefits, but it will be several years before any material revenue uplift is achieved. Further, given the vast quantities of data collected on trade timing, processes, and volumes and developments in AI and big data, we envisage these data offering data insights (without exposing trade secrets of individual customers) as a service in the foreseeable future. This could allow partner organisations to manage their networks, process trade better and remove costs by enabling better data-driven decision making.

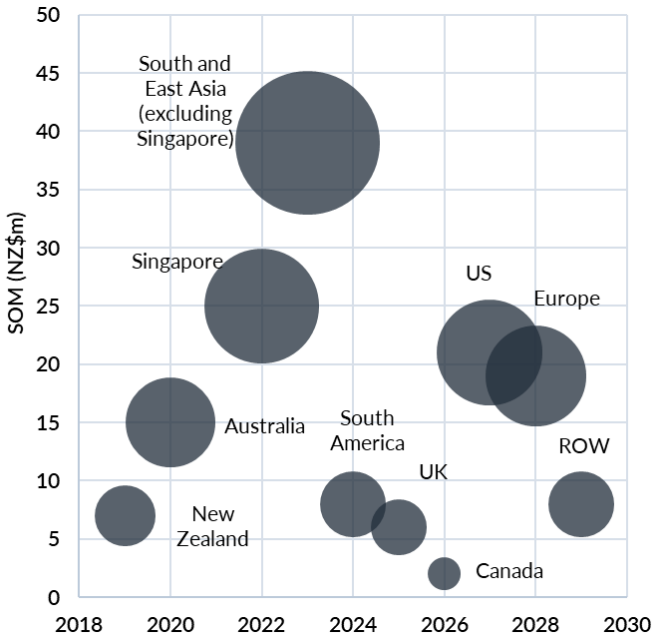
Our assessment of global TAM is shown in Figure 18 below .

Figure 18. TWL — Global Total Addressable Market (TAM) and Market Entry Timing estimates



Source: Forsyth Barr analysis

Figure 19. TWL — Global Serviceable Obtainable Market (SOM) and Market entry timing estimates (at low end of range)



Source: Forsyth Barr analysis

Global assessment — Serviceable Obtainable Market (SOM)

We estimate the global trade compliance documentation: **Serviceable Obtainable Market (SOM) for TWL to be between NZ$150m and NZ$250m**, see Figure 19 above. We assume that four TEUs drive one shipping bill multiplied by our estimates of ARPC. The assessment framework is seen in Figure 20 below.

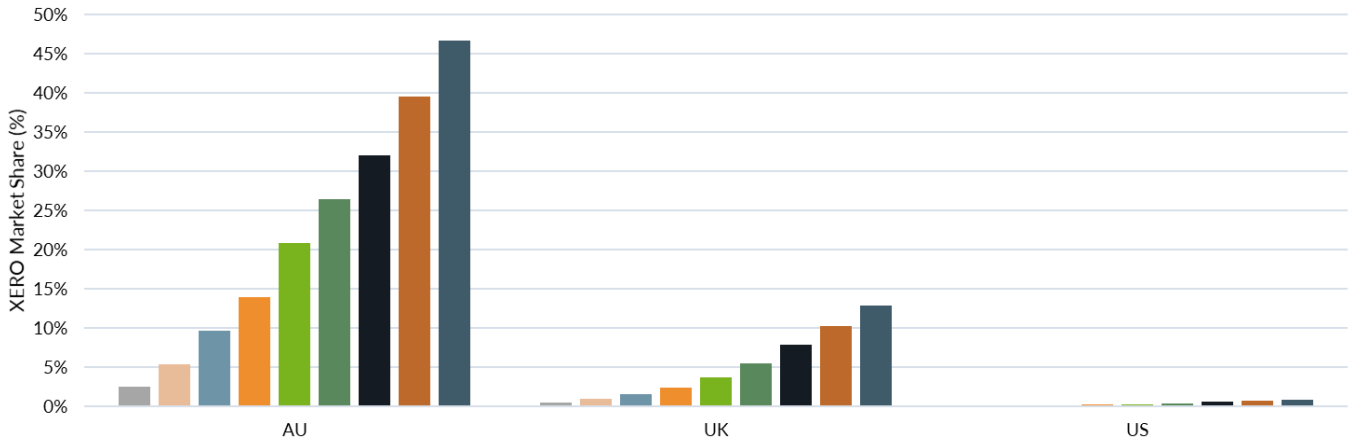
Figure 20. Our TAM/SAM and SOM Framework in action

Source: Forsyth Barr analysis

Assessing this market entry against global progress

Given an organic market entry strategy takes time, heavy investment and persistence, we endeavoured to assess how quickly such market entry takes to gain market share. In doing so, we analysed how quickly Xero has been able to enter into new markets. We used its successful market entry into: Australia, the progress in market development in the United Kingdom and the disappointing entry into the United States in the review. Our modelling and forecasts assume TWL captures only a portion of assessed SAM within ten years. While TWL will have home market advantage in NZ, as Xero did, and find Australia and adjacent markets easier to push into other market entries will likely be harder.

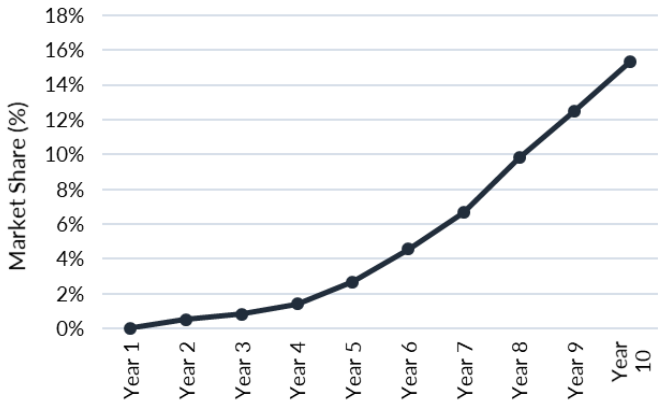
Figure 21. Xero — Market share by market over time (%)



Source: Xero, Forsyth Barr analysis

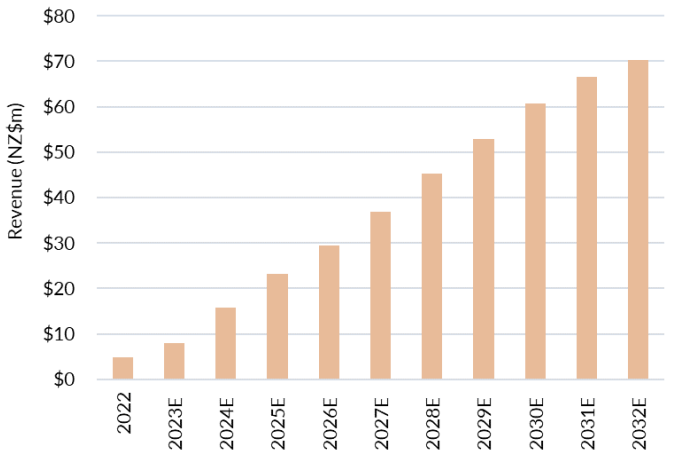
The average of these three market entries is shown in the Figure 22 below.

Figure 22. Xero (XRO) — derived organic market penetration (average market entry AU/UK/US)



Source: Xero, Forsyth Barr analysis

Figure 23. TWL — long run revenue estimates



Source: Forsyth Barr analysis

Given the work undertaken on Xero, our long term revenue estimates see TWL capturing around half its medium-term SOM under an organic market entrant strategy. This gives management potential to over-deliver via exceptional execution. This analysis also clearly indicates the need for an ongoing acquisition strategy, especially in gaining initial exposure to a new market. We see this forming a core part of each new market entry, with one or more acquisitions in each market, to obtain a critical mass closer to the tipping point of growth. We acknowledge a wide range of potential outcomes. Figure 23 shows that we anticipate around NZ$70m of revenues in FY32, including Rfider, just below half our low estimate of the global trade compliance documentation Serviceable Obtainable Market (SOM) for TWL of NZ$150m-NZ$250m. We expect acquisitions to fill part of this gap and likely expand the addressable markets TWL operates in, thereby increasing SOM.

4. Acquisition strategy to supercharge growth

We consider a crucial component in TWLs future growth strategy is via acquisitions. This has been a successful component in several of TWL's competitors — especially WiseTech and Descartes.

We believe a well-executed acquisition strategy could provide the following accretive benefits to TWL:

1. **Geographic expansion —** Access to new or developing existing markets. We would expect TWL to focus its acquisition search in Australia initially then toward Asia and South America.
2. **Product enhancement —** A decision either to build or buy will likely be undertaken to develop the full suite of desired services. Given time frames for developing in-house and the shortage of software developers globally, we expect the buy option to form a crucial part of completing the entire product offering.
3. **Enhancing staff/development resources —** Acquisitions can be used as a way of securing/building the development team given a very tight labour market in New Zealand. This may provide the ability to expedite R&D desires and gain R&D capability in other locations.
4. **Key customer access —** Acquisitions can at times be a relatively more cost effective method to gain a foothold into large scale clients. This could provide significant network effects longer-term and allow cross-sale opportunities of existing TWL product offerings.

Key to the success and integration of acquisitions will be management's ability to execute.

We believe that TWL's competitors are better capitalised and may offer significant competition for any larger scale acquisitions. As such, smaller acquisitions under the radar of the less prominent competitors are more likely than large, company changing acquisitions. The land grab in the TradeTech space has been going on for almost a decade already, with TWL actively participating since mid-2019. We would recommend TWL raises money early and often to accelerate its growth plans. This is in addition to our view of the need for a heavy programme of R&D to strengthen the value proposition, shorten time-frames for delivery and increase customer interoperability - thereby aiding drive the network effect. Given the capital requirements and its early stage in the revenue cycle, TWL will likely raise money multiple times over the coming years.

Historical acquisitions

TradeWindow has made seven acquisitions since its inception, ProDoc, IVS Origin, Hi-Tech Freight Solutions, Cyberfreight, Speedi, Freight Legend and now Rfider. The acquisition of IVS Origin was undertaken by way of a share sale, meaning the newly renamed Trade Window Origin Limited is now a wholly-owned subsidiary of Trade Window Limited. The other five acquisitions were assets only, meaning the assets were transferred to Trade Window Limited (or a subsidiary), and no separate legal entity was acquired. Further details of TWL's historical acquisitions are as follows:

Figure 24. TWL historical acquisitions

Target	Details
Prodoc	On 26 July 2019, TWL entered into an agreement for the purchase of assets from Prodoc. Consideration was NZ$4m comprising NZ$2.5m cash and NZ$1.5m in shares, issued at NZ$3.15 per share (implying a post 10:1 share exchange price of NZ$0.315 per share). The transaction was part funded through a NZ$1.35m five-year term loan and a NZ$150k revolving credit facility from ASB; and a NZ$637k vendor loan, for which the final repayment was made in July 2021.
IVS Origin (IVSOL)	On 14 October 2019, TWL agreed to purchase 51% of IVSOL. Consideration was NZ$433k in cash and shares. IVSOL was renamed Trade Window Origin Limited (TWOL). On 31 March 2021, TWL acquired the remaining 49%. Consideration was NZ$416k in shares. Full control over TWOL has allowed TWL to integrate the Certificate of Origin functionality into its Prodoc and Cube solutions. The web-based solution is now part of its ecosystem of products and can provide superior, expedited, and cost-effective Certificate of Origin service.
Hi-Tech Freight Solutions (Aust) Pty (HTFSL)	On 18 February 2021, TWL entered into an agreement for the purchase of the assets of Sydney based freight forwarding software company, HTFSL. Consideration was A$2.2m comprising A$750k in cash and A$1.5m in shares issued at a price of NZ$8.64 (implying a post 10:1 share exchange price of NZ$0.864 per share). The transaction was part funded through a NZ$420k five-year term loan from ASB.
Cyberfreight Solutions Pte. Limited (CSPL)	At the same time as HTFSL, TWL also acquired the assets of Cyberfreight Solutions (CSPL), a Singaporean company related to HTFSL for SG$5k cash. Full completion of these transactions occurred on 1 April 2021. HTFSL and CSPL, together known as “Cyberfreight”, had been operating a freight forwarding software platform for over 20 years, with a roster of over 250 customers spanning New Zealand, Australia, Singapore, China, Fiji, Papua New Guinea, Indonesia and Malaysia. Based on unaudited management accounts, Cyberfreight has booked unaudited revenue of approximately NZ$675k in the half year to September 2021. Cyberfreight has since been rebranded as "TradeWindow Freight". This acquisition was considered material given that it was strategically important in providing a customer base for TWL to cross-sell its newly developed products. It provided TWL with a cost-effective way to amass a high-quality customer base, access to freight management capabilities, and secure market share in Australia and further afield.
Speedi Software Limited (Speedi)	On 10 September 2021, TWL entered into an agreement for the purchase of the assets of Tauranga based border clearance software company, Speedi. At the time of the acquisition Speedi had been operating for over 30 years. Consideration was NZ$1.45 million comprising NZ$725k cash and NZ$725k in shares issued at a share price of NZ$9.20 per share (implying a post 10:1 share exchange price of $0.920 per share). The transaction was part funded through a NZ$725k five-year term loan from ASB. Full completion of the transaction occurred on 1 October 2021. This acquisition was not considered material given that the acquisition was for a specific, niche functionality that is not material to TWL’s overall product suite, as compared with TWL’s proposed market capitalisation on listing, the value of the acquisition is relatively immaterial.
FreightLegend	On 26 August 2021, TWL entered into an agreement to purchase the FreightLegend software solution from FreightLegend Limited. Consideration was NZ$100k in cash. Full completion of the transaction occurred on 4 October 2021. The FreightLegend business assets were acquired by TWL’s subsidiary TradeWindow Services Limited. FreightLegend will become a module of the TradeWindow Freight solution. FreightLegend is a cloud-based software application to help freight forwarders streamline how they prepare and track freight quotes. FreightLegend was the sole asset of FreightLegend Limited, a pre-revenue start-up business at the time of the acquisition, with only one trial customer. This acquisition was not considered material given that this was an acquisition of limited intellectual property only, with the value of the acquisition being NZ$100k.
Rfider Limited	On 17 May 2022, TWL announced a conditional agreement to acquire the business and assets of Rfider, an Auckland-based software company. The maximum purchase price is NZ$10m and the final purchase price will be proportional to the achievement of an aggregate NZ$4.2m in revenue over a two year period. The acquisition will be funded with an initial payment of NZ$2.5m in cash and the balance in TWL shares in two tranches. The transaction is conditional on TWL sourcing additional funding by 30 July 2022. Rfider has developed a mobile interface that can be rapidly deployed in complex supply chains to capture many points of data. It will help TWL extend its reach deeper into primary industry supply chains by providing traceability all the way back to the points of cultivation and production.

Source: Company, Forsyth Barr analysis

Pre-listing NZ$15m raising

Between May and September 2021 TWL raised NZ$15 million from new and existing shareholders at a subscription price of NZ$0.92 per share (after applying the 10:1 share consolidation from the original NZ$9.2011 per share offering). The equity was raised from 48 investors, including ASB Bank Limited and Quayside Holdings Limited, who purchased a combined 57.5% of the shares. The offer was initially made to existing investors, who took up 84.4% of the NZ$15 million, and 12 new wholesale investors who took up the remaining NZ$2.35 million. Additionally, between August and September 2021 there was a secondary sale conducted by three existing shareholders. They sold 195,462 shares to selected wholesale investors at the same price as the equity raising above.

Upcoming raise

Somewhat associated with the purchase of Rfider, which is conditional on satisfactory financing arrangements being made, we anticipate TWL raising additional capital in the coming months. We would not be surprised if TWL raised between NZ$10m and NZ$20m to fund the ongoing investment in its product set between now and the end of FY23.

5. TradeWindow to outgrow its peers

TWL is an early-stage Auckland based software company founded by AJ Smith (now CEO) and Kerry Friend (Executive Director) in December 2018. TWL provides solutions for exporters, importers, freight forwarders, customs brokers, and many other industry intermediaries to drive productivity, increase connectivity, and enhance visibility. Its digital trade platform, called Cube, is underpinned by blockchain technology and enables customers to provide supply chain partners with secure permissioned access to authenticated data needed to process a shipment. The company serves 450+ companies across many industries, including dairy, manufacturing, seed and grain, forestry, meat, wine, horticulture, seafood and others. Current customers are mainly New Zealand and Australia exporters sending products out to end markets, in the future it will offer broader geographic points of contact and both import, export, and cross border trade support.

Web 3.0 and disruptive change

TWL forms part of a new breed of Web 3.0 cloud-based companies using Distributed Ledger Technology (DLT) and machine-based understanding of data to create more intelligent, connected and open interactions between parties. TWL is targeting completions of a full suite of new products over the next twelve to eighteen months. This will have a disruptive effect on the old paper-based international trade processes and drive significant economic and efficiency benefits to customers and intermediaries. It also forms a distinguishing feature against competitors. Distributed Ledger Technology (DLT) refers to the technological infrastructure and protocols that allow simultaneous access, validation, and record updating in an immutable manner across a network spread across multiple entities or locations. TWL securely records transactions from customers on the Blockchain*, which is a type of DLT.

*Blockchain and DLTs are not cryptocurrencies; however, cryptocurrencies use Blockchain as their foundation ledger technology. See "Appendix: What is Blockchain?" in the back of this report for more information.

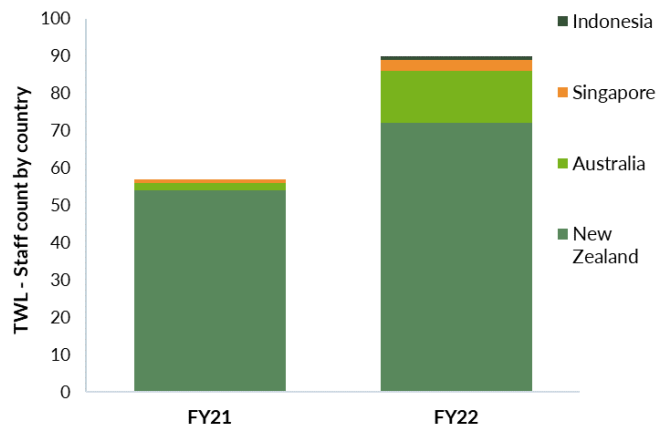
Locations

TWL has a presence in New Zealand, Australia and Asia, with operations in Auckland, Sydney and Singapore. The Singapore operation and customers came from the acquisition of Cyberfreight and have established relationships with sales agents across the Philippines and Thailand. This provided a relatively capital-light method for expansion within the region. A New Zealand Trade and Enterprise (NZTE) Springboard grant funded a market entry study that identified Chile shared many attractive characteristics found in the New Zealand and Australian export sectors. We understand that TWL will consider its entry into South America over the coming years as to which would the optimal location for entry into the large South American market.

Staff

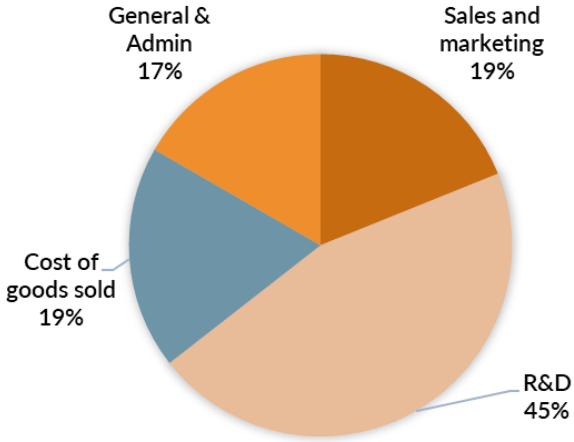
As of March 2022, TWL had 90 employees across software development, cybersecurity, supply chain, sales and marketing, finance, customer support, and human resources. TWL is focussed on cultivating a high-performance team culture which is supported by a focus on well-being. Employees are provided with on-the-job training, paid courses, paid health insurance, flexible working arrangements and additional leave days, among other benefits.

Figure 25. TWL — staff count by country (March 2022)



Source: Company, Forsyth Barr Analysis

Figure 26. TWL — staff by area of operations (March 2022)



Source: Company, Forsyth Barr Analysis

New Zealand's technology skills crisis

The constrained specialist labour pool is a prevailing risk to TWL and other New Zealand tech-focussed businesses. Strong demand from technology companies has made the search for adequate staff difficult and expensive. Industry body NZTech estimated that up to 10,000 roles sat vacant in high-tech firms across the country in 2021. New Zealand tech companies have had to tap into technologically skilled talent internationally to retain their cutting edge position. Bruce Jarvis, Head of Software-as-a-Service at Callaghan Innovation, noted, "*we're [New Zealand is] not short of entrepreneurs. The biggest constraint here is the talent to take those ideas through the growth stage, through the international stage.*"

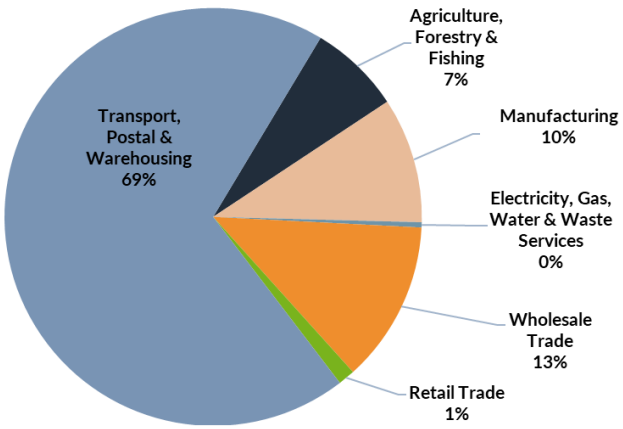
We expect TWL to adapt to this new world, looking for talent in its Singaporean office or via outsourcing partners, to flex as and when the resource is needed.

Customers

TWL has more than +450 customers across the dairy, meat, horticulture, seafood, consumer products, manufacturing, forestry, and logistics sectors. Its largest sector is freight forwarders and customs brokers, comprising around 250+ SME plus large customers subscribing to its software. Some of their high profile customers include Synlait, Open Country Dairy, Greenlea Premier Meat, ANZCO, Silver Fern Farms, T&G Global, Sealord, Independent Fisheries, Cedenco Foods, Whittakers, RedStag, Pac Forest Products, Wallace International, Airwave Australia, Hanes, and UB Freight. See two customer profiles later in this document.

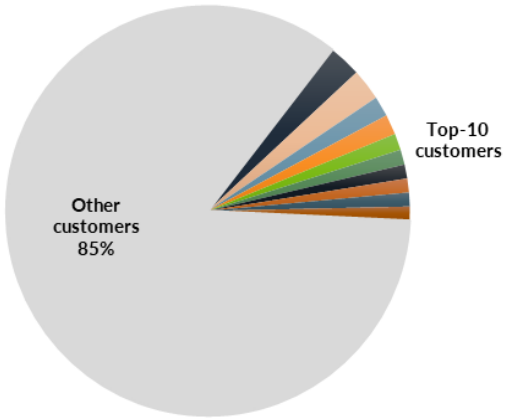
TWL has an impressive and diverse range of customers, none of which represent a significant portion of revenues. We believe this low level of customer concentration bodes well for significantly lowering investor views of contract risk. Its top-ten customers combined represent circa 15% of revenue, which we consider excellent in relation to other technology stocks.

Figure 27. TWL — customers by sector (March 2022)



Source: Company, Forsyth Barr Analysis

Figure 28. TWL — customer concentration (March 2022)



Source: Company, Forsyth Barr Analysis

Business model

TWL's customers purchase software licences to access one or more of the company's solutions. The types of software licences vary depending on customer size, sales channel and legacy customer agreements. Each of TWL's products derive revenues differently but collectively TWL has five revenue segments:

1. **Transactional revenues** — Created on the back of a set of trade documents, or the sharing of a set of trade documents with revenues dependant on volume. Customers are invoiced monthly in arrears.
2. **Subscription revenues** —A fixed subscription fee for access to the solution, varying depending on the number of solutions subscribed for and the number of users of the solution. Customers are invoiced on a monthly, quarterly, or annual basis throughout the term of the contract.
3. **Installation revenues** — Varies depending on the complexity of the installation and services required to assist with implementation. Customers are invoiced on an upfront basis or on a monthly instalment basis.
4. **Service revenues** — Service charges are for ad-hoc customisation or enhancement requests. Customers are invoiced monthly on completion of the work.
5. **Certificates** & other revenues — these are non-Subscriber revenues which are transactional revenues but billed in segments.

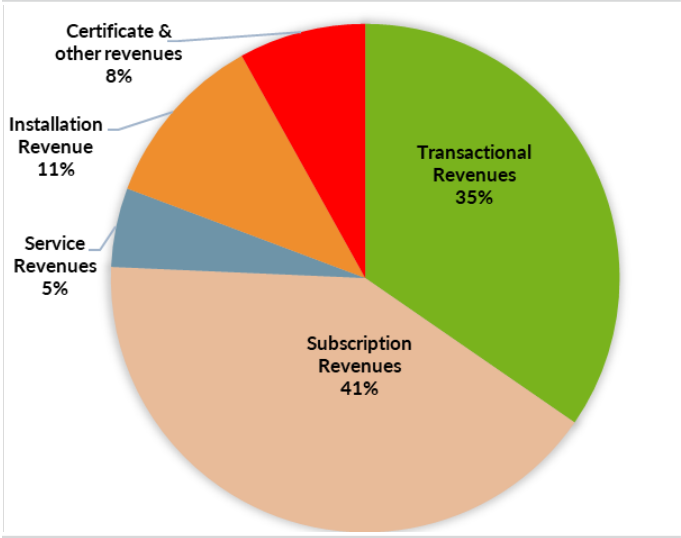
Figure 29. TWL — product revenue sources

Product	Revenue
TradeWindow Cube	Subscription fees — monthly
	Transaction fees — calculated per document set created/shared
TradeWindow Prodoc	Subscription fees — monthly
	Transaction fees — calculated per document set created
TradeWindow Freight	Subscription fees — calculated per module and number of users
TradeWindow ExpressDoc	Subscription fees — monthly
TradeWindow ExpressFreight	Subscription fees — monthly
Rfider	Transaction Fees— monthly
	Subscription fees — monthly

Source: Forsyth Barr analysis

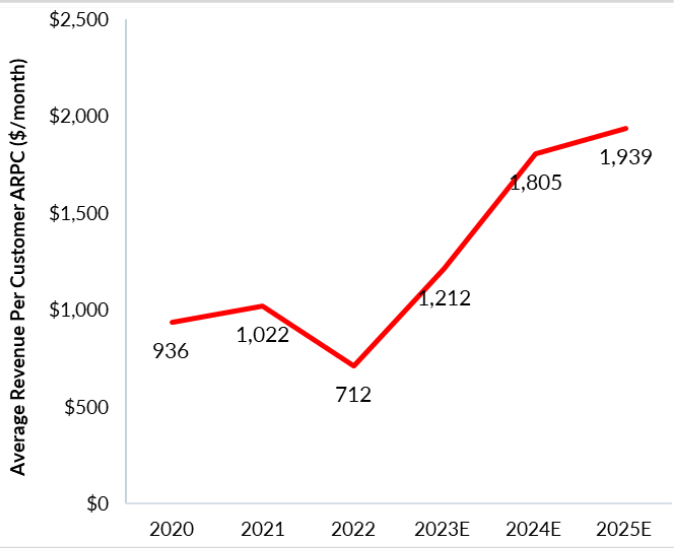
The transaction costs charged by TWL, of circa NZ$10 to NZ$30 per set of shipment documents, are materially lower than that experienced via manual paper processes, including document preparation costs, courier costs, and manual handling costs. Customers report saving 70–90% by implementing digital processes over manual ones. We envisage, with value-added services, that what TWL charges per billable document approaching NZ$50+ over time.

Figure 30. TWL — Revenue by Line (FY22)



Source: Company, Forsyth Barr Analysis

Figure 31. TWL — ARPC (historical and forecast) per month (NZ$)



Source: Company, Forsyth Barr Analysis

Figure 32. TWL — segmental revenue information (NZ$, unless otherwise stated)

	2020	2021	2022	2023E	2024E	2025E
Transactional Revenues	226,603	593,000	1,342,000	3,088,800	5,916,000	10,512,000
Segment Revenue Per Cust. estimate (NZ$/month)		445	703	1,300	1,700	2,000
Subscription Revenues	130,674	420,313	1,593,000	3,253,920	7,222,800	9,201,154
Segment Revenue Per Cust. estimate (NZ$/month)		316	341	586	963	992
Service Revenues	-	143,777	195,000	224,588	295,995	481,065
Segment Revenue Per Cust. estimate (NZ$/month)		108	42	43	43	44
Installation Revenue	-	204,832	434,179	627,000	1,450,405	2,288,305
Segment Revenue Per Cust. (NZ$/new customer)		14,030	16,699	15,000	15,000	15,000
Certificate & other revenues	-	280,000	313,000	359,950	413,943	476,034
Combined Group						
Trading Revenue (NZ$)	**357,277**	**1,641,922**	**3,877,179**	**7,554,258**	**15,299,142**	**22,958,558**
Group Revenue Per Cust. estimate (NZ$/month)	**936**	**1,022**	**712**	**1,212**	**1,805**	**1,939**

Source: Forsyth Barr analysis

FY22 result summary

TWL's FY22 results reflected good progress in building a connected global trade platform for exporters, importers, freight forwarders and customs brokers. Overall, the result reflected new customer additions, existing customers purchasing more services and growth via acquisitions. In FY22 TWL made three acquisitions; freight forwarding software solution Cyberfreight, customs clearance software solution SpeEDI and freight quotation software solution FreightLegend. Overall, FY22 showed:

- Total revenue came in at NZ$4.9m, +108%, with trading revenue rising +136%.
- Existing customers' average monthly billings grew +16% YoY and organic trading revenue +32%.
- Gross margin increased to 50%, up from 36% in FY21.
- Geographically, the revenue split showed the foundations of the Australian business developing with total revenues of +519%, while revenues in New Zealand were +67%.
- The customer retention rate was 94%.
- EBITDA loss increased to NZ$9.5m, compared to an FY21 EBITDA loss of NZ$5.9m.
- The company raised NZ$15m of new capital over the period.
- At the end of the period, cash and cash equivalents were $5.9m, up from $1.4m in the pcp.
- Total operating expenses were NZ$14.4 million, up +76% (FY21: NZ$8.2 million), reflecting R&D spending on building and commercialising a scalable global trade platform.

Following the FY22 result, TWL announced the conditional purchase of Rfider, strengthening TWL's supply chain visibility offering.

Figure 33. TWL — FY21 versus FY22 Financial results (NZ$)

	FY21 Actual	FY22 Actual	Change
Revenue	1,641,840	3,877,617	+136%
Other income	701,936	999,330	+42%
Total Revenues	**2,343,776**	**4,876,947**	**+108%**
Employee benefits expense	(6,342,880)	(10,830,303)	+71%
Depreciation and amortisation	(1,069,502)	(1,666,826)	+56%
Other expenses	(1,864,513)	(3,593,903)	+93%
Total operating expenses	**(9,276,895)**	**(16,091,032)**	**+73%**
Operating profit / EBIT	**(6,933,119)**	**(11,214,085)**	**-62%**
Operating EBITDA	(5,863,617)	(9,547,259)	-63%
Net financing costs	(141,037)	(169,673)	
Profit before income tax	(7,074,156)	(11,383,758)	-61%
Income tax benefit	475,902	560,000	
Net Profit (Loss) for the Year	**(6,598,254)**	**(10,823,758)**	**-64%**
Exchange differences on translation of foreign operations	847	136	
Loss for the year from discontinued operations	-	-	
Comprehensive Net Income/(loss) for the year	(6,597,407)	(10,823,622)	

Source: Forsyth Barr analysis

In the following SWOT table we have summarised our view of the company's key Strengths, Weaknesses, Opportunities, and Threats.

Figure 34. TWL — SWOT analysis

Strengths	Weaknesses
■ TWL's high standards of data protection and security that are independently tested and audited. ■ TWL products have interoperability with an ecosystem of border agencies, ocean carriers, ports, banks, and insurance companies. This is supporting TWL's competitive moat. ■ TWL has experience in making acquisitions to build a customer base and product portfolio. This could lead to a more rapid level of scale relative to just an organic sales process. TWL has structured past acquisitions with shares as part of the consideration to ensure alignment between the vendor and TWL. ■ TWL has early mover advantage in the commercialisation of blockchain technology; temporarily adding to its competitive moat. ■ TWL has a number of well recognised brands as customers that have gained operational efficiencies from using its software solutions. ■ Network effects are already beginning as initial customers have generated demand for TWL by attracting other businesses in their sector who are fast followers seeking to realise similar operational efficiencies. ■ Few competitors offer a spectrum products as TWL is targeting. ■ Very low level of customer concentration — lowering client risk. ■ Management has significant ownership of the business, aligning interests. ■ TWL uses open source framework with customised aspects added on top allowing for more robust and lower costs of development. ■ Being listed allows for an easier capital raising path than many non-listed peers and a way of issuing stock for acquisitions.	■ TWL will need to frequently raise money for acquisitions and fund the negative cash flow of R&D. ■ Most revenues are currently from NZ and Australian export companies. ■ Reliant on progress within government departments for digitising trade practises. ■ M&A will need to form a material part of revenue growth for the company to gain critical mass globally. ■ ASB Bank has NZ bank exclusivity on back-end integration until the end of 2022. Although other NZ banks can access the Cube via the Cloud. ■ TWL is a relatively new company to the TradeTech market, and given its regional exposures, TWL's global brand awareness is low.
Opportunities	**Threats**
■ The market segments are large and new geographies have similar product and customers TWL can sell to. ■ COVID-19 has likely accelerated the transition to digital trade documents and companies' digital transformations, especially during times of supply chain disruption. ■ TWL's current customers are primarily located in New Zealand and Australia, most of which are reliant on international trade for a significant proportion of their revenues. ■ Deeper penetration of existing customers by cross-selling various products thereby improving average revenues per customer. ■ While the global M&A race for scale in the sector has started, there remains several acquisition opportunities to gain critical mass more quickly. ■ Several significant global and regional partnerships are progressing with plans to speed up the implementation of digital trade. ■ Serving large importers — where TWL only has limited penetration. ■ Data plus analytical capability provides access to adjacent market opportunities including trade finance.	■ Security breaches and unauthorised access to customer data could result in significantly negative outcomes. ■ Real or perceived errors, failures, defects or bugs, especially when updates are released may impact customer perceptions and loyalty. ■ A limited pool of specialist labour and strong demand from other technology industries may make finding adequate staff difficult and more expensive. ■ Key personnel who have been the principal driving forces behind its growth may leave. ■ Disruption to customer activity such as downtime or errors as TWL frequently introduces new features, updates and add-ons. ■ TWL R&D projects may not produce the desired features. ■ Changes to government policies or sanctions could slow trade between countries. ■ There is an inherent risk with acquisitions, including the risk of acquired businesses not producing the forecasted revenue. ■ Larger competitors operate in parts of the market with deeper pockets, providing them resources to enhance their offering and better access to capital to compete for acquisitions. ■ Slower penetration into existing customers. ■ Intellectual property (IP) may be misused or misappropriated. ■ TWL is operating in a nascent market so is a higher risk investment than more established businesses. ■ TWL's performance and commercialisation of products at scale depends on the widespread adoption of digital trade solutions by mainstream exporters, importers, freight forwarders and customs brokers. ■ Given the need to set standards upon digitisation, being the first to help countries digitise may be necessary to ensure interoperability with government agencies.

Source: Forsyth Barr analysis

TradeWindow — Product summary

TWL's solutions incorporate many innovative technologies, including blockchain, to aid security combined with markedly improving the traceability of the data, which enables trust between parties. Trust, therefore, is a crucial outcome. Cloud-based computing infrastructure provides customers with the flexibility of accessing the platform at any time, from any location, with internet connectivity on a range of devices, including desktop computers, laptops, tablets and smartphones. Its solutions are industry agnostic and scalable with different sized organisations from SME to large enterprises. It currently has eight solutions designed to be adopted in increments, delivering increasing value to customers. While we are at the beginning of a new era of trade digitalisation, as a collective package, we consider TWL's key value propositions for customers is the software's ability to:

- Improve productivity
- Reduce costs
- Deliver better connectivity to ecosystem partners operating on sector specific solutions. TradeWindow Cube is designed to be inter-operable with the software platforms used by ocean carriers, banks, border agencies and port authorities
- Enable better data-driven decision making and outcomes
- Aid information visibility and accessibility
- Enhance the reliability of data and enable quick identification and fixing of errors. This reduces the risk associated with errors, e.g. goods being held up at the border because shipping documents have not been prepared correctly.
- Improve security
- Reduce non-tariff trade barriers

Once customers and intermediaries implement the solutions the benefits listed above will flow to all. This will create a network effect where other system players will find it necessary to be involved and, as such, will likely create high barriers to entry over time. The logic being that a digital transformation starts within a customer's business by streamlining back office processes then connecting with their supply chain partners. TWL has itself developed and aggregated the benefits into three broader categories:

1. **Productivity** — Digitises back end operations for superior efficiency
2. **Connectivity** — Connects permissioned partners across the supply chain ecosystem
3. **Visibility** — Repurposes, aggregates and enriches data captured from the other solutions

Figure 35. TWL's products fit across trade facilitation

Source: Company

Productivity

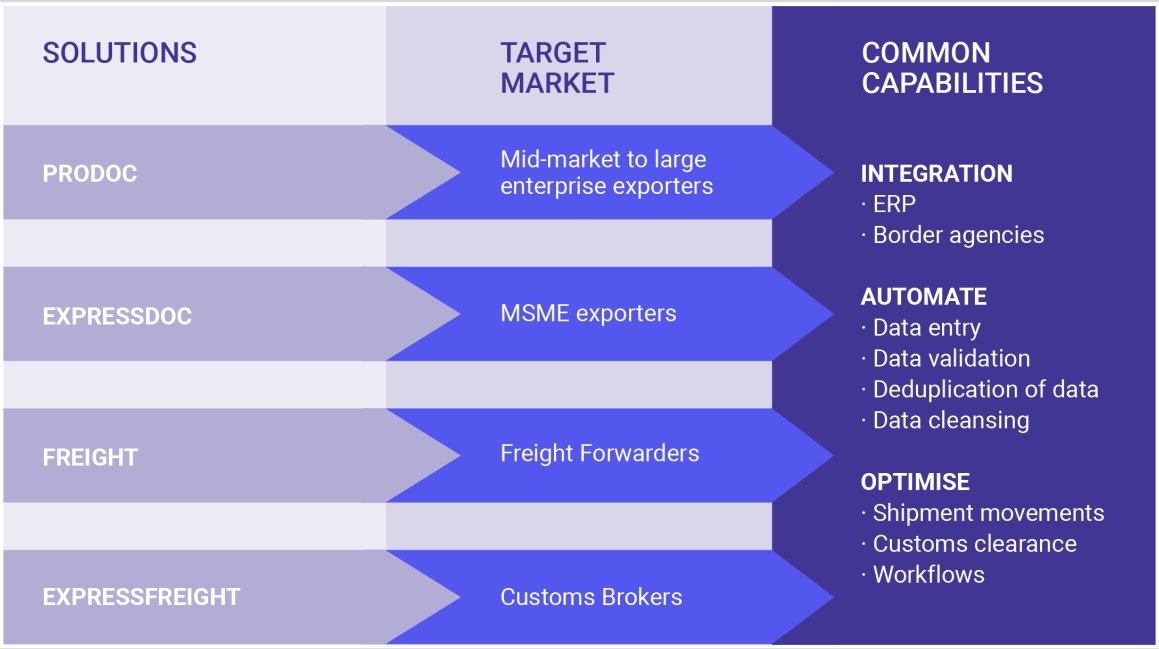
TWL's Prodoc, ExpressDoc, Freight, and ExpressFreight solutions are designed for exporters, importers, freight forwarders and customs brokers to run critical business processes. Solutions are purpose-built, each designed to capture data at source and automate workflows to deliver efficiency, accuracy and quality for all involved. Integration into Cube enables automation of cross-organisational workflow, with data available from the source in near real-time.

Common capabilities across TWL's Productivity solutions include:

- **Third-party integrations** — Seamless connectivity with Enterprise Resource Planning ("ERP") systems and border agencies
- **Automated data-entry** —Capture data once at source with edits syncing across documents and modules. Eliminates manual data entry, duplication of work and reduces human error
- **Optimise workflow** — Efficient logical workflow and interactions with key partners across the supply chain ecosystem

See: https://tradewindow.io/solutions/productivity

Figure 36. TWL — overview of productivity solutions



Source: Company

TradeWindow Prodoc

Prodoc is a customisable enterprise document solution designed to meet the demands of mid-market to large enterprise exporters trading internationally. Prodoc is a flexible solution designed to leverage customers' IT investments with integration into either on-premise or cloud-based ERP systems. Prodoc integrates systems used by border agencies for compliance submission. As of September 2021, it alone facilitated around NZ$34 billion per year of trade transactions. Equating to 56% of New Zealand's total merchandise exports by value being either partly or fully digitalised through TWL's core digital documentation solution — amounting to one million export documents per year.

TradeWindow Freight

Freight builds on the 20+ year legacy of Cyberfreight (which it acquired in April 2021) combined with the new generation technology smarts of TWL. Freight is a modular solution for freight forwarding operations from order management to warehousing. Modules can be combined to deliver an end-to-end freight forwarding focussed ERP system. Core capabilities include accounts, customer relationship management (CRM), container freight station, customs, e-commerce, export documents, freight, customs, order tracking, local transport, shipping and airlines, and warehousing.

TradeWindow ExpressDoc (https://app.tradewindow.io/doc)

ExpressDoc is an SaaS cloud-based, self-service, export documentation solution designed to meet the needs of a small and mid-size enterprise (SME) at the start of their export journey. ExpressDoc captures data at source through an Application Programming Interface ("API") with cloud-based accounting software solution Xero, with MYOB to follow soon. ExpressDoc is in beta testing with a commercial release anticipated for Q1 FY23.

TradeWindow ExpressFreight/SpedEDI Software

ExpressFreight, currently named SpeEDI Software, is a cloud-based cargo reporting and border clearance solution targeted towards shipping lines and their agents, air freight couriers, and independent customs bonded stores operators. ExpressFreight eliminates the need for manual data entry and connects with New Zealand border agencies through Electronic Data Interchange ("EDI") connectivity.

Connectivity

Designed to connect all parties through integration into incumbent systems used in each part of the supply chain, including:

- **Commercial —** ERP systems used by exporters and importers, including SAP, Microsoft Dynamics 365, Oracle, NetSuite, along with sector specific solutions.
- **Logistics —** Systems used by organisations to secure bookings with shipping lines, airlines, and port and terminal operators. Current connections include INTTRA, CargoSmart and PortConnect.
- **Finance —** Systems used by large financial institutions including SWIFT, the messaging system that connects financial institutions and large corporates across the globe, and CGI Trade360, a trade finance back-office solution.
- **Government —** Systems used by border agencies, including Trade Single Windows throughout Asia.

See: https://tradewindow.io/solutions/connectivity

TradeWindow Cube

TWL's Cube solution enables organisations involved in global trade to share mission-critical data securely and collaborate with partners across the supply chain ecosystem. Trusted collaboration using enterprise-grade security underpinned by blockchain technology. Permissioned parties can view and edit, with actions recorded on an immutable audit trail.

Key features in Cube currently include:

- **Origin —** Online fast turnaround electronic Certificate of Origin service.
- **Vault —** Scalable cloud-based data vault approved by The New Zealand Customs Service and New Zealand Inland Revenue.
- **Bookings and scheduling —** Seamless access to INTTRA and CargoSmart, the booking systems used by the world's largest shipping lines.

In January 2022, TWL announced the integration of Mastercard's payment network and technology with Cube. The partnership will improve trust between trading partners and support event-based payment triggers, enabling earlier payment options and better reconciliation. Security is a critical element of this, allowing payments to trigger specific events at the satisfaction of requirements. We would envisage numerous similar partnerships, similar to the Mastercard partnership, over time to improve interoperability.

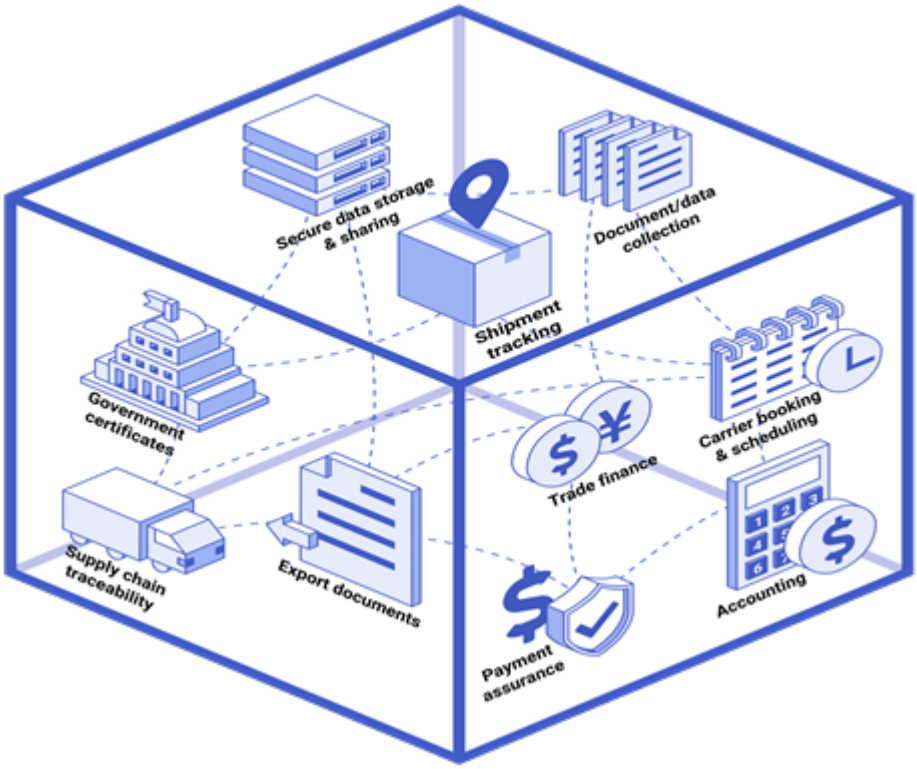
In March 2022, TWL announced a partnership with Vero Marine insurance, part of the Suncorp Insurance Group. As part of this initiative, Vero Marine will be the first insurer in New Zealand to offer its marine insurance certificates digitally. Removing the need to print paper certificates and courier them between interested parties will undoubtedly improve efficiency.

In April 2022, TWL announced a partnership with PortConnect, a comprehensive online cargo management system. The partnership will offer an additional layer of supply chain visibility for TWL customers through PortConnect's container and vessel data for the Ports of Auckland, Port of Tauranga, Timaru Container Terminal, and Lyttleton Port Company, which process more than 70% of New Zealand's exports.

These industry partnerships will likely become common and integral to building the network. As interoperability develops over time in each market, the network benefits will flow to all parties in different counties and industries. The network effect explains that value is derived from the connections between organisations on the network interacting with each other to benefit the entire group. As the size of the network increases, the network benefits accrue to those on the network and participants become increasingly compelled

to utilise the platform. This creates a positive reinforcing cycle and builds the barriers to others entering the market. Being the first to provide these scale network benefits becomes increasingly crucial to sector companies achieving success.

Figure 37. TWL's Cube visualised



Source: Company

TradeWindow Origin (https://origin.tradewindow.io/)

Origin is an automated Certificate of Origin issuer authorised by New Zealand Customs. The service has approved over 100,000 Certificates of Origin (CFTA, AANZFTA, Non-FTA origin certificates, RCEP), covering markets and industries worldwide, with a client base of over 250 New Zealand exporters and freight forwarders. Origin meets quality, performance, technical expertise, competence, and professional judgment standards. The service operates to government regulations, national and international standards. It operates under ISO 27001, 17020, and 9001. Origin's benefits:

- Offers quick turnaround time for Certificate of Origin documents, including afterhours and weekends.
- Empowers teams with in-depth specialised knowledge.
- Ensures the company stays up-to-date with regulations, standards and rule changes.
- Makes submitting certificates hassle-free as it learns and stores products and consignees for automation, tracks and traces certificates and offers layers of security to ensure the integrity and protection of data.
- Seamlessly integrates into TWL solutions (once Prodoc is superseeded by Cube).

Visibility

TradeWindow Assure (https://tradewindow.io/solutions/visibility)

TWL's Assure solution enhances transparency both within organisations and across the supply chain. Assure enables organisations to re-use data to build trust with businesses and consumers. Customers can provide parties with permissioned access to blockchain verified records that prove end-to-end traceability of goods. Assure use cases include:

- **Data-driven story telling** — securely captured and verified data to prove the provenance and authenticity of particular goods.
- **Risk management —** proprietary algorithms and advanced cryptography can be used to detect patterns of fraudulent activity.

Rfider's (https://www.rfider.com/) functionality will strengthen TWL's offering for customers who compete on transparency of origin, ethical practices, sustainability and quality. It also broadens TWL's offerings to customers beyond the export operations team to help solve broader issues of concern to the marketing team, and senior management/board with respect to marketing claims of sustainability and verification for ESG reporting including 1) **Mobile interface** that can be rapidly deployed in complex supply chains

to capture many points of data, and 2) **Deeper reach** into primary industry supply chains by providing traceability all the way back to the points of cultivation and production.

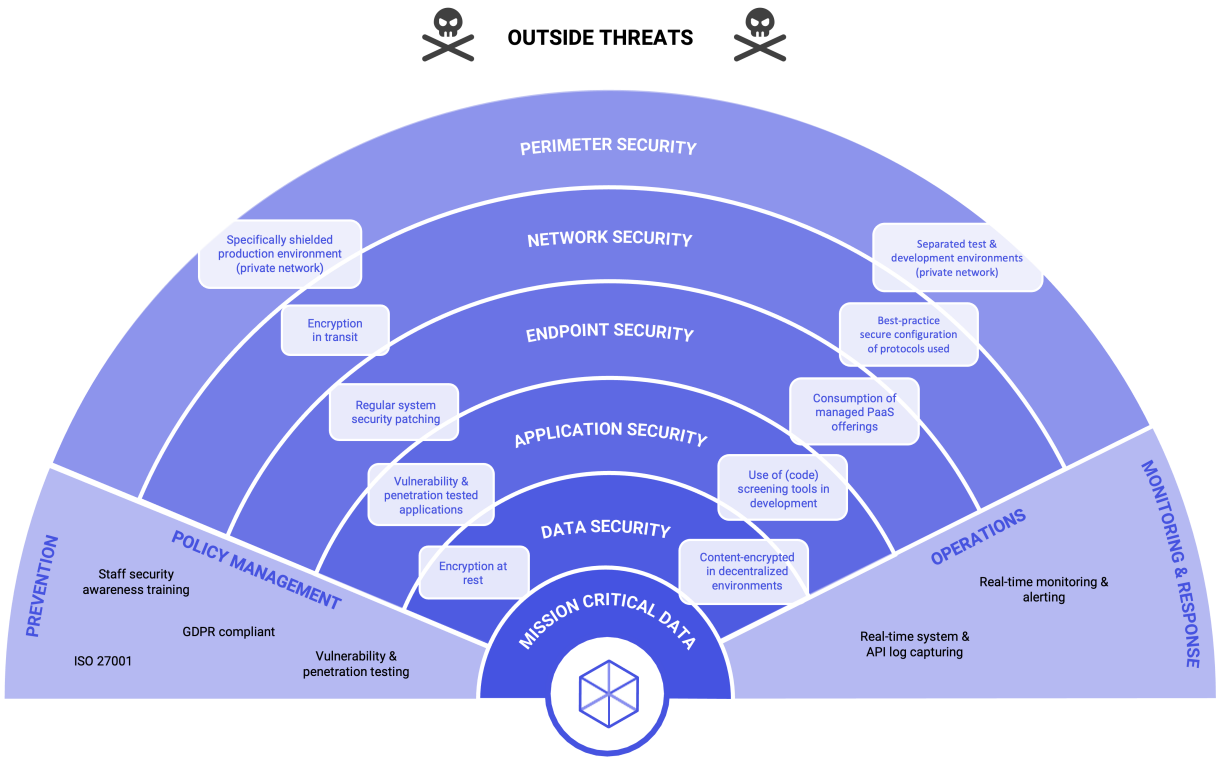
Cybercrime and security features

An interesting outcome of the COVID-19 pandemic has been a massive increase in cybercrime globally. The costs to businesses, either through general business disruption, the extra costs of fighting attacks, damage to their brand or even the ransom paid for release, are enormous. Global security specialists have suggested that this has cost businesses billions of dollars globally.

Driven by imposed lockdowns and work from home mandates, more people have been confined in their homes with many more hours online each day. For the fraudsters this has been a boon. Cybercriminals have taken advantage of the situation, causing mayhem for businesses and individuals. Hackers have been sending more significant volumes of malware like ransomware, viruses, worms, trojan horses, and spyware that has been increasingly sophisticated and challenging to detect. Unsuspecting workers have failed to recognise the threats and exposed organisations to them.

It is, therefore, an essential feature that TWL's security systems are seen as a solution to reducing this risk for potential customers. This provides both an opportunity and risk to TWL that needs to be carefully managed. Core to the TWL offering is a suite of security measures. See Figure 38 below. At its heart is a drive for industry best practice management of security risks, encryption, permissioned access, training, third party certifications and the use of blockchain for improving security (see the blockchain Appendix for background explanations and information). As such, we consider cybercrime and the security features of TWL's offering as more likely a positive to customer implementation than a hindrance to growth.

Figure 38. TWL — security measures



Source: Company

Certifications

TWL has achieved three certifications as part of building credibility and engendering trust in their solutions:

- **ISO 9001 Quality Management Systems —** The business operates so the products meet customer and regulatory requirements.
- **ISO 27001 Security Standards —** The information security management framework includes all legal, physical and technical controls involved in TWL's information risk management processes.
- **PAS 99 Integrated Management Systems —** The world's first specification for integrated management systems that streamline operations, align all common standard requirements, and cut separate audits and administration costs.

Customer stories

Whittaker's

Whittaker's is an industry-leading confectionery manufacturer whose primary export markets are Australia, China, Canada and Singapore. It exports hundreds of TEU (twenty-foot equivalent container units) out to many end markets every year. Daniel Charpentier, Whittaker's Logistics Manager, said, "*We have quite a complex supply chain ... there's a lot of stakeholders involved, and so we have to get it right*". "*Within three months* [of implementation]*, a fully-fledged export documentation system was functioning ... that allows us to really automate processes*". Whittaker's was an early adopter and development partner for Prodoc. Whittaker's says "*that cut our average time producing documents by an hour and a half. What used to take close to two hours to produce now takes thirty minutes*".

Whittaker's also recently onboarded TradeWindow Cube. Cube now plays a pivotal role in Whittaker's export process, managing all communications with New Zealand Customs, the Ministry for Primary Industries and Whittaker's export customer base. For example, Cube now allows them to conduct an entirely paperless trade with customers in Singapore. Whittaker's has found the customisation required pretty easy to implement, and development response times of TWL for help as very good.

Daniel said, "*Shipping is a very traditional sector, and COVID-19 has really forced people to think differently. The difficulties and issues that have arisen throughout the last two years have actually given all exporters that are using digital solutions (not only Whittaker's) the ability to demonstrate to their supply chain the benefits of having a platform such as Cube*". He further commented on the complex nature of supply chains "*that is probably one of the biggest benefits that we've seen is, it just takes the noise out*". "*It comes down to de-risking our supply chain. The more we know, the more control we have. That's one of the elements or components of this system, is that it provides us with data. It gives us insights into our shipments.*" Whittaker's uses TWL products exporting to 20 different markets.

On the cost of the system, Whittaker's see TWL's suite as a cost-saving tool in that "*if we didn't have a system such as TradeWindow Prodoc and Cube that would cost us more, we would need to have more heads.*"

Whittaker's is investigating the implementation of TradeWindow Assure, for improving traceability and integrity of its supply chain, and would hope to see TWL's suite implemented to help manage its inwards supply chain management in the future.

Jack Link's

Jack Link's is a high-quality beef jerky manufacturer that has operated in New Zealand since 2002. The Company creates around 560,000 packets of jerky every week, with most exported to the US, Australia, Japan, Korea, and Singapore.

TWL has helped Jack Link's achieve a 33% reduction in documentation errors. Mike Millett, Jack Link's Commercial Manager, said, *"Our data accuracy was far higher once onboarding TradeWindow Prodoc, and the solution has been far easier to use, we no longer spend half an hour working to fix an issue like we did on the old software"*. On an export basis, all the company's documentation and shipping documentation goes through the TWL product. In the past, required forms were generally sent by courier up to the customers, as many countries don't accept emailed copies of documents. In light of inefficient spreadsheets, document errors and the double-handling of data, the TWL Prodoc system was selected for use. Mike said, *"there is a whole raft of different rules in different regions, different countries, they all have their own set of rules"* so TWL's provides simplicity.

The Company also became an early adopter of the Cube solution. Cube has allowed Jack Link's to conduct secure paperless trade into Australia and the USA. The Company thinks that as paperless trade becomes operational in other markets, it "will be a game changer". The Company can also display its supply chain provenance (a validated history of farm to table), which is a requirement in many markets for food exports. Mike said, *"we could upload the whole set of docs straight into Cube. It's secure. It's got a blockchain security so we can upload it. Customers can then download it from Cube and they would have the documentation available to do preclearance on shipping"*.

On service and TWL's response rate to requests for changes in documentation, Jack Link's team considered that TWL *"bend over backwards to help us solve any problems"*.

Key competitors

Regarding the competitor set, TWL operates across various TradeTech segments. This chapter highlights a few competitors and provides some extra detail but is not intended to create an exhaustive list of industry players. We found during our investigations that none of the competitors appeared to have the product width and range of TradeWindow. TWL's products target not only the trade platform side but also value-added services in traceability, provenance, extra security and across network connectivity.

At the large end of town, enterprise customers will often look at SAP and Oracle-based ERP solutions that stretch into trade but operate in a very different target market – multinationals seeking bespoke solutions. TradeLens, the partnership developed between IBM and Maersk, has excellent global visibility, but its association with Maersk, given the rise of shipping rates globally, may be problematic. TradeLens offers connectivity into the logistics parts of the supply chain, whereas TWL's sector-neutral approach provides a broader reach to logistics, commerce, government and finance parties. In the region, Wisetech Global is one of the powerhouses with FY21 revenue of A$507.5 million and a gross margin of 83%. It formed in 1994. Even with its scale, it expects FY22 revenue growth of +18% to +25%. They operate more in the large end of town but not as much in the SME space against TWL. They are an aggressive acquirer of industry players. E2Open / BlueJay / Expedient is a significant global business with revenues of US$425.6 million and an FY22 gross margin of 48% and generally operates more in North American supply chain markets but intersects with TWL in the Australian mid-market freight forwarding segment (via Expedient). E2Open is also acquiring TradeTech businesses at pace. Descartes is a prominent North American player providing cloud-based logistics and supply chain management solutions. Descartes does not currently cross over TWL, in its current markets, but offers similar freight and logistics solutions.

WiseTech Global

WiseTech Global was founded in 1994 and is a software solutions provider to the logistics industry globally. WiseTech Global is listed on the Australian Securities Exchange (ASX:WTC). The Company develops, sells and implements solutions that enable logistics services providers to move and store goods and information. WiseTech has 50 offices, 33 product development centres and its headquarters are in Sydney, Australia. The Company has a diverse team of 1,800 people globally, spanning more than 60 nationalities and ranging in age from 18 to 74. Approximately 31% of its employees and 43% of its Board members are female.

The Company serves over 18,000 of the world's logistics companies across more than 165 countries, including 41 of the top 50 global third-party logistics providers and 24 of the 25 largest global freight forwarders worldwide. Annually, WiseTech executes over 72 billion data transactions. More information can be found on the Company website: https://www.wisetechglobal.com/.

Products

CargoWise, WiseTech's flagship technology is an integrated software platform where providers can execute complex transactions and manage their operations on one global database across multiple users, functions, offices, corporations, currencies, countries and languages. It is available in 30 languages, licensed for use in 169 countries and delivered through the cloud by data centres in Australia, Europe and the US. The Company also has a variety of other software solution businesses as it has completed 39 acquisitions since its IPO in April 2016. Currently, WiseTech has twenty in forwarding and customs, five in transport, two in rates and contracts, three in warehouse, two in parcel, one in enterprise business and one in carrier.

Vision, mission and culture

The Company's vision is to be the operating system for global logistics. The Company's mission is to create breakthrough products that enable and empower those that own and operate the supply chains of the world. WiseTech has a culture of innovation and productivity. The Company's test first, fail quickly and improve rapidly approach enables it to tackle the challenges of the logistics technology sector. It has driven WiseTech to add over 4,300 product enhancements to its global platform in the past five years.

Strategy, outlook and financials

The Company's strategy is centred on the 3Ps delivering its vision: product (extend technology lead), penetration (expand market penetration) and profitability (drive operational efficiency). Its strategy is designed to accelerate growth by leveraging structural changes including the need to replace ageing legacy systems, demand for integrated global software solutions with increased visibility and industry consolidation driven by logistics providers.

Currently, the Company is focussed on continuing its market penetration momentum and evolving and expanding the ***CargoWise*** ecosystem. This will require strategic investment in innovation and product development. Additionally, the Company has slowed its near-term acquisition activity to focus on extracting synergies from its past acquisitions to maximise operational leverage and drive scalability.

The Company has an FY21 market capitalisation of A$10.4 billion, FY21 revenue of A$507.5 million and FY21 EBITDA of A$206.7 million. Wisetech has a FY21 gross margin of 83% and FY21 EBITDA margin of 41%. It expects FY22 revenue growth of 18% to 25% (representing revenue of A$600–A$635 million) and EBITDA growth of 33% to 43% (representing A$275–A$295 million).

E2open / BlueJay / Expedient

E2open was founded in 2000 and is a provider of supply chain management software. E2open helps its diverse blue-chip customers orchestrate their global supply chains. E2open offers an end-to-end supply chain management software as a service (SaaS) platform powered by field-proven AI and machine learning, real-time data from a vast global network and best-in-class applications. E2open began trading on the New York Stock Exchange (NYSE:ETWO) after going public via a SPAC in February 2021. E2open is headquartered in Austin, Texas, US. More information can be found on the Company website: https://www.e2open.com/.

Products

- ***Harmony®*** is E2open's supply chain collaboration platform. It enables all users across a customer's end-to-end business ecosystem to seamlessly connect, visualize, plan and execute supply chain operations in a closed-loop, collaborative manner using real-time information. Its intuitive user experience extends across all the Company's applications using the most robust data integration technology.
- ***Intelligent Applications*** powers every stage of a customer's digital transformation. It is offered in seven suites: channel shaping; demand sensing; business planning; collaborative manufacturing; global trade management; supply management; and transportation and logistics. These suites are network-based, integrated best-in-class applications with embedded AI that draws upon real-time data.
- ***E2net*** is E2open's scalable, multi-enterprise cloud-based network. It empowers customers to connect all their trading partners and logistics providers across all tiers and ecosystems. It connects manufacturers, suppliers, vendors, service providers and customers in a responsive, trusted and secure network with reusable connections to data sources, transactional systems and partners. It currently has over 220,000 demand, supply and logistics participants.
- **Bluejay Solutions (** https://www.blujaysolutions.com/ **)** aims to harness the collective power of a collaborative network and data-driven insights with a blend of data, network, and applications.
- **Expedient Software (** https://expedientsoftware.com.au/ **)** has been in operation in Australia for 30 years. It provides a cloud software solution. It offers customs clearance, freight forwarding, accounting and CRM Software, workflow, track and trace, transport / container management, e-Commerce, bond warehouse and container freight software.

Mission, purpose, principles and values

E2open's mission is to build the most comprehensive and capable end-to-end global supply chain software ecosystem combining networks, data and applications to deliver enduring customer value. E2open's central purpose is to improve quality of life by enabling the most cost-effective and environmentally sound production and distribution of goods and services. The Company's operating principles and values form the foundation of achieving its mission and purpose. E2open's operating principles are: be prepared; build relationships on trust and respect; be direct and transparent; learn and operate with intensity; make and meet commitments reliably; always add value; and own the results. The Company's values are empathy, integrity, inclusion, collaboration, decisiveness, aspiration and innovation.

Strategy, outlook and financials

E2open serves all industries. However, E2open's industry focusses are in high tech; consumer packed goods; industrial manufacturing; food and beverage; pharmaceutical; aerospace and defense; oil and gas; automotive; logistics service providers; trucking; retail; ocean carriers; retail private label; semiconductor manufacturing and telecom operators. The Company has had two funding rounds. The first was a debt financing round raising $950 million in July 2019. The second was a post-IPO equity round raising $175 million in February 2021. Additionally, E2open has acquired 13 organisations. Its most recent acquisition was BluJay Solutions in May 2021. The Company has an FY22 market capitalisation of US$2.2 billion, FY22 revenue of US$425.6 million and FY22 EBITDA of -US$44.8 million. E2open has an FY22 gross margin of 48%.

DESCARTES

Descartes Systems Group

Descartes Systems Group is a Canada-based technology company founded in 1981 that is engaged in providing on-demand, software-as-a-service (SaaS) solutions. The Company combines technology, trade intelligence and the reach of its network to deliver a complete offering of cloud-based logistics and supply chain management solutions. Descartes began trading on the Toronto Stock Exchange (TSX: DSG) in January 1998 and on the NASDAQ Stock Market (NASDAQ: DSGX) in June 1998. It has over 1,500 employees globally and more than 20,000 customers worldwide. More information can be found on the Company website: https://www.descartes.com/home.

Products, partnerships and sales

The Company's sales efforts are directed towards two customer markets: transport companies and logistics services providers; and manufacturers, retailers, distributors and mobile business service providers. Its products include:

- The ***Descartes Global Logistics Network™ (GLN)*** is one source to connect to carriers and logistics services providers regardless of mode, geography or IT sophistication to manage the real-time flow of commercial, logistics, customs and product information. It spans more than 160 countries.
- The ***Logistics Technology Platform*** fuses the ***GLN*** with a broad array of modular, interoperable web and wireless logistics management solutions. Specifically, it offers solutions for B2B connectivity and messaging; customs and regulatory compliance; broker and forwarder enterprise systems; global trade intelligence; e-commerce shipping and fulfilment; transportation; and routing, mobile and telematics.
- The ***United by Design*** strategic alliance programme brings together partners to ensure complementary hardware, software and network offerings are interoperable with the Company's solutions and work together seamlessly to solve multi-party business problems. The programme classifies partners as technology, consulting or channel/value-added reseller partners. Outside of this, the Company also has association partners, such as the Association of International Customs and Border Agencies, who connects Descartes with major logistics organisations, programmes and think-tanks.
- ***Evolution***, the Company's global conference, helps to connect customers, partners and the Company's product management team for input, feedback and networking.

Vision, mission and culture

The Company's core values are centred on a T-E-A-M framework: transparency, excellence and expertise, accountability and metrics-driven results. It also has a deep sense of environmental responsibility as its solutions reduce carbon emissions, paper use and fuel consumption.

Strategy, outlook and financials

The Company's strategy is to grow organically and inorganically through acquisitions. Since 2006, Descartes has completed 52 acquisitions, 14 of which were after 2017. The most recent acquisition was NetCHB in February 2022. The Company is uncertain about the future impact of the pandemic due to the unpredictable duration and scope of restrictions on a geography-by-geography basis. Accordingly, the Company implemented a Fiscal 2021 Restructuring Plan in May 2020 that outlines how it expects its workforce to reduce by 5%, provides for the closure of offices and suspends hiring, travel and external marketing events.

The Company has an FY22 market capitalisation of US$6.2 billion, FY22 revenue of US$424.7 million and FY22 EBITDA of US$168.0 million. Descartes has an FY22 gross margin of 76% and FY22 EBITDA margin of 40%. The Company revenues consist of licence revenues and services revenues. Services revenues comprise ongoing transactional fees; professional services revenues from consulting, implementation and training services; and maintenance, subscription and other related revenues.

BSM Global

BSM Global was founded in 2003 and specialises in global trade management (GTM) systems and solutions. The Company's system-based solutions provide strategy, change management and the ability to embed innovation, visibility and control into the customer's supply chain. BSM Global was built to service the global commodity industry and its clients now span the globe. BSM Global is headquartered in Sydney, Australia, with additional offices in Australia, NZ and the US. More information can be found on the company website: https://www.buysellmove.com/.

Products

The Company offers solutions defined around its clients' key business objectives, fully optimised functionality to meet export and import trade requirements and deep industry knowledge across all industry verticals. Specifically, the Company offers solutions for profile management; holistic product management; contract and order management; shipping planning; e-tenders, rates and cost management; document management and compliance; and analytics and business reporting. The Company's solutions are cloud-based so easily integrate with finance, product and ERP systems as well as global carriers, banks and other third party providers. Clients do not need to load anything onto their existing systems. Clients only need high speed internet that will provide them with 24/7 access to their international supply chain, historical data, documentation and reporting.

The Company on-boards and works with clients by following a six step process: review (understand the client's supply chain); tailored solutions (prepare an individualised project plan); tangible benefits (demonstrate cost reductions and productivity improvements); BSM systems demonstration (conduct a tailored demonstration showing end-to-end transaction scenarios); implementation (follow a methodology involving kick off, training and going live); ongoing support and updates (automatically updated applications, 24/7 help desk support and a dedicated account manager).

Strategy, outlook and financials

The Company focusses on four areas to target trade companies globally, from first time exporters to seasoned global traders:

- **Integration:** BSM Global's solutions are easily integrated with ERPs, CRMs, accounting and trade related systems to provide a depth of functionality in a scalable cloud based environment.
- **Industry focussed:** BSM Global has highly experienced consultants who have worked within the supply chain and/or global trade management sector, regularly collaborates with industry partners and builds bespoke solutions.
- **Local expertise:** BSM Global's consultants all have real-world supply chain experience and up-to-date knowledge of local markets, compliance and industry needs.
- **Global connectivity:** The core strategy of BSM Global is global reach supported by worldwide offices so the Company is continuing to deploy resources into more countries to meet the increasing demands of its growing international customer base.

Due to the pandemic highlighting flaws in manual systems and processes, the Company had a record year of trading and welcomed a number of new clients in 2021. New sites implemented during the last year have been spread across a variety of different vertical markets. These include agriculture; beer, wine and spirits; dairy; food and beverage; horticulture; major retail; meat; recycling and resources. Currently, the Company is growing its ***Carrier Project***. This involves engaging with clients and major shipping lines to establish purely digital interaction between them. The final desired outcome will be to provide its clients with the ability to make bookings, lodge forwarding instructions, receive container milestone updates, receive freight invoices and more, all from within the BSM Global site.

Financial information is not available as the company is private.

CargoX

CargoX is a global company founded in 2015 and specialises in the transfer of documentation, based on blockchain transaction and an ownership validation platform. The core team of founders brings together more than 100 years of experience in the logistics, banking, programming, IT and blockchain industries. CargoX's main development office is located in Ljubljana, Slovenia. More information can be found on the Company website: https://cargox.io/.

Products

The ***CargoX Platform*** for blockchain document transfer (BDT) helps companies transfer documents, encrypted at the highest confidentiality level, as well as transfer the ownership of those documents. It is based on a neutral, public blockchain which enables an audit trail of events only to the participants involved, while preserving total confidentiality and full data, identity and business connection privacy. The platform is conceived as a flexible, multi-industry solution designed to include the concepts of e-mail, banking transactions, document creation and viewing capabilities. It can be integrated into any industrial workflow. It also enables the creation and use of bespoke workflows, with heavy optimizations for specific processes in mind.

On the ***CargoX Platform*** or any other electronic platform, customers can use the ***CargoX Smart B/L solution*** to send an electronic bill of lading (smart B/L). Ownership of the smart B/L will be unequivocally transacted to the new owner, who can legally claim ownership rights.

Strategy, outlook and financials

The Company is positioning itself as the leading independent provider in global trade, a market it considers to be "wide open". Currently, it is primarily in the transport and logistics industry as its products help exporters and importers share and authorise documentation. The Company states that it is not a competitor in this industry. Instead, its products add value to the market by helping supply chain participants improve probability and gain an immediate competitive advantage.

The Company is continuing to develop its products. It intends to create solutions for smart supply chains, with smart sensors, automated management, payments and ordering. For the ***CargoX Platform***, it has already added new workflows to serve regulators and the manufacturing, trading, finance, energy and services industries.

For the ***CargoX Smart B/L solution***, the Company created its minimum viable product in two and a half months. It is working towards bringing it to production before continuing down its roadmap to code and introduce greater innovations to the business. Its current in-solution development focus is on providing direct and quick benefits for users, providing clean workflows, a refined user experience, and future-proof, open architecture.

The Company has had several funding rounds and an initial coin offering (ICO).

- **Pre-seed round:** US$250,000 in May 2013
- **Seed round:** US$1 million in July 2014
- **Series A:** US$4 million in January 2016
- **Series B:** US$10 million in July 2016 — led by Goldman Sachs
- **Series C:** US$25 million in November 2016 — led by Goldman Sachs
- **Series D:** US$60 million in August 2018 — led by Blackstone Group
- **Series E:** US$87 million in April 2020 — led by LGT Lightstone Latin America
- **Series F:** US$200 million in November 2021 — led by Tencent and SOFTBANK Latin America
- **ICO:** US$7 million in 7 minutes and 40 seconds in January 2018 via a crowd-sale of Ethereum-based CXO Tokens, with over 10,000 contributors representing 95 different countries

Financial information is not available as the company is private.

TradeLens (Joint Venture)

TradeLens was jointly developed by IBM and Maersk and launched in 2018. It is an open and neutral industry platform underpinned by blockchain technology and supported by major players across the global shipping industry. It is an industry solution built on a model of transparency for all members of the ecosystem, not a company. It handles more than 700 million events and 6 million documents a year, expediting decision-making and lowering the administrative frictions in trade. TradeLens is headquartered in Jersey City, New Jersey, US. More information can be found on the Company website: https://www.tradelens.com/.

Products

TradeLens can be understood in three components:

- **The Ecosystem:** A foundational business network comprising of shipping and cargo owners; 3PLs and freight forwarders; intermodal operators; customs and government authorities; ports and terminals; ocean carriers; financial services providers and software developers. Each entity shares information that can be tracked, stored and actioned across the platform throughout a shipment's journey.
- **The Platform:** A platform that brings together the ecosystem through a set of open standards. Powered by Hyperledger Fabric blockchain technology and IBM Cloud, it enables the industry to share information and collaborate securely. Its main features are permissioned data, blockchain-enabled, standards-based, enterprise security and open APIs. It has tracked over 2,835.7 million events, published over 26.9 million documents and processed 53.9 million containers for permissioned parties on six continents.
- **The Applications and Services Marketplace:** An open marketplace that allows both TradeLens and third parties to publish fit-for-purpose applications and services atop the platform, fostering supply chain innovation and value creation.

TradeLens also offers two featured products;

- **TradeLens CORE:** Provides true end-to-end visibility of containerised freight and trade document collaboration tools for the customer and their partners.

- **TradeLens eBL:** A standard, industry-supported, end-to-end digital solution that provides shippers, cargo owners and freight-forwarders a streamlined and secure process for the issue, transfer and surrender of original bills of lading.

Strategy, outlook and financials

TradeLens was founded on the understanding that collaboration between both traditional and emerging partners in global trade creates opportunities for innovation, efficiency, and growth. It was in this spirit that IBM and GTD Solution came together as equal partners to co-lead the development of TradeLens. A TradeLens advisory board is being formed to shape the development of the TradeLens platform.

TradeLens' overarching objectives are:

- **Connecting the ecosystem:** TradeLens brings together all parties in the supply chain onto a single, secure data-sharing and collaboration platform.
- **Driving true information sharing:** TradeLens provides seamless, secure sharing of real-time, actionable supply chain information across all parties.
- **Foster collaboration and trust:** TradeLens enables the digitization and automation of cross-organisational business processes integral to global trade, while ensuring critical transaction information is secure, immutable and auditable.
- **Spur innovation:** TradeLens lays the foundation for ongoing improvement and innovation through an open API environment, the use of standards and promotion of interoperability.

Financial information is not available as TradeLens is not a listed company.

Appendices

Appendix 1: Board profiles

Director remuneration and benefits

The overall director fee pool (the total fees available for payment to directors in their capacity as directors) has been fixed at a maximum of $500,000 per annum. Executive directors are not remunerated in their capacity as directors. The directors are entitled to be reimbursed for all reasonable travel, accommodation and other expenses incurred in connection with their attendance at board or shareholder meetings or otherwise in connection with TWL business. Figure 39 below sets out the remuneration and value of other benefits received by each Board Director of TWL while Figure 40 sets out the remuneration and the value of other benefits received by the Executive Directors of TWL.

Figure 39. TWL remuneration of Board Directors (NZ$)

Name	Category	Base Fee	Committee	Total
Kerry Friend	Executive Director	-	-	-
Albertus Johannes (AJ) Smith	Chief Executive Officer, Executive Director	-	-	-
Alasdair MacLeod	Non-Executive Independent Chairman of the Board	43,542	5,958	49,500
Philip (Phil) Norman	Non-Executive Independent Director	27,500	2,292	29,792
Diana Puketapu	Non-Executive Independent Director	27,500	6,417	33,917
Total		**98,542**	**14,667**	**113,209**

Source: Forsyth Barr analysis

Figure 40. TWL remuneration of Executive Directors (NZ$)

Name	Category	Salary	ESOP	Total
Kerry Friend	Executive Director	145,900	101,097	246,997
Albertus Johannes (AJ) Smith	Chief Executive Officer, Executive Director	205,809	92,822	298,631

Source: Forsyth Barr analysis

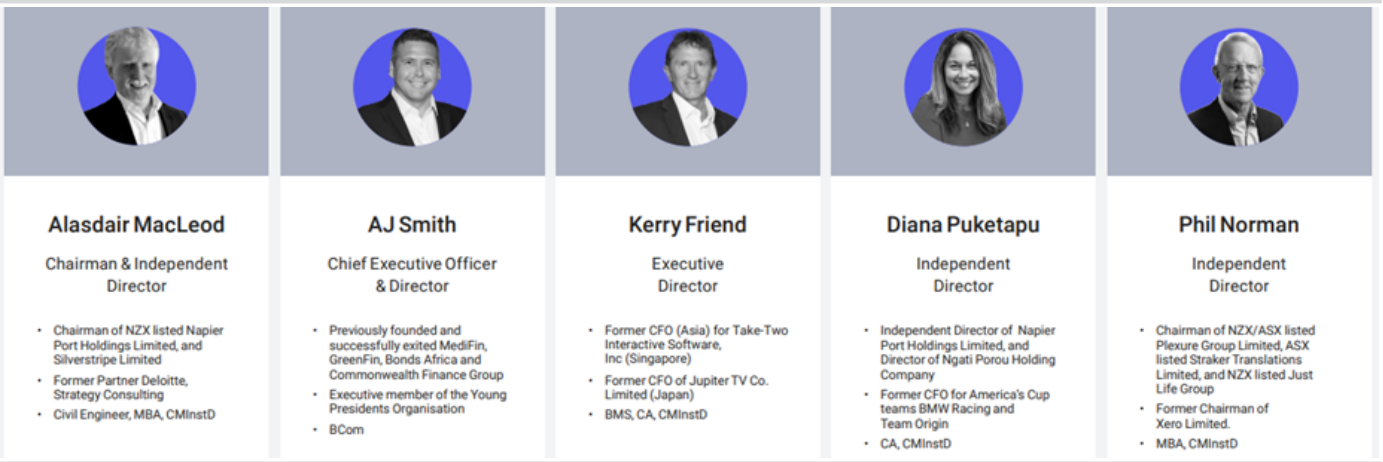
The table below sets out the expected annual directors' fees for FY23.

Figure 41. TWL expected annual directors' fees for FY23 (NZ$)

Position	FY23 fees per annum
Chair	95,000
Directors (other than the chair)	60,000
Committee chair	8,000-10,000
Committee members	4,000-5,000

Source: Forsyth Barr analysis

Figure 42. TWL Board of Director profiles



Source: Forsyth Barr analysis

Figure 43. TWL Director profiles

Board Member	Position	Description
Alasdair MacLeod	Independent Chair	Alasdair joined the TradeWindow board in October 2021 and was appointed Chair at that time. He has a broad range of experience in governance across software, technology, and not for profit sectors. Alasdair is currently Chair of Napier Port Holdings Limited and SilverStripe Limited, and serves as independent member of the Board Appointments Committee for IHC New Zealand. He was Chair of the Hawke's Bay chapter of ExportNZ (a division of BusinessNZ) for seven years, and is a Trustee and mentor with Big Brothers Big Sisters Hawkes Bay. Alasdair started his career as a civil engineer, and then transitioned into management where he gained a broad range of experience across the energy, infrastructure, technology and primary sectors. As a Partner in Deloitte for 12 years, Alasdair led the teams that developed New Zealand's Aquaculture Strategy, Horticulture Strategy, and Red Meat Sector Strategy. Alasdair has a Higher National Diploma in Civil Engineering from the Glasgow Caledonia University, later completing a Master of Business Administration from Massey University. He is a Chartered Member of the Institute of Directors.
AJ Smith	Executive Director and Chief Executive Officer	AJ Smith is a founding shareholder of TradeWindow and has been the CEO from the company's inception in 2018. AJ has a track record of innovation and investment with successful rapid-growth companies including MediFin, GreenFin and Bonds Africa (South Africa) and Commonwealth Finance Group (Switzerland). With a strong belief in building high-performance teams, AJ is an active executive member of the Young Presidents Organisation and graduated from the University of Freestate (South Africa) with a Bachelor of Commerce majoring in Business Management, Marketing, and Law. As Executive Director and CEO, AJ is focussed on formulating and executing TradeWindow's strategic growth objectives.
Kerry Friend	Executive Director	Kerry Friend is a founding shareholder of TradeWindow and has been a director since inception in 2018. Kerry has three decades of financial management experience. He started his career with EY Wellington before following a career across Asia primarily in the media and entertainment sector. Kerry has previously held senior finance positions with Take-Two Interactive Software (Singapore), Jupiter TV (Japan), Bloomberg (Japan) and News Corporation (Japan). Kerry holds a Bachelor of Management Studies from the University of Waikato, is a Chartered Accountant, a Chartered Member of the NZ Institute of Directors, and a member of the Australian Institute of Company Directors.
Diana Puketapu	Independent Director	Diana joined the TradeWindow board in October 2021. Diana has a strong governance background, with her current portfolio including directorships on Napier Port Holdings Limited, Ngati Porou Holdings and New Zealand Cricket. In 2015 she was elected to the board of the New Zealand Olympic Committee. She sits as either the Chair or a member of all of these entities' Audit Committees. Diana's career began with PWC in Auckland and then Singapore. She was then Chief Financial Officer for ten years, both in the commercial sector and in the sporting environment. This included CFO roles for two America's Cup sailing campaigns, establishing businesses in Spain, the UK and the US. Diana is a Fellow Chartered Accountant and a Chartered Member of the Institute of Directors. Her iwi affiliation is Ngati Porou.
Phil Norman	Independent Director	Phil joined the TradeWindow board in October 2021. Phil brings extensive governance experience in the technology sector, he was the founding Chairman of Xero, one of New Zealand's most successful publicly listed technology companies, and is currently Chairman of NZX/ASX listed Plexure Group Limited, Chairman of ASX listed Straker Translations Limited and Chair of NZX listed Just Life Group Limited. Phil is also the Independent Chairman of Loyalty New Zealand Limited (Fly Buys). Phil holds an MBA degree from Auckland University and he is a Chartered Member of the Institute of Directors.

Source: Forsyth Barr analysis

Appendix 2: Management profiles

Management changes

On 19 April 2022, TWL announced a significant reorganisation of its management structure.

- Dr Guy Kloss, the founding Chief Information Officer of TWL, will assume the responsibilities and job title of Chief Technology Officer following the departure of Brendan McEnroe as Chief Technology Officer.
- Andrew Balgarnie will move from Chief Operating Officer to Chief Revenue Officer, a new role focussed on commercialising products and offshore expansion.
- Gavin De Steur will move from Chief Customer Officer to Chief Operations Officer.
- Adrian Collier will move from Chief Supply Chain Officer to take on a new role as Chief Product Officer. Adrian was New Zealand's Trade Commissioner stationed in Taiwan before joining TWL in late 2021.

At the time the CEO of TWL, AJ Smith, said the re-alignment, which came into effect the same day, would equip the business for the next phase of commercial scaling. *"The new responsibilities reflect the experience and strengths of the respective individuals, and will ensure an efficient structure to drive continuing growth".*

Figure 44. TWL Management team profiles

Management	Position	Description
AJ Smith	CEO	See Board description.
Deidre Campbell	Chief Financial Officer	Deidre has extensive financial management and leadership experience within a public company having been the Group CFO for Methven Limited, a formerly NZX listed designer and manufacturer of showers and taps. During her 16 years as CFO, Deidre led the establishment of processes and systems to support Methven's growth from $20 million to $100 million in sales, transition to an international business, and from private ownership to an NZX listed company. Deidre is a Chartered Accountant and member of Chartered Accountants Australia and New Zealand.
Andrew Balgarnie	Chief Revenue Officer	Andrew is an experienced business strategist, deal maker and problem solver with a broad background spanning strategy, corporate finance, and consultancy. Andrew has a track record for delivering large complex transactions and early-stage capital raising. Andrew spent six years in Australia with NBN Co where he worked on several high-profile projects including the procurement of a satellite network, strategic review, and business transformation. Andrew holds a Bachelor of Business Studies from Massey University, and a Master of Business Administration from the Australian Graduate School of Management.
Gavin de Steur	Chief Operating Officer	Gavin is an experienced people leader with over 20 years of operational experience. His diverse background spans telecommunications, security, and technology. Gavin's early career started as an Electronics Engineer Telkom South Africa before moving into customer facing and managerial roles. Gavin previously founded Agic Technologies, a cash processing technology business, which was sold to Fidelity Security Group. Gavin and his family moved to New Zealand in 2019 where he helped establish the Customer Success team for UneeQ, an enterprise software company. Gavin holds a Bachelor of Engineering from the University of Pretoria (South Africa).
Dr. Guy Kloss	Chief Technology Officer	Guy is an enterprise architect, computer scientist, chemical engineer, rocket scientist and thought leader in the world of data security. He has built up a wealth of experience by applying his unique skillset across a diverse range of organisations including Bayer, the German Aerospace Centre, Mega, Qrious, Gentrack and Nyriad. Guy holds a Master of Engineering from TU Dortmund University (Germany), and a PhD in Computer Science from Massey University.
Dewald van Rensburg	Chief Legal Officer	Dewald is a lawyer with more than 20 years' experience in corporate and commercial law. Prior to joining TradeWindow in December 2019, Dewald worked as Registrar at a South African university where he oversaw governance and compliance for more than 40 institutional committees. He has served as director on various boards and holds a Bachelor of Laws and a Master of Laws with specialisation in International Corporate Finance Law. He is currently pursuing a Doctorate in Business Administration.
Adrian Collier	Chief Product and Supply Chain Officer	Adrian has more than 20 years' experience in leadership roles covering health, pharmaceuticals, manufacturing, retail, renewable energy and international trade. Before joining TradeWindow in 2021 Adrian was the New Zealand Trade Commissioner to Taiwan for four years where he developed a first-hand appreciation of the challenges facing New Zealand exporters. Adrian has also lived and worked in mainland China with pharmaceuticals giant Pfizer where he held several technology leadership roles. Adrian holds a Bachelors and Masters degree (Hons) from the University of Auckland.
Kerry Friend	Executive Director	Kerry Friend is a founding shareholder of TradeWindow and has been a director since inception in 2018. He has three decades of financial management experience. He started his career with EY Wellington before following a career across Asia primarily in the media and entertainment sector. Kerry has previously held senior finance positions with Take-Two Interactive Software (Singapore), Jupiter TV (Japan), Bloomberg (Japan) and News Corporation (Japan). Kerry holds a Bachelor of Management Studies from the University of Waikato, is a Chartered Accountant, a Chartered Member of the NZ Institute of Directors, and a member of the Australian Institute of Company Directors.

Source: Company, Forsyth Barr analysis

Appendix 3: ESOP plan and escrowed shares

Employee share option plan (ESOP)

TWL believes that employee share ownership is a key factor in motivating and retaining employees. Accordingly, TWL has 585,640 options on issue pursuant to its existing employee share option plan (ESOP). Provided that the exercise conditions are met, each option is able to be exercised for one ordinary share in TWL on the relevant vesting date. The exercise price is NZ$0.00920 per share. No further options will be issued under the ESOP.

The number of options and relevant vesting periods for such options are set out in the table below.

Figure 45. TWL —Employee share option plan (ESOP) vesting periods

Vesting Period	Number of Options
FY22	331,675
FY21	225,799
FY24	28,166
Total	585,640

Source: Forsyth Barr analysis

Escrowed shares

At the time of listing in November 2021, TWL had 150 registered holders, including 13 holders through a custodial account. The four following shareholders have entered into escrow arrangements with TWL in respect of their shareholdings (representing 90% of the shares owned by each escrowed shareholder):

Figure 46. TWL escrowed shares

Escrowed Shareholder	Escrowed Shares	Shareholding (%)
ASB Bank Limited	17,319,069	20.1%
AJ Smith	13,296,069	15.5%
Kerry Friend and YHPJ Trustees (2016) Limited as trustees of the Tomadachi No. 2 Trust	3,468,195	4.0%
Stephen Cox	3,791,763	4.4%
Total	37,875,096	44.0%

Source: Forsyth Barr analysis

Under these arrangements, each escrowed shareholder has agreed not to sell or otherwise dispose of any shares where such sale or disposal would result in the escrowed shareholder holding less than their specified number of escrowed shares in the period between Listing and the first day after the date on which TWL releases to NZX its results announcement in respect of the half year ended 30 September 2022. The escrowed shares held by the escrowed shareholders represent, in aggregate, 44% of the total number of shares on issue at the time of Listing.

There are customary carve-outs from the escrow arrangements. In addition, for ASB Bank Limited, a carve-out is provided where the transfer is required by law or regulator, or where the transfer is required to avoid or mitigate adverse reputational damage for ASB Bank Limited or its affiliates.

Appendix 4: Blockchain 1-0-1

Who invented blockchain?

Blockchain was first outlined in 1991 by Stuart Haber and W. Scott Stornetta, two researchers who wanted to implement a system where document timestamps could not be tampered with. Blockchain's first use origin goes back to the release of a 'white paper' that established the model for a blockchain on 31 October 2008.

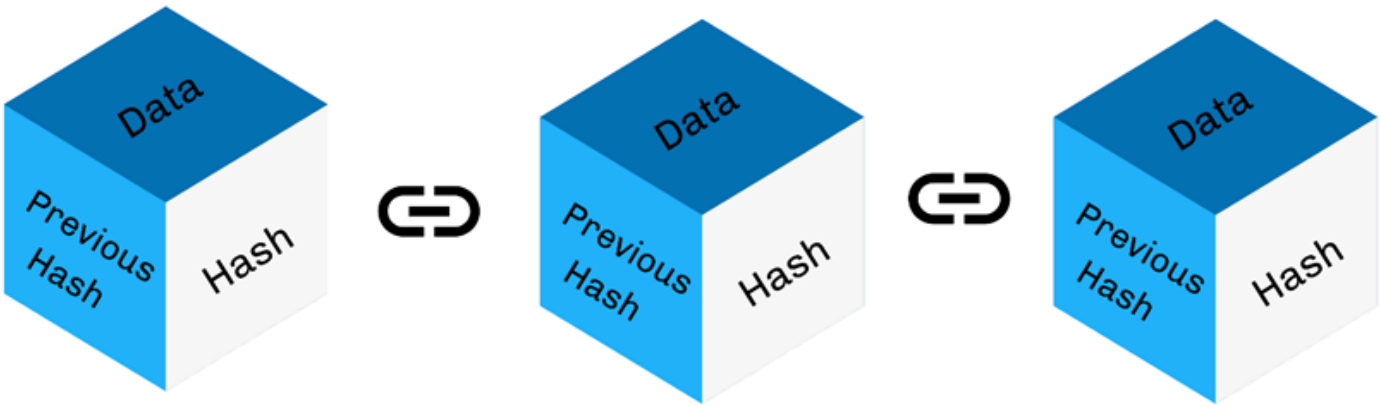
What is blockchain?

In its most basic form, blockchain is a system of recording information:

Blockchain is a database, a digital distributed ledger shared across public or private computing networks.

Blockchain enables everyone involved in a transaction to know, with certainty, what happened, when it happened, and confirm other parties are seeing the same thing without the need for an intermediary providing assurance and without a need to reconcile data afterwards. Blockchain is a type of distributed ledger technology (DLT). Transactions are recorded with an immutable cryptographic signature called a hash. The transactions are then grouped in blocks and each new block includes a hash of the previous one, chaining them together.

Figure 47. How a blockchain is formed



Source: Salesforceben.com

As a database, **blocks are the stored data** along with who is participating in the blockchain via their 'digital key' or username. A copy of the database/ledger is held at each point or node of the computer network. Every piece of information is encrypted mathematically and added as a new 'block' to the chain of historical records. Every single block is different from other blocks and is identified as different by a unique code that will help the system tell two blocks apart. This code is called a "hash".

The chain represents how digital data is stored in the database/ledger. The network carries a series of protocols participants go through before the new information is validated/verified and added to the chain. Other nodes validate the new data in the block and if all protocols are followed it will be accepted as a new block and added to the chain. This helps to prevent fraud without referring to a centrally stored authority.

Thus, a block is made up of several components:

- **Data:** Contains data such as the sender, receiver, and amount of currency.
- **Hash:** A unique ID created using cryptography to convert the data into a long unique string.
- **Previous hash:** The previous block's hash allows the new block to chain the blockchain in a sequence.

How blockchain works

Blockchain's goal is to allow digital information to be recorded and distributed, but not edited. It acts as a foundation for records of transactions that cannot be altered, deleted, or destroyed.

Below outlines the steps of a blockchain transaction process:

1. **Request:** Someone requests a transaction of contracts, records, cryptocurrency or other information
2. **Broadcast:** The requested transaction is broadcast to a P2P network consisting of computers, known as nodes
3. **Validation:** All the nodes form a network of nodes that validate the transaction and the user's status using known algorithms
4. **Creation of block:** Once a transaction is verified it is combined with other transactions to create a new block of data for the ledger
5. **Addition of block**: The new block is then added to the existing blockchain in a way that is permanent and unalterable
6. **Completion:** The requested transaction is complete

Blockchain can be used in a decentralised way such that no single person, group or authority has control. Specifically, blockchain can allow data to be spread out among several nodes at various locations. If one user tried to alter the data at one node, the other nodes would not be altered. Instead, the other nodes would cross-reference each other and pinpoint the node with the incorrect information. Thus, blockchain creates an irreversible timeline of data.

Validation of each new block is an important step since there is no single node in control. To validate blocks a majority of the decentralised network must agree to it.

Therefore, a blockchain hacker would need to simultaneously control and alter at least 51% of the copies of the blockchain so that their new copy becomes the majority copy and, thus, the agreed-upon blockchain. Such an attack is almost insurmountable as it would require an immense amount of money and resources to redo all the blocks.

Types of blockchain networks

Blockchains can be characterised as either permissionless, permissioned or both:

Figure 48. Characterisation of blockchains

Characterisation	Description
Permissionless	Permissionless blockchains allow any user to become a node of the blockchain network and do not restrict the rights of the nodes on the blockchain network.
Permissioned	Permissioned blockchains restrict access to the network to particular nodes and may also restrict the rights of those nodes on that network. Users' identities are known by one another.

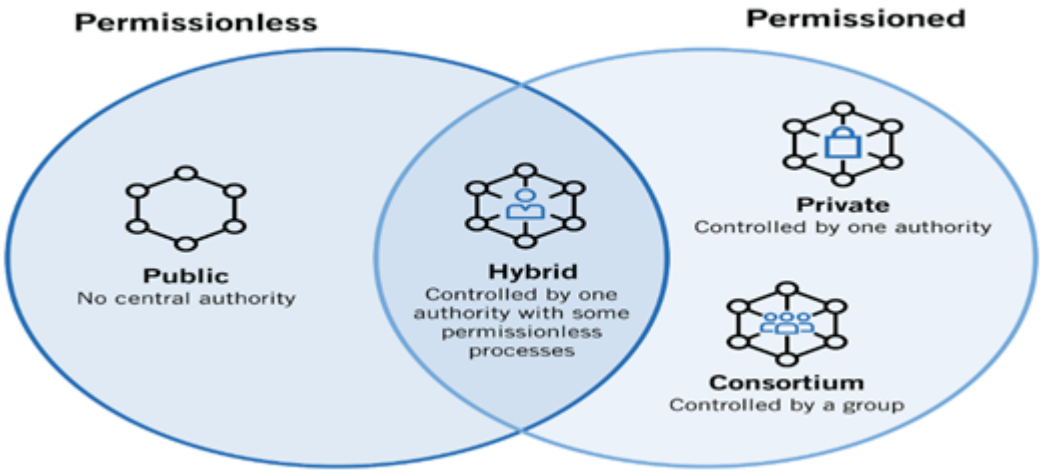
Source: Forsyth Barr analysis

Figure 49. Types of blockchain networks

Type	Description
Public	Public blockchains are permissionless in nature, allow anyone to join, and are entirely decentralised. Public blockchains allow all blockchain nodes to have equal rights to access the blockchain, create new blocks of data, and validate blocks of data.
Private or Managed	Private or managed blockchains are permissioned blockchains controlled by a single organisation. The central authority determines who can be a node. The central authority also does not necessarily grant each node equal rights to perform functions. Private or managed blockchains are only partially decentralised because public access to these blockchains is restricted.
Consortium	Consortium blockchains are permissioned blockchains governed by a group of organisations rather than one entity, as in the case of the private blockchain. Consortium blockchains enjoy more decentralisation than private blockchains, resulting in higher levels of security. However, setting up consortiums can be a fraught process as it requires cooperation between several organisations, which presents logistical challenges and potential antitrust risk. Further, some members of supply chains may not have the needed technology nor the infrastructure to implement blockchain tools. Those who do may decide the upfront costs are too steep a price to pay to digitise their data and connect to other supply chain members.
Hybrid	Hybrid blockchains are blockchains that a single organisation controls but with a level of oversight performed by the public blockchain, which is required to perform specific transaction validations.

Source: Forsyth Barr analysis

Figure 50. Characterisation and types of blockchain



Source: Forsyth Barr analysis

Advantages and disadvantages

Each blockchain solution will have specific advantages and disadvantages in the particular use, different use cases and applications. However, four overarching properties of blockchain are:

- **Consensus:** The parties to the blockchain agree on who within the business network gets to validate and approve the transactions.
- **Provenance:** The blockchain has a complete record of who owns what asset throughout its life cycle, effectively representing a verifiable audit trait.
- **Immutability:** Cryptographically linked blocks are impossible to tamper with, boosting trust across the network.
- **Finality:** Finality comes as a consequence of the first three properties. When a transaction is committed into the blockchain it cannot be altered. History cannot be rewritten for that transaction. The blockchain represents the single version of the truth for its contents and its network participants.

Based on these properties, blockchains main advantages and disadvantages are outlined below.

Figure 51. Advantages of blockchain

Advantages	
Secure	All records are individually encrypted with high-security protocols.
Timestamped	A transaction is timestamped and recorded on the block.
Transparency	Blockchain is decentralised, so all network participants have a copy of the ledger. This also removes any intermediaries.
Lower ongoing costs	Costs of creating new blocks are low, and eliminating the need for intermediaries reduces costs.
Programmable	A blockchain is programmable using smart contracts.
Anonymous	The identity of participants is either anonymous or identities are pseudonymous. However, this may be an issue if this feature is exploited to commit illicit acts.
Irreversible / immutable	All validated records are irreversible and cannot be changed.

Source: Forsyth Barr analysis

Figure 52. Disadvantages of blockchain

Disadvantages	
Complex	The technology is relatively immature and standards have not yet been set.
Scalability	Blockchain is more complicated to scale due to requiring consensus mechanisms.
Integration	Blockchain can be challenging to integrate into legacy systems.
High implementation costs	Blockchain can be costly for companies to implement, which has delayed its mass adoption.
Inefficient/wasteful	Nodes may be doing the same work to validate each block, implying a huge waste of computational power, energy and storage.
Private keys	It is almost impossible to recover private keys.
51% attack	If more than half the nodes validate incorrect information, the false information will become the consensus and agreed-upon information.
Irreversible/immutable	Data cannot be overwritten, such as when there is an error.

Source: Forsyth Barr analysis

Blockchain applications

Rather than a singular form of blockchain the technology can be configured in multiple ways to meet a particular use case's objectives and commercial requirements. From a technology standpoint it remains a relatively immature and misunderstood technology. However, as the technology develops, the potential impact across many industries is growing. Blockchain has the potential to grow to be a core part or platform for worldwide record-keeping systems. Each blockchain solution will have specific advantages and disadvantages for the particular use, different use cases and applications.

Blockchains uses are emerging and real world cases are already being seen — not limited to:

- Processing payments and money transfers locally or cross-border
- Monitoring supply chains
- Real estate, land, and auto title transfers
- Loyalty rewards programs and transactions for retailers
- Digital IDs
- Farm to plate food tracking and safety
- Cryptocurrency exchange
- Decentralised finance (DeFi) applications
- Non-fungible tokens (NFTs)
- Regulation and compliance
- Secure sharing of medical data
- Smart contracts

Smart contracts

Smart contracts are programmes stored on a blockchain that runs when predetermined conditions are met. They are typically used to automate an agreement's execution so that all participants can be immediately sure of the outcome without any intermediary's involvement or time loss. They can also automate a workflow, triggering the following action when conditions are met. Smart contracts work by following simple "if/when…then…" statements written into code on a blockchain. A network of computers executes the actions when predetermined conditions have been met and verified. These actions could include releasing funds to the appropriate parties, registering a vehicle, sending notifications, or issuing a ticket. The blockchain is then updated when the transaction is completed. That means the transaction cannot be changed, and only parties who have been granted permission can see the results. Within a smart contract there can be as many stipulations as needed to assure the participants that the task will be completed satisfactorily. To establish the terms participants must determine how transactions and their data are represented on the blockchain, agree on the "if/when...then…" rules that govern those transactions, explore all possible exceptions, and define a framework for resolving disputes. Then the smart contract can be programmed by a developer — although increasingly organisations that use blockchain for business provide templates, web interfaces, and other online tools to simplify structuring smart contracts.

What are the differences between a blockchain and a typical database?

The critical difference between a blockchain and a typical database is how the data is structured when stored. The key differences are:

- A **blockchain** consolidates information into groups, known as blocks, which hold different data sets in varying sizes depending on the application. For blockchain, each participant has a secured copy of all records and all changes so each user can view the provenance of the data. Blocks have specific storage capacities and, when filled, are closed and linked to a previously filled block, forming a chain of data known as the blockchain. Essentially these blocks of data are strung together. All new information that follows that freshly added block is compiled into a newly formed block added to the chain once filled. This method of structuring data inherently makes an irreversible timeline of data, an exact timestamp. When a block is filled, it is set in stone (now invariable) and becomes a part of this timeline. They are linked together via cryptography. Cryptography develops protocols that prevent third parties from viewing private data, improving security. Modern cryptography combines the disciplines of mathmatics, computer science, physics, engineering to perform three essential tasks: 1) Encrypting and encoding the text into an unreadable format, 2) Decryption is a method of reversing the encryption converting it back into its original form. 3) Cypher/algorithm for performing encryption or decryption following a well-defined set of steps.
- On the other hand, **typical computer databases** are structured into tables. Data within the most common databases are assembled into rows and columns in a series of tables to make processing and data querying efficient. The other difference between a blockchain and a database is that most typical computer databases are held centrally, at one organisation or in one data centre.

Appendix 5: Company history

Figure 53. Company history

Date	Event
2018	
May	Exploratory phase – entry into the ASB Edge programme.
November	Digital trade Proof of Concept (POC) working in collaboration with Greenlea Premier Meats.
December	Incorporation of Trade Window Limited.
2019	
June	ASB make NZ$1 million 'Angel' investment.
July	On 26 July 2019, TradeWindow entered into an agreement for the purchase of assets from Prodoc Limited. Consideration was NZ$4.0 million comprising $2.5 million cash and NZ$1.5 million in shares, issued at a share price of NZ$3.15 per share (implying a post 10:1 share exchange price of NZ$0.315 per share). The transaction was part funded through a NZ$1.35 million five-year term loan and a $150,000 revolving credit facility from ASB; and a NZ$637,300 vendor loan, for which the final repayment was made in July 2021.
November	Closed 'Seed' round capital raise of NZ$2.67 million led by ASB.
December	Opened an office in Singapore.
2020	
January	Minimal Viable Product version of Cube released.
January	On 14 October 2019, TradeWindow entered into an agreement for the purchase of 51% of the shares in IVS Origin Limited ("IVSOL"). Consideration was NZ$433k comprising $234k in cash and $200k in shares issued at a share price of NZ$3.15 per share (implying a post 10:1 share exchange price of NZ$0.315 per share). The business of IVSOL was spun out of the operations of Independent Verification Services Limited on 14 October 2019, and IVSOL was subsequently re-named Trade Window Origin Limited ("TWOL").
February	Opened an office in the Australian market.
February	Minimal Viable Product version of Assure released.
March	Expanded into Asia via a new Singapore office.
March	Minimal Viable Product version of ExpressDoc released.
May	Admitted into the SWIFT cooperative as a Non-Supervised Entity active in the financial services industry.
June	Admitted into the Pan Asian E-commerce Alliance (PAA).
October	Achieved interoperability between TradeWindow Cube and Trade-Van, Trade Single Window operator for the Chinese Taipei border agencies.
November	Interoperability between TradeWindow and IMDA (Singapore) and support by Quayside Holdings.
December	Minimum Marketable Product version of Trade Contracts, Booking and Schedules and Origin.
2021	
February	Closed 'Series A' capital raise of NZ$6.8 million led by ASB.
February	Release of Cube 2.0.
February	On 18 February 2021, TradeWindow entered into an agreement for the purchase of the assets of Sydney based freight forwarding software company, Hi-Tech Freight Solutions (Aust.) Pty Limited ("HTFSL"). Consideration was AU$2.25m comprising AU$750k in cash and AU$1.50m (NZ$1.63m) in shares issued at a share price of NZ$8.64 (implying a post 10:1 share exchange price of NZ$0.864 per share). The transaction was part funded through a NZ$420k five-year term loan from ASB. TradeWindow also acquired at the same time the assets of Cyberfreight Solutions Pte. Limited ("CSPL"), a Singaporean company related to HTFSL for SG$5k cash.
March	Minimum Marketable Product version of Cube released.
March	Acquired the remaining (49%) shares of Trade Window Origin Limited.
August	On 26 August 2021, TradeWindow entered into an agreement to purchase the FreightLegend software solution from FreightLegend Limited. Consideration was NZ$100k in cash. Full completion of the transaction occurred 4 October 2021. The FreightLegend business assets were acquired. FreightLegend will become a module of the TradeWindow Freight solution.
September	On 10 September 2021, TradeWindow entered into an agreement for the purchase of the assets of Tauranga based border clearance software company, Speedi Software Limited. At the time of the acquisition, Speedi Software Limited had been operating for over 30 years. Consideration was NZ$1.45m comprising $725,000 cash and NZ$725k in shares issued at a share price of NZ$9.20 per share (implying a post 10:1 share exchange price of NZ$0.920 per share). The transaction was part funded through a NZ$725k five-year term loan from ASB.
September	Closed 'Series B' capital raise of NZ$15 million led by ASB.
October	Acquired freight quotation software solution from FreightLegend Limited.
November	Undertakes a compliance listing on the NZX under the ticker TWL.NZ.
2022	
January	TradeWindow teams up with Mastercard to simplify cross-border payments and increase access to trade finance.
February	TradeWindow was recognised as a designated certification body by NZ Customs Service to issue certificates of origin under the enabling regulations in the Regional Comprehensive Economic Partnership (RCEP) Agreement.
March	TradeWindow and Vero Marine team up to offer New Zealand's first paperless insurance for exporters.
April	TradeWindow partners with PortConnect to offer greater end-to-end supply chain visibility. PortConnect provides container and vessel data for the Ports of Auckland, Port of Tauranga, Timaru Container Terminal and Lyttelton Port Company who process >70% of NZ's exports.

Source: Forsyth Barr analysis

Appendix 6: Key terms & definitions

Figure 54. Key terms

Term	Definition
Application programming interface (API)	An API is a software intermediary that allows a connection between two applications, often between computers or between computer programs. An API enables companies to open up their applications' data and functionality to external third-party developers, business partners, and internal departments within their companies. This allows services and products to communicate with each other and leverage each other's data and functionality through a documented interface.
Beta testing	Beta testing is an opportunity for real users to use a product in a production environment to uncover any bugs or issues before a general release.
Block	A block is a collection of transactions that has not yet been recorded in any prior blocks.
Blockchain	A blockchain is a decentralized public ledger that uses cryptography to record transactions among a network's participating agents. It permits transactions to be gathered into blocks and recorded cryptographically into chain blocks in chronological order, and allows all users in the network to access the ledger. A central authority does not own, control, or manage this distributed database.
Blockchain application	A blockchain application is a P2P system for validating, time stamping, and permanently storing transactions and agreements on a shared ledger that is distributed to all participating nodes.
Border agencies	Border agencies include New Zealand Customs Service, Immigration New Zealand and other Government agencies who work together to monitor and regulate a country's border and facilitate trade and travel while managing risk.
CargoSmart	CargoSmart offers solutions that help shippers, consignees, logistics service providers, and non-vessel-operating common carriers (NVOCCs) manage their shipments throughout the supply chain.
Certificate of Origin	A Certificate of Origin is an important international trade document that certifies that goods in a particular export shipment are wholly obtained, produced, manufactured or processed in a particular country.
CGI Trade360	CGI Trade360 offers a single, integrated and global platform that enables banks to offer their customers a robust set of trade, open account and supply chain finance services.
Cloud computing	Cloud computing is the delivery of computing services, including servers, storage, databases, networking, software, analytics, and intelligence over the Internet.
Consensus protocol (algorithm or mechanism)	Consensus protocol is the set of rules and mechanisms implemented in a blockchain to consolidate the preferences and decisions of users and to manage decision-making of the network. It determines how users reach consensus on that blockchain in achieving the necessary agreement on a single data value or a single state of the network among distributed processes.
Crosschain	A crosschain is the interoperability between two relatively independent blockchains. It enables blockchains to speak to one another because they are built in a standardized way.
Cryptocurrency	A cryptocurrency is a digital or virtual currency that uses encryption techniques to regulate the generation of units of currency and verify the transfer of funds. It operates independently of a central bank. Many cryptocurrencies such as bitcoin are decentralized networks based on blockchain technology.
Cryptography	Cryptography is a mathematical algorithm used to encrypt and decrypt information. In blockchain it is used for creating wallets, signing transactions, and verifying the block.
Customer relationship management (CRM) software	Customer relationship management is a software that is used to manage relationships and interactions with existing and potential customers, typically using data analysis.
Customs broker	A customs broker acts as an intermediary who deals directly with the Customs on behalf of importers and exporters in the handling of customs formalities, primarily clearing imported or exported goods.
Decentralized application (dApp)	A decentralized application is a computer application that runs on a distributed computing system.
Decentralized network	A decentralized network refers to a network in which anyone can transact on the ledger. The network is decentralized in the sense that no centralized entity governs the network.
Digital Economy Partnership (DEPA)	DEPA is an agreement between New Zealand, Chile and Singapore, which is in place to support trade conducted by exporters and SMEs in the digital era.
Distributed ledger (DLT)	A distributed ledger is a database that is shared across multiple sites or geographies accessible by multiple people. It allows transactions to open to the participants publicly. The participant at each node of the network can access the records shared across that network and can own an identical copy of it. Any changes or additions made to the ledger are reflected and copied to all participants.
DPoS	Delegated Proof of Stake (DPoS) is a consensus protocol that provides dependable verification and approval of transactions in a blockchain.
Electronic data interchange (EDI)	Electronic data interchange is the concept of businesses electronically communicating information that was traditionally communicated on paper, such as purchase orders and invoices.

Source: Forsyth Barr analysis

Figure 55. Key terms continued...

Term	Definition
Encryption	Encryption refers to the process of converting data to an unrecognizable or "encrypted" form. A common use of encryption is to protect sensitive information, so that only authorised parties can view it. Blockchain encryption prevents sensitive information from getting into the wrong hands and being misused or forged.
Enterprise resource planning (ERP) software	Enterprise resource planning (ERP) is a software that organisations use to unify and manage day-to-day business activities such as accounting, procurement, project management, risk management, compliance, and supply chain operations.
Freight forwarder	A freight forwarder is a person or company that organises shipments for individuals or corporations to get goods from the manufacturer or producer to a market, customer or final point of distribution.
Genesis block	Genesis block is the name of a blockchain's first block. It is the prototype of all other blocks in the blockchain as the common ancestor of them. If any block is followed backward in time it eventually leads to the genesis block.
Hybrid blockchain	A hybrid blockchain is a mix of public and private blockchains. It can host an application or service on an independent permissioned blockchain while leveraging a public blockchain for security and settlement.
Hyperledger	Hyperledger is an open source blockchain project designed to promote collective advancement of blockchain projects as opposed to disparate proprietary systems.
Immutability	Immutability is the inability of a block to be deleted or modified once it is in the blockchain.
Interoperability	Interoperability refers to the exchange of data and information compatibly across varied complex systems.
INTTRA	INTTRA is a multi-carrier network that offers the ability to search ocean schedules, book and track containers, submit shipping instructions and verified gross masses (VGMs) electronically.
ISO17020	ISO17020 specifies requirements for the competence of bodies performing inspection and for the impartiality and consistency of their inspection activities.
ISO27001	ISO27001 is the international standard that lays out the specifications for implementing an information security management system.
ISO9001	ISO9001 sets out the criteria for a quality management system. Organisations use the standard to demonstrate the ability to consistently provide products and services that meet customer and regulatory requirements.
Micro, small and medium sized businesses	The classification of micro, small and medium sized businesses varies between countries depending on the size of the economy, relationships to other markets and the size profile of businesses in that country. New Zealand classification: micro businesses – 1–5 FTE employees; small businesses – 6–19 FTE employees; and medium businesses – 20–49 FTE employees. World Bank classification: micro businesses – 1–9 employees; small businesses – 10–49 employees; and medium businesses – 50–249 employees.
MYOB	MYOB provides tax, accounting and other business services software to small and medium businesses.
Network effects	The network effect is a phenomenon whereby the value of a product or service increases when the number of people or participants who use that product or service increases.
Node	A node is any kind of device such as a computer, laptop, or server that connects to the blockchain network. It stores, spreads, and preserves the blockchain data. All nodes on a blockchain network are connected & constantly exchange the latest data.
Oracle	An oracle is a way for a blockchain or smart contract to interact with external data. As third-party services, blockchain oracles serve as bridges between blockchains and the outside world.
Pan Asian E-commerce Alliance (PAA)	The Pan-Asian E-Commerce Alliance aims to promote and provide secure, trusted, reliable and value-adding IT infrastructure and facilities for efficient global trade and logistics. The combined membership of the parties now exceeds 350,000 organisations, representing almost all active trading enterprises in the Asian market.
PAS99	PAS99 specifies a framework for integrated management systems.
PortConnect	PortConnect is New Zealand's first comprehensive online cargo management system, providing viewing of and direct interaction with cargo status and movements at the Ports of Auckland, Port of Tauranga, Timaru Container Terminal & Lyttelton Port Company.
Private (permissioned) blockchain	A private blockchain is closed and invitation-only such that specific users or entities on a blockchain have authorizing powers over others, allowing them to appoint members or validators. It has centralized authorities and is often deployed in the area of internal business operations.
Public (permissionless) blockchain	A public or permissionless blockchain is a decentralized ledger that is accessible to any user. Users do not need permission from anyone on the network to perform certain actions such as joining the network, receiving/sending transaction data, and participating in the consensus process to determine what blocks get added to the chain.
Purchasing Managers Index (PMI)	The Business NZ Purchasing Managers' Index (PMI) measures the activity level of purchasing managers in the manufacturing sector. A reading above 50 indicates expansion; a reading below 50 indicates contraction. It gives an indication about the health of the manufacturing section and production growth in New Zealand.
Record	A record is a combination of transactions.
Smart contract	A smart contract is computer code operationalized within blockchain that automatically moves digital assets according to prespecified rules. Thus, smart contracts are codes that are built into the software that enable automation of processes.
SWIFT	SWIFT provides services related to the execution of financial transactions and payments between banks worldwide.

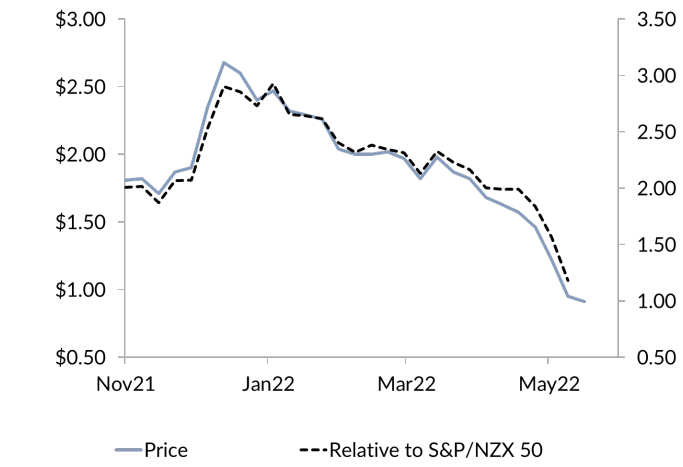
Source: Forsyth Barr analysis

Figure 56. Key terms continued...

Term	Definition
Tamper-resistant ledger	A tamper-resistant or immutable ledger is a record (data stored on the blockchain) that cannot be changed due to use of encryption and digital signatures.
Trade Single Window	Trade Single Window is a single electronic channel for cargo and excise industries to submit information to and receive responses from border agencies.
TradeTech	Trade finance technology often abbreviated as TradeTech refers to the application of technology, innovation, and software to support, modernise and digitally transform the trade finance industry.
Web 3.0	Web 3.0 is the third generation of internet services for websites and applications that will focus on using a machine-based understanding of data to provide a data-driven and Semantic Web. The ultimate goal of Web 3.0 is to create more intelligent, connected and open websites.
Xero	Xero is a cloud-based accounting software platform for small and medium sized businesses.

Source: Forsyth Barr analysis

Figure 57. Price performance



Source: Forsyth Barr analysis

Figure 58. Substantial shareholders

Shareholder	Latest Holding
ASB Bank	22.4%
Albertus Johannes Smith	17.2%
Quayside Securities	7.9%
Holding des mers du sud	6.1%

Source: NZX, Forsyth Barr analysis, NOTE: based on SPH notices only

Figure 59. International valuation comparisons

Company	Code	Price	Mkt Cap	PE		EV/EBITDA		EV/EBIT		Cash Yld
(metrics re-weighted to reflect TWL's balance date - March)			(m)	2023E	2024E	2023E	2024E	2023E	2024E	2024E
Trade Window	**TWL NZ**	**NZ$0.91**	**NZ$78**	**<0x**	**<0x**	**<0x**	**<0x**	**<0x**	**<0x**	**0.0%**
Wisetech Global	WTC AT	A$40.85	A$13,331	67.0x	52.7x	38.1x	30.8x	47.5x	37.4x	0.4%
E2Open Parent Holdings Inc	ETWO US	US$8.35	US$2,515	48.9x	26.7x	15.0x	13.0x	42.4x	32.8x	n/a
Descartes Systems Grp/The	DSG CN	US$80.40	US$6,815	59.2x	n/a	30.8x	27.5x	47.3x	40.1x	n/a
			Compco Average:	**58.4x**	**39.7x**	**28.0x**	**23.8x**	**45.7x**	**36.8x**	**0.4%**
EV = Mkt cap+net debt+lease liabilities+min interests-investments			**TWL Relative:**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**-100%**

Source: *Forsyth Barr analysis, Bloomberg Consensus, Compco metrics re-weighted to reflect headline (TWL) companies fiscal year end

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