The City Rail Link: A Great Big Sucking Sound for Taxpayer and Auckland Ratepayer Dollars

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Executive Summary

- The City Rail Link was supposed to cost $3.4 billion when it was approved in 2017. Now it is estimated to cost $5.493 billion. This is a $1.074 billion increase on the previous estimate of $4.419 billion in May 2019. When the City Rail Link was first mooted in 2014, the cost estimate was $2.5 billion.

- This massive cost overrun will stretch the finances of Auckland Council beyond breaking. The Council struggled in 2019 to stay within its borrowing limit when it needed to find $500 million in supposed savings to fund its 50% share of the $1 billion increase in the cost of the link to $4.42 billion.

- It is unacceptable to Auckland ratepayers and to taxpayers that the cost revision released in 15 March 2023 was the first update since the revised cost envelope in early 2019. The City Rail Link Limited spent all of 2022 digging away lacking any real idea of the latest cost of the project to Auckland ratepayers and taxpayers because of COVID-19 supply bottlenecks and other cost escalations.

- The Minister of Transport and the Mayor seem to have quickly resigned themselves to accepting the 15 March cost estimate and the billion-dollar cost overrun. They turned their minds to whether the 50:50 split in costs of the City Rail Link should stay as it is or be revised because of the poor financial state of the Council generally and in the aftermath of the cyclone. This is not good enough.

- Taxpayers and Auckland ratepayers are entitled to expect more pushback than this against the numbers from the negotiations with the private contractors. Cabinet and Auckland Council are not rubber stamps. Scheduling meetings of Auckland Council on 23 March and of Cabinet on 27 March makes consideration of the 15

March cost update unseemly fast and leave insufficient time for officials to give proper advice and probe for alternatives.

- Another major concern for Auckland ratepayers and for taxpayers is Cabinet and the Governing Body of Auckland Council were given different information about the benefit-cost ratios when considering the 2019 revised cost envelope of $4.42 billion:

  > Cabinet was told that the benefit-cost ratio would remain above one if costs didn't run beyond $5.1 billion with the advice from Treasury and ministry officials pitched in neutral terms.

  > The Governing Body of Auckland Council was told that if the costs are less than $6.64 billion, the benefit-cost ratio will remain greater than one. An unacceptable discrepancy.

  > It takes rare political courage not to fund a cost overrun when the benefit-cost ratio was so pumped up and the city hall officials were advising the Council that the City Rail Link was still "a strong project".

- There must be symmetry of information this time from officials to Cabinet on 27 March and to Auckland Council on 23 March to ensure they act on the same information on costs and benefits.

- Back in 2017 when the project was first approved, the Treasury said that it was always a weak case for the City Rail Link in terms a benefit-cost ratios. The City Rail Link is now a white elephant.

- There will be a huge benefit shortfall from the City Rail Link because Auckland rail patronage is down 40% on pre-Covid levels. One in three New Zealand workers are now working from home for some part of the week. Ridership is unlikely to return to pre-Covid levels for many years because the shift to working from home is a global trend. This is especially so for managers and the professions, the very workers who are the fountain of agglomeration benefits of cities and for the City Rail Link.

- The working from home revolution wrought by COVID-19 has turned the City Rail Link into a cost with few benefits. The City Rail Link is now built in anticipation of passenger growth that is now several decades further away. The costs of the project are at least $5.5 billion but the benefits are unlikely to be more than $5 billion because of the large falloff in rail patronage subsequent to the working from home revolution.

- City Rail Link Limited should have released a revised benefit-cost ratio. Taxpayers and Auckland ratepayers deserve to know whether they are supporting a project that now has no net benefit.

- There must be an inquiry by the Audit Office covering the updated cost estimate released in March 2023, the 2019 revised cost envelope and the 2015 business case. There must be accountability for allowing costs to run completely out of control for some years now.

- There should be an inquiry by the Productivity Commission into the implications of the working-from-home revolution for major transport investments. With rail patronage down by 40% in Auckland, it may be a generation before patronage returns to pre-COVID levels, much less grows by enough to put pressure on public transport system capacity and call for further investments.

What is the Auckland City Rail Link?

1. This paper is about cost overruns and benefit shortfalls in the Auckland City Rail Link. The City Rail Link is New Zealand's largest ever transport infrastructure project. It will double rail capacity into the Auckland city centre with a 3.45km twin rail tunnel connecting the Britomart and Mt Eden stations that was due to open in early 2024. Two new stations at Aotea and Karangahape will be built and the existing stations at Britomart and Mount Eden will be redeveloped. Britomart station will be transformed into a two-way through station creating a rail loop rather than a dead-end that requires the trains to reverse out.

2. The 2015 business case for the City Rail Link was premised on an ever-growing demand for public transport in Auckland and a need to relieve pressure on a bus network nearing capacity. Benefits include trains at least every 10 minutes during peak times, reduced travel times (for example, up to a 17-minute trip saving from Henderson to central Auckland), improved access to employment and education opportunities, less traffic congestion, and commercial and residential development around the stations.

3. The 2015 business case estimates a cost-benefit ratio of 1.6 from doubling rail capacity into the city. The 2015 business case for City Rail Link estimated discounted monetary benefits that included:

   > $1.3 billion of travel time savings for public transport users (both existing and new);

   > $866 million of wider economic benefits – in particular, improved economic productivity from increased density of employment and improved accessibility (also referred to as agglomeration);

   > $317 million of benefits generated from increased reliability in travel times;

   > $136 million of travel time savings for road users and trucks; and

   > $125 million of health benefits for new public transport users from walking to and from train stations.

4. In 2017, the Crown and Auckland Council agreed to fund the City Rail Link equally. They jointly set up City Rail Link Limited as a time-limited special purpose Crown company to deliver the project.

5. The Link Alliance is responsible for delivering the City Rail Link's main construction works. There was one other company bidding for the tunnelling contracts. Alliances are a form of collaborative procurement where the parties, in the case of City Link, six New Zealand and international companies, work together to deliver the project and share project risks and rewards. The parties can solve problems without needing to renegotiate the contract with the principal, which is City Rail Link Limited. The downsides of a procurement alliance can be that they do not always offer certainty on costs and can lead to protracted negotiations about cost sharing (Auditor-General 2022). Previous projects of the Link Alliance include the MTR Hong Kong: Shatin to Central Link 1103, the Doha Metro – Red Line South and the Qatar Railways Company: Lusail Light Rail Transit, Contracts 1&2 (City Rail Link Limited 2019).

The double risk to taxpayers and ratepayers from rail megaprojects

6. Taxpayers and ratepayers need to come to infrastructure projects of the scale of the Auckland City Rail Link with certain knowledge about the hazards and difficulties that lie ahead for such megaprojects:

   Megaprojects are large-scale, complex ventures that typically cost a billion dollars or more, take many years to develop and build, involve multiple public and private stakeholders, are transformational, and impact millions of people (Flyvbjerg 2017).

7. Taxpayers and Auckland ratepayers must know whether an amount is a little or a lot, how much is too much and when things have crossed a line when considering massive infrastructure investments such as the City Rail Link megaproject both in the first instance and as the project and its costs unfold.

8. Flyvbjerg et al. (2003) analysed 258 large transport projects. Cost overruns of 50% to 100% and revenue shortfalls of 20% to 70% were common. Rail project cost blow-outs averaged 44.7% in the 58 projects he reviewed. Cost escalations on road projects averaged 20.4% in the 167 projects that were reviewed.

9. Flyvbjerg et al. (2005) found that passenger forecasts are routinely overestimated with actual rail passenger traffic 51% less than what was forecasted on average. They also found that 84% of actual rail traffic was more than 20% below forecast and none of the rail megaprojects reviewed had actual traffic more than 20% above what was forecasted. Forecasting errors for road megaprojects are better than for rail with an average under forecast of traffic of 9.5% “with no significant difference between the frequency of inflated versus deflated forecasts”. Flyvbjerg et al. (2005) also found that the causes of inaccuracy differed between transport modes “with political causes playing a larger role for rail than for road”. Flyvbjerg found that good evidence that:

When cost risk and revenue risk are combined, a risk profile emerges for urban rail, which proves such projects to be economically risky to the second degree... With actual costs and patronage in urban rail being different from that forecast to the degree and with the statistical significance documented above, an inevitable conclusion is that the results of conventional cost-benefit analysis, which is typically at the core of documentation and decision making for this type of project, is of little or negative value here (*Flyvbjerg 2007, pp.25-26*).

10. Flyvbjerg and Bester (2021) expanded the sample of public megaprojects to 2062 confirming again that rail is a double risk. The average cost overrun for the 264 rail megaprojects was 40% on average in real terms while the benefit shortfalls was 34% on average for the 74 rail projects where data was available. On average, 34% of the estimated passengers for the new rail megaproject never showed up. Flyvbjerg and Bester (2021) also found cost overruns of an average of 36% for the 48 megaproject tunnels they studied. The benefit shortfall on tunnel megaprojects was 20% for the 23 tunnels studied. By comparison, the 869 road projects had a cost overrun of 24%; the benefit shortfall for the 532 road projects where data was available was 4%. Rail megaprojects are a big double risk to the public purse.

11. Flyvbjerg et al. (2003, 2005, 2021) should not be accepted uncritically. An accurate cost estimation for megaprojects either in the first instance or during renegotiations is the equivalent of asking for a reasonably accurate history of a large new business in advance. It is no small matter for any firm to discover how to operate at least cost; the least cost way is not just lying around waiting to be picked up (Alchian 1950b; Becker 1962; Stigler 1958, 1987; Milgrom 1989). Alchian (1950a) illustrated the subjectivity of cost estimation with tendering bids. He found that tenderers routinely disagreed over its likely cost by margins of 20 percent. These tenderers were predicting their own costs about which they are most knowledgeable, and they have an incentive to bid truthfully to win the tender.

12. There are large productivity differences across producers, even within narrowly defined industries such as saw-blade manufacturing, white pan bread bakeries, ready-mixed concrete, book-stores, and manufactured ice. Researchers have found large differences in the productivity of competing firms in every country, industry, and time-period studied. Lining-up industry producers from least to most productive, a 90th percentile producer draws twice as much output from the same measured inputs (capital, labour, energy, materials) as the 10th percentile producer. Not surprisingly, the lowest 20 percent of manufacturers in productivity are two and a half times more likely to go out of business within five years than those in highest 20 percent of performers.

13. It's not just a matter of cajoling a design team to write down a more truthful cost estimate. If large and persistent differences in productivity levels across businesses

are ubiquitous even for producers of standard products, the notion that through more honest cost estimation that more megaprojects can be delivered on budget and on time may misunderstand how uncertain and unpredictable the operation of any business is, much less a megaproject. There are large honest disagreements on the best way to go forward in producing the most standard of products ranging for ready-mix concrete to fresh bread. Imagine how many more honest disagreements and deep uncertainties that must be resolved in delivering megaprojects such the City Rail Link or the proposed light rail link to Auckland airport.

14. What makes Flyvbjerg et al. (2003, 2009, 2021) so persuasive is across an ever-expanding megaprojects data set he found a persistent bias in the cost forecasts almost entirely in the same direction. Cost under-runs were rare for the megaprojects he studied. The over-run bias was just so pronounced. Megaprojects perform so badly that Flyvbjerg rightly postulated an Iron Law of Megaprojects:

    If, as the evidence indicates, approximately one out of ten megaprojects is on budget, one out of ten is on schedule, and one out of ten is on benefits, then approximately one in a thousand projects is a success, defined as on target for all three. Even if the numbers were wrong by a factor two – so that two, instead of one, out of ten projects were on target for cost, schedule, and benefits, respectively – the success rate would still be dismal, now eight in a thousand. This serves to illustrate what may be called the "iron law of megaprojects": Over budget, over time, under benefits, over and over again (Flyvbjerg 2017).

15. Flyvbjerg et al. (2005) argues that cost over-runs in megaprojects come from the inherent inaccuracies of forecasting, scope creep and other issues but, importantly, the rate of cost escalation error for megaprojects have not decreased in the past 70 years. Indeed, Flyvbjerg et al. (2003) said

    No learning seems to take place. Or, alternatively, project promoters and forecasters have learned what there is to learn, namely that cost escalation pays off; cost escalation is a simple consequence of cost underestimation and underestimation is used tactically to get projects approved and built.

16. The failure to improve the accuracy of megaproject cost estimates over the many decades he studied is attributed by Flyvbjerg (2009) to deceit and bias in the initial costings to get projects started. Flyvbjerg et al. (2003, 2005) places strategic deception front and centre as his explanation for megaproject cost overruns because "underestimated costs + overestimated benefits = funding".

17. The big lesson from the Iron Law of Megaprojects for taxpayers and for Auckland ratepayers is not to hope for the best, certainly in the case of rail and tunnel megaprojects. Taxpayers and Auckland ratepayers should be watching for red flags on the promised benefits and on cost control. There is little hope for a rail megaproject just muddling through on its own to a good benefit-cost ratio. A strict ruler must be run over rail megaproject cost overruns because there is no healthy buffer in the benefits column for rail megaprojects to keep the benefit-cost ratio from quickly going south.

A massive cost overrun even before the big dig!

18. The City Rail Link was supposed to cost $3.4 billion. The 2011 business case had a $2-3 billion cost range with a mid-point of $2.5 billion; the 2015 business case that was the basis for the go-ahead by the Crown and the Council in 2016 and 2017 put the cost of the project at $3.4 billion.

19. Costs were already growing rapidly before a sod of soil was turned and even a tunnel construction contract signed. As the then 2016 mayoral candidate Phil Goff rightly observed:

    The original estimates by Auckland Transport, New Zealand Transport Agency and Treasury put the price at $2.5 billion. They are now saying the cost may be as high as $3.4 billion… New Zealand taxpayers and Auckland ratepayers are owed an explanation for why local and central agencies may have underestimated the costs. We also need answers around the reliability of their new estimates and whether these can be depended on… if the price continues to escalate it puts more pressure on Auckland ratepayers. We need assurances that the project will be delivered on time and within budget (quoted in Orsman 2016).

20. The 2019 revised cost envelope estimated the cost of the City Rail Link at $4.42 billion because of scope creep, cost escalation and larger contingencies. This $1 billion cost overrun includes $268 million approved by Cabinet and Auckland Council in 2018 to make the platforms at Aotea, Karangahape, and Mount Eden stations longer to allow for nine-car trains instead of six-car trains and

adds a second entrance to Karangahape station. The longer, nine-car trains allow up to 54,000 people to move in and out of Auckland's CBD during the rush hours. The original scope allowed for 36,000 people at peak times. The City Rail Link's Chief Executive, Dr Sean Sweeney, gave as an explanation:

"The $1 billion cost increase on the previous $3.4 billion estimate made in 2014 reflects significant changes impacting the project in the past five years... No-one could have foreseen the competitive pressures that have occurred in the construction industry over the past few years and the impact that has on costs, particularly for a project the scale and complexity of the City Rail Link... Eighteen months ago, the value of work in the infrastructure pipeline on both sides of the Tasman was $80 billion – the value of that work is now estimated at $230 billion (City Rail Link 2019).

21. This $150 billion in new infrastructure seems to have appeared out of nowhere and swamped the infrastructure pipeline. This is surprising as the planning and lead-up horizons for megaprojects is many years before any soil is turned and there is large scale hirings of labour and specialised equipment.

22. City Rail Link (2019) also disclosed that at the time of the revised cost envelope that:

   > in 2014 the project assumed an annual cost escalation of two percent but New Zealand in 2019 was experiencing escalation of more than six percent and will do so for the foreseeable future; and

   > the allocation for contingency on the project was underestimated when the project was last estimated in 2014; and

   > an independent audit concluded that contingency on the City Rail Link project was below international benchmarking.

23. The 2019 revised cost envelope was issued while the procurement process was still live for the main tunnelling contracts. The major digging was yet to start and yet there were cost increases of 30% before any unexpected tunnelling conditions further increases costs. The cost increase over the midpoint in the 2011 business case is up to 75% without any major digging and tunnelling.

Another $6.7 billion in follow-on investments are assumed

24. To make things worse, the 2022 audit office review of the governance of the City Rail Link found another $1.1 billion in wider network improvements required to be completed by day one, the first day of operations in 2024, that were not included in the 2015 business case. Why was this so?

> *Cabinet recognised that wider network improvements were needed for Day 1 but decided not to include them in the CRL project's scope. Instead, Auckland Transport and KiwiRail are responsible for resourcing and delivering the wider network improvements. The wider network improvements are currently budgeted at about $1.11 billion. This brings the total budget for the works needed for Day 1 to about $5.53 billion* (Auditor-General 2022, p. 20).

25. The $1.11 billion in improvements include removing level crossings ($220 million), the Wiri to Quay Park upgrade ($318 million) and increasing the number of trains ($440 million). As the Audit Office noted:

> *Although we have not audited the business case, we note that the costs of the wider network improvements were not included. However, we also understand that at least some of these works are required to realise the intended monetary and other benefits described in the business case* (Auditor-General 2022, p.18)

26. The business case was seriously incomplete because some of the benefits were premised on spending not approved in the process that approved the City Rail Link. Taxpayers and Auckland ratepayers should have had all the relevant information before them about costs and benefits when judging the wisdom of a megaproject such as City Rail Link. The $1.11 billion in improvements in the wider system required for the launch of the City Rail Link on day one in early 2024 as planned should have been in the business case and benefit-cost ratios in the interests of public transparency.

Another billion dollars was ferreted out of the woodwork by the audit office

27. But it gets worse. The audit office found that KiwiRail and Auckland Transport needed an additional $6.7 billion between 2022 and 2036 for additional tracks and trains, lengthening platforms for the nine-car trains, removing all level crossings on the southern and western lines, and a signalling upgrade.

28. Only once these works are complete would the City Rail Link be able to run at a maximum capacity of 54,000 passengers an hour in peak times. When the City Rail Link opens in 2025, now pushed back from 2024, patronage will rise from 15,000 passengers per hour to 27,000. Business cases are in development. Taxpayers and Auckland ratepayers should not have been asked to approve New Zealand's largest ever transport infrastructure project only to slowly learn through an audit inquiry that many more billions of their dollars are needed to realise the main benefits of the City Rail Link.

A long-delayed cost update

29. The 2022 candidates for Mayor and Council had every right to express dissatisfaction that no updated cost envelope for the City Rail Link in time for the October 2022 local elections. A cost update was originally scheduled to come out in mid-2022 (Orsman 2022). Mayor Brown said before his election that:

    It's time for some honesty. The public needs to know if there is a large bill from CRL that will be left sitting in the new mayor's in-tray (quoted in Orsman 2022).

30. Six Auckland Councillors and several local election candidates joined mayoral candidate Wayne Brown in calling for the City Rail Link Limited books to be opened before the local elections to show the scale of any budget blowout (Orsman 2022). Councillor Chris Fletcher said:

    The scale of the rumoured cost increase is extremely troubling and could have a significant impact on the council finances, debt and rates. Full disclosure should be made to the ratepayers before the postal votes are sent out (quoted in Orsman 2022).

31. The Mayor of Auckland and the minsters of finance and transport were privately briefed by City Rail Link Limited on 9 December 2022 on an updated costs estimate. This briefing was City Rail Link Limited's latest view of the costs. That briefing was not an agreed position with the Link Alliance. Access by the Taxpayers' Union to this 9 December briefing was refused under the Official Information Act because the cost renegotiations were still live in early 2023. Councillor Sayers and then mayoral candidate Wayne Brown had speculated about a new cost estimate of $5.5 billion.

32. Taxpayers and Auckland ratepayers should not accept a situation where a megaproject has been tunnelling away for several years without an updated cost envelope. Furthermore, it has been known all of 2022 that Covid supply issues and rising costs in the global infrastructure sector will lead to further large cost increases for the City Rail Link. City Rail Link Limited has been tunnelling away all of 2022 with no clear idea of the final cost of the megaproject and when it might be completed.

Another billion-dollar cost overrun

33. City Rail Link Limited released its cost update on 15 March 2023. The cost of the project is now estimated to be $5.493 billion which is a $1.074 billion increase on the previous May 2019 estimate of $4.419 billion. The cost estimate when the project was approved in 2017 was $3.4 billion. The 2014 cost estimate for the project was $2.5 billion. This is a massive cost overrun. This is a 25% increase on the 2019 revised cost envelope and a 61% increase on estimated costs of the project in 2017.

34. A revised completion date was also released on 15 March. Construction of the stations and supporting rail infrastructure is now expected to be completed by November 2025. Following the end of the construction programme, City Rail Link Ltd will hand over the completed infrastructure to KiwiRail and Auckland Transport, who will then carry out the additional work required to open to passengers.

Blame it on Covid

35. City Rail Link Limited (2023) said that the extra funding and additional time for completion is "primarily due to Covid impacts – time lost on-site and the knock-on effect on the supply chain, resourcing, materials, and labour costs". For example, Auckland endured two level four lockdowns, a further 280 days of restricted working conditions (Covid traffic light system) and 3.2 million hours lost through illness among staff, with 800-plus workers infected.

36. City Rail Link Limited is very much blaming it all on Covid. The 2019 revised estimate cost estimate envelope referred more to wider infrastructure pipeline pressures with many projects in Australia competing for the same specialised resources. These pressures seem to no longer apply

Why the unseemly rush to seek Sponsor approval of the cost update?

37. This cost update is to be considered by the Auckland Council on 23 March and by Cabinet on 27 March. Why the rush? This is a massive cost overrun which ministers and Council members and importantly the officials that advise them should be given a reasonable amount of time to explore and test for alternatives. This search for options should include the possibility of returning the cost estimate for further renegotiation with the Link Alliance. Taxpayers and Auckland ratepayers are being poorly served by this rush to decision. They have every right to expect their elected representatives to be much more than a rubber stamp.

38. The reactions of the Auckland Mayor and the Minister of Transport was to quickly resign to their fates regarding approving the cost overrun and turning their minds to whether the 50-50 split between taxpayers and Auckland ratepayers will still apply. The finances of the Auckland Council were already under pressure before another billion dollars in spending is required to repair cyclone damage.

Another $500 million or more in costs is in the wind

39. The Mayor of Auckland has predicted that the cost overruns have not finished for the City Rail Link. He talked of further cost overruns of $500 million. There is more than 18 months for the project to run so this is not an unreasonable fear by the Mayor.

40. What is an additional concern to taxpayers and Auckland ratepayers is no cost updates have been issued for the $1.1 billion in day-one expenses that Auckland Transport and Kiwirail must spend that is in addition to the spending on the City Rail Link to open the new facilities. This is the $1.1 billion in day one expenses ferreted out by the audit office in its review of the governance of the City Rail Link. There is no reason to assume that this $1.1 billion is immune to Covid and other cost pressures.

Taming the City Rail Link with managerial economics

41. Building on the modern economic literature on the principal-agent dilemma, Froeb et al. (2008) argue that mistakes are made – business opportunities are missed – for one of two reasons:

    1. A lack of information; or

    2. Bad incentives.

42. Rational, self-interested actors err because either they do not have enough information to make better decisions than they currently do, or they lack incentives to make the best use of the information they have in hand. Froeb et al. (2018) then went on to argue that this information and incentives-based analysis just above gives rise to three questions about all business problems including in procurement:

    1. Who is making the bad decision?

    2. Does the decision maker have enough information to make a good decision?

    3. Does the decision maker have the incentives to make a good decision?

43. To Froeb et al. (2018), the answers to the above questions immediately suggest solutions:

    1. Let someone else—someone with better information or better incentives—make the decision;

    2. Give more information to the current decision maker; or

    3. Change the current decision maker's incentives.

44. The rest of this paper will explore the ability of the ministers, council members and bureaucracies involved in the City Rail Link to make credible commitments to improve incentives and information flows to decision makers subject to the soft budget constraints that are inherent to the public sector.

Who made the bad decisions about the City Rail Link?

45. Cabinet and Auckland Council approved the City Rail Link despite already rapidly mounting costs:

    > The 2011 business case costed the project at a mid-point of $2.5 billion;

    > The 2015 business case saw costs rise to $3.4 billion and yet the project was approved; and

    > The April 2019 revised cost envelope put costs at $4.42 billion.

46. Spiralling costs suggests that bad decisions have been made regarding cost control and even getting a clear idea of what costs might be. They were rising so fast as the throwing doubt on any forecasts.

47. The Auditor–General reviewed the governance of the City Rail Link in 2022 to report that it mostly worked well but it still needed improvements. That said, the Audit Office did not review the 2015 business case nor the 2019 revised cost envelope. These crucial decision points, the success of which show whether the governance of the City Rail Link is really working well are yet to be audited.

48. There has not been enough finger-pointing over the shortcomings in the running of the City Rail Link. There were expenditures totalling $1.11 billion that took an audit review to highlight properly. The Transmission Gully P3 never got a pass on its big cost overruns. They were large enough to throw into question the very concept of further public-private partnerships (P3s).

Can we let someone else make the decisions about the City Rail Link?

49. Despite out-of-control costs, it is not possible to let someone else make the decisions—someone with better information or better incentives—about the City Rail Link because it is a public project. Some personnel can be changed at Auckland Transport, the New Zealand Transport Agency or at City Rail Link Limited, but the deep pockets of the taxpayer and Auckland ratepayer will always be present. There is an escalation of commitment bias where project sponsors never pull out once a megaproject has started that will always be at the heart of the incentive structures for public procurement. This bias is:

    The tendency to justify increased investment in a decision, based on the cumulative prior investment, despite new evidence suggesting the decision may be wrong. Also known as the sunk cost fallacy (Flyvbjerg 2021, p. 532).

50. None of City Rail link Limited, the Council or Cabinet are subject to a bankruptcy threat if they fail to deliver to budget nor can they be displaced through a takeover as the case in a private project. Taxpayers and Auckland ratepayers are stuck with them all; more and more taxpayer and Auckland ratepayer dollars are thrown at a project at the risk of a negative benefit-cost ratio. The escalation of commitment bias is less of a problem in the private sector because private firms can run out of money, lose support of their banks and be unable to find new investors. They have hard budget constraints.

51. Once the Crown and the Council were committed to the City Rail Link, their ability to pull out was rather limited in a political sense. Former mayor of Los Angeles and former California legislative assembly speaker Willie Brown rightly described the initial budget as a down payment to start the digging:

News that the Transbay Terminal is something like $300 million over budget should not come as a shock to anyone. We always knew the initial estimate was way under the real cost. Just like we never had a real cost for the Central Subway or the Bay Bridge or any other massive construction project. So get off it. In the world of civic projects, the first budget is really just a down payment. If people knew the real cost from the start, nothing would ever be approved. The idea is to get going. Start digging a hole and make it so big, there's no alternative to coming up with the money to fill it in (Brown 2013).

52. The City Rail Link is not delivered by a public-private partnership. Private partners can be fired, penalised through contractual remedies, or not hired again for not delivering to budget. For example, one of the two private partners in the London Underground public-private partnership was allowed to go into administration after poor cost control (Ricketts 2009). The arbitration on the cost claim by one of the two private partners in the London Underground public-private partnership was not big enough to save it from going into administration (Ricketts 2009).

53. There are pension funds across the world that specialise in infrastructure public–private partnerships and wish to develop a global brand for success. For example, the NZ Superannuation Fund submitted a $6 billion proposal to build and operate Auckland's proposed light rail network with the Quebec pension fund partner CDPQ Infra. There is no similar international guarantee on project quality for the City Rail Link. There is no private partner who can run out of money if they don't control costs. Taxpayers and Auckland ratepayers are locked into the existing decision-making structure, no one can be fired, and has no ability to let someone else make better decisions with better incentives and better information.

54. The real advantage of public-private partnerships is they act as a filter against white elephants. If there is a proper transfer of project risk in terms of revenue shortfalls and costs overruns to the private partners, they will be reluctant to sign onto a public-private partnership that is unlikely to succeed.

55. There was no such initial test or screening device when the City Rail Link was first proposed in terms of attracting private capital. As mentioned, the NZ Superannuation Fund submitted a $6 billion joint proposal to build the Auckland light rail network. Now that costs have escalated to $15 billion, it would be an interesting test to see if NZ Superannuation and its Québec partner would be willing to resubmit a proposal to build as a public-private partnership what increasingly looks like a white elephant.

56. City Rail Link Limited has no reputation good or bad in infrastructure delivery because it is a special purpose company set up to deliver the project. One solution for a new firm wishing to establish credibility is to borrow the reputation of the far more substantial party for a fee. In the case of public-private partnerships involving international pension funds as an example, they put at stake their global brand for delivery to budget. It's too late now to use that institutional structure to guarantee better value for taxpayer and ratepayer money. Taxpayers and Auckland ratepayers are stuck where they are.

Did the decision-makers have enough information to make good decisions?

57. Information of varying quality and timeliness was put to Cabinet and the Council when the 2015 business case was considered in 2016 and 2017 by Auckland Council and Cabinet. The briefings to the ministers of finance and transport were succinct but still had room to contain key information that was not passed on to Auckland Council or to Cabinet in 2015. The question from Taxpayers and Auckland ratepayers is did Cabinet and Auckland Council notice that the information coming before it could have been better and return briefings to officials for reworking in 2015 and 2019.

58. The ministers of finance and transport were reminded in 2015 by the Treasury and the Ministry of Transport that the economic case for the City Rail Link was always weak. They were reminded of early work in 2011 by Auckland Transport and the Ministry of Transport that put the benefit-cost ratio of the City Rail Link as between 0.4 and 0.9. This is a big difference from the 1.6 in the 2015 business case.

59. The unredacted parts of the 2015 Cabinet paper released under the Official Information Act did not pass on these warnings about the weak economic case for the City Rail Link. Taxpayers and Auckland ratepayers have every right to demand that Cabinet be told that it is considering a low-quality investment. The ministers of finance and transport should not have kept that to themselves – that the benefit-cost ratio was a bit soft and then some. The Cabinet paper they signed off on did not remind Cabinet of these reservations when the government was making an early commitment to fund the City Rail Link. Taxpayers and Auckland ratepayers have every right to demand better information to be before Cabinet. Doubtful transport investments should be clearly earmarked in the advice to Cabinet.

60. The information submitted to Cabinet and Auckland Council by officials was subpar. The costings for the City Rail Link were made three years previous in 2014 and not updated for the 2017 decisions by Cabinet and Auckland Council. Furthermore, that costing of $3.4 billion made in 2014 did not include the establishment costs for City Rail Link Limited. To make things worse, the cost escalation factor was projected to be 2% per year. In 2019, City Rail Link Limited realised this was inadequate when revising the cost envelope; it should have been 6%. This forecast was made when the Reserve Bank was within its 2% inflation target. This was before the March 2020 onwards splurge of inflation because of the Covid monetary expansion. This is wholly unsatisfactory from the perspective of taxpayers and ratepayers.

61. When Cabinet was considering the revised cost envelope in 2019 asking to approve a new budget of $4.42 billion it was warned that the benefit-cost ratio was starting to be a bit tight:

> *An update of project benefits to 2018 values by PricewaterhouseCoopers (PwC) has confirmed that the benefit-cost ratio for the CRL project will remain positive (> 1) at this new cost level. PwC states that, as long as the total project cost remains below $5.1 billion, the CRL base case remains justified based on an economic assessment (Minister of Finance and Minister of Transport 2019, p. 4).*

62. Cabinet was also told by the ministers of transport and finance that "Council officers will provide elected representatives with information similar to that in this paper" about the revised cost envelope. Not so.

63. The Governing Body of Auckland Council was provided with much more optimistic estimates of the updated benefits of the project than provided to Cabinet by the ministers of finance and transport:

> *CRLL engaged PwC to update the economic assessment of benefits of the project prepared as part of the 2015 business case to reflect new parameters, a revised delivery schedule, and using the most up-to-date transport modelling. The updated assessment found that the benefits of the project are between $6.64 billion and $7.06 billion. This means that if the total project costs are less than $6.64 billion, the benefit-cost ratio will remain greater than one (i.e. benefits exceed costs). Additionally, PwC noted that this assessment is considered to be conservative as it is based on a standard 40-year assessment period despite being a transformational, long-life project. If the assessment was extended to 60 years the gross benefits would increase by up to 24 per cent. They also noted that the assessment did not incorporate the scope change to support nine-car trains which would be expected to further increase the benefits, although it is noted there would also be additional costs to be considered. This work confirms that at a cost of $4.4 billion CRL remains a strong project for sponsors to invest in with a benefit-cost ratio of at least 1.5 (Auckland Council 2019, p. 13).*

64. On the information sent to the Governing Body of Auckland Council, even a devotee of the Iron Law of Megaprojects would still be comfortable about the buffer left in the benefit-cost ratio. There was still $2-3 billion to spare before the project went south. The benefit – cost ratio for the City Rail Link was said to be still 1.5. The Governing Body of Auckland Council didn't have to worry too much about the Iron Law of Megaprojects because officials said there was still a substantial benefits buffer.

65. Cabinet was operating off a different, more pessimistic advice from officials emphasising a significant cost overrun on a now $4.4 billion project that was a mere $700 million away from going below one in its benefit-cost ratio. It was not the $1.5-2 billion benefit-costs ratio buffer in the Auckland Council agenda papers which would have been far more reassuring to

members of the Council. Little wonder only three members of the Council voted against approving the revised cost envelope.

66. The Taxpayers' Union struggled to find the PricewaterhouseCoopers' $6.64 billion number put to Auckland Council using official information requests. PricewaterhouseCoopers summarised its 11 April 2019 economic assessment update on the City Rail Link in the executive summary as follows:

Based on a spend profile and escalation rates provided by CRLL, a benefit-cost ratio (BCR) of 1 is still maintained if the capital cost is lower than:

> *$5,119 million (unescalated, in 2018 dollars)*

> *$5,815 million (escalated to the year of spend)*

This value is considered to be conservative as it does not reflect the additional benefits associated with:

> *any scope changes since the business case was completed, for example the inclusion of 9-car future proofing means future benefits would be higher than assessed*

> *recent growth in rail patronage being higher than forecast at the time of the business case, as existing rail passengers receive considerable benefits from CRL (PricewaterhouseCoopers 2019, p. 1).*

67. The advice from Treasury and ministry officials to Cabinet used the $5,119 million number from the 11 April 2019 Economic Assessment Update by PricewaterhouseCoopers when advising Cabinet on whether the benefit-cost ratio of the City Rail Link is still greater than one for the 2019 revised cost envelope of $4.42 billion.

68. The Council was operating on much rosier forecasts of benefits than either the ministers of finance and transport or Cabinet. Cabinet and the council were supposed to be operating off much the same advice before deciding on the revised cost envelope. That was the assurance by officials to Cabinet in 2019.

69. The range of benefits of the project of between $6.64 billion and $7.06 billion that was included in the agenda papers for the Governing Body of the Auckland Council came from page 12 of the 15 April 2019 Indicative Update by PricewaterhouseCoopers and are "escalated to the year of spend" with an annual cost escalation factor of 3.8%. The 11 April 2019 update by PricewaterhouseCoopers used by Treasury and the Ministry of Transport to advise Cabinet is a different document to the 15 April 2019 Indicative Update from PricewaterhouseCoopers that was used by Council and City Rail Link Limited officials to advise the Governing Body of Auckland Council. The 15 April document by PricewaterhouseCoopers included modelling based on updated rail passenger forecasts which increased the benefits from the City Rail Link by 13% to 19%. Taxpayers and ratepayers should recall that Flyvbjerg et al. (2006, 2021) found that rail passenger forecasts for rail megaprojects are routinely overestimated with actual rail passenger traffic ⅓ to ½ lower than what was forecasted on average when the rail megaproject was first approved.

70. The numbers included by PricewaterhouseCoopers in its 15 April update's executive summary which can be assumed to be in anticipation that they would be quoted in decision making were as follows:

Based on a spend profile and escalation rates provided by CRLL, a benefit-cost ratio (BCR) of 1 is still maintained if the capital cost is lower than $5.85 billion (unescalated, in 2018 dollars) or $6.64 billion (escalated to the year of spend)

71. The $5.85 billion figure – the unescalated 2018 dollars number based on updated passenger forecasts – was the highest the council officials should have gone when advising on the benefits of the project because it is from the summary of the PricewaterhouseCoopers 15 April document. Stigler's law of textual exegesis (1965) is that because even the great and the good are human enough to contradict themselves, change their minds, and even write in vague terms from time to time and are misheard, rely on their own summaries of their own work to work out what they really think rather than hand-picked quotations. You can then check if their analytical system supports their summaries of their main works.

72. Auckland Council was not told in the agenda papers supplied to the members of the Council that it was deciding with numbers escalated to the year of spend when

checking whether there was still a benefit-cost ratio greater than one. The numbers given to the council by their officials was not qualified as either in terms of 2018 prices or year of spend prices as they were in both April updates from PricewaterhouseCoopers so council members would have assumed 2018 prices for the benefits.

73. The benefit-cost ratio before the Council, ratepayers and taxpayers should be comparable in time by being in 2018 dollars and not selectively escalated to the year of spend. The Treasury used un-escalated benefit and cost numbers when advising Cabinet. The officials at Auckland Council should have followed this as best practice. Officials at Auckland Council told the Governing Body of the Auckland Council that the project was still "a strong project". They used escalated numbers to the year of spend which boosted the benefit-cost ratio significantly. Treasury and Ministry of Transport officials gave more tempered advice to Cabinet stating no more than that the benefit-cost ratio remains greater than one at this new cost level.

74. The Iron Law of Megaprojects is not likely to reverberate with the Governing Body of the Auckland Council if the City Rail Link still had a benefit-cost ratio of 1.5 after a 30% cost overrun. It is hard to summon the political courage to cut back on a megaproject that still has a good benefit-cost ratio and officials were advising that the City Rail Link was still a "strong project". If Auckland Council had been presented instead with the less rosy information that was put before Cabinet, that the benefit–cost ratio was now nearing one, Council members might have probed for savings options.

75. As it stands, Cabinet approved the project because the revised cost envelope of $4.42 billion came in under $5.1 billion in estimated benefits, which was a bit of a close call. Auckland Council approved the project because it easily came under the benefit-cost ratio of one threshold of $6.6 billion to $7.1 billion. Both sets of advice albeit from different officials can't be right.

76. Different cost mitigation options were put to Cabinet and the Governing Body of the Auckland Council. Cabinet was advised by the ministers of finance and transport against trimming the project because it was substantially reduced benefits. The Governing Body of the Auckland Council was presented by officials with about $500 million in savings that could be made supposedly elsewhere in Auckland Council business. The Auckland priority was keeping the Council within its borrowing limit.

77. To explain in turn starting with the Cabinet paper, delivering the City Rail Link within the currently agreed funding amount was not considered by officials to be a plausible option as it would deliver a system with limited functionality and benefits, including the probable elimination of stations. Removing a station (for example, Karangahape Rd), delivering a single tunnel, or simplifying the connection with the Western Line could deliver savings but have significant negative patronage impacts. KiwiRail and Auckland Transport indicated that they will not support the single tunnel and simplified connection options from an operational feasibility perspective. Cabinet was told that all scenarios had negative impacts on capacity, operations, and resilience. The advice was effectively take-it-or-leave-it. No numbers were given on each of the options such as eliminating a station so Cabinet could decide for itself.

78. The Governing Body of the Auckland Council was told that the council could fund the revised cost envelope for the City Rail Link with $500 million in savings. This consisted of:

> a windfall reduction in interest rates expenses of $100 million because of very low interest rates,

> what was in effect a $100 million bridging loan from the Crown arising from delaying council payments towards City Rail Link by a few years with the Crown pitching in earlier;

> $50 million dollars from the progression of the off-street parking strategy;

> $130 million from reassessment of the valuation of operating commitments which impact on the council's debt policy limits; and

> another $100 million in savings from better cash management.

79. The $500 million in supposed savings were windfalls that could just as easily be

earmarked to any other purpose by the Auckland Council including lower rates.

80. It was important to taxpayers and especially Auckland ratepayers that the Governing Body of the Auckland Council be briefed accurately and fairly. Auckland Council was much more likely to push back against the revised cost envelope because it was pushing up against its borrowing limit. The Crown does not face binding borrowing limits as does Auckland Council so Cabinet can go soft.

81. The revised cost envelope in 2019 was rushed through by the Crown and the Council. The billion-dollar project increase was approved before the tunnelling began. The procurement process with the tunnelling companies was still live. Outside consultants such as PricewaterhouseCoopers and the advice from officials to Cabinet and to the Governing Body of the Auckland Council both said that their advice and reports were undertaken in a compressed time-period, and further work may identify feasible options to reduce City Rail Link costs for a modest loss of benefit, such as possibly smaller scale. Another missed opportunity to the detriment of taxpayers and Auckland ratepayers. Cabinet and Auckland Council both passed up the opportunity to wait and ask for more considered advice before they decided.

82. Auckland Councillors Greg Sayers, Christine Fletcher and Mike Lee voted against approving the revised cost envelope because they did not think they were given enough information. For example, the council's report lacked any detailed information on why the City Rail Link's costs had gone up. Auckland Council worked off the table reproduced below. The table was said to lack any details on the drivers of the cost increases. Councillor Mike Lee also thought that the updated economic assessment by PwC was not sufficiently independent because it was paid for by City Rail Link Limited.

83. The Taxpayers' Union commends Auckland Councillor Mike Lee for saying:

> *"It's not our money to play with. We have to be prudent and careful and not just sign off a decision on the flimsiest evidence… All this is doing is inflaming the market. We're saying to companies you can overshoot your costs and inflate your price and then you can go back to the politicians and they will rubber stamp it. I've been a long term advocate of this project from when I was in charge of the ARC, we started the business case for it…. But I thought it would be totally immoral to vote on a half a billion dollar bail-out without proper information … There are limits and we have to be fiscally responsible. We can't just rubber stamp any proposal put before us* (Forbes 2019).

84. The Taxpayers' Union commends councillors Greg Sayers, Christine Fletcher and Mike Lee for standing up for ratepayers and saying that they were not given sufficient information on the revised costs.

City Rail Link 2019 revised cost envelope

$ Million		Existing		Updated	Increase
Construction Costs		2,382		2709	327
Client-side cost		484		636	152
Direct cost		2865		3345	479
Contingency (P50)	9%	255	14%	458	203
Escalation (P50)	10%	285	12%	391	106
Nine-Car adjustment (Aotea, K Rd, Mt Eden)				250	250
C3 bid adjustment				-25	-25
Project cost (P50)		**3405**		**4,419**	**1,014**

Source: Auckland Council.

Can information flows be improved?

85. The benefit-cost analysis by PricewaterhouseCoopers was subject to a number of qualifiers about how it could be improved considerably if they had a few more months to work. When international consultants who pride themselves on working to tight timelines are advising that their benefit-cost advice could be much better with a bit more time, the Auckland Council and Cabinet should have heeded these sage warnings and given themselves more time to decide.

86. Both Cabinet and the Council should have insisted on costed options to trim the project rather than be presented with advice with no numbers saying that there is no way to trim. For example, the discussion in the 2019 Cabinet paper and the Auckland Council meeting agenda papers on the revised cost envelope on removing one of the stations should have said how much would be saved by doing that. Deleting a station from the City Rail Link is not without precedent. Engineer reviews previously undertaken in 2013, 2014 in 2015 resulted in the deletion of the originally proposed Newtown station. Every option for trimming should be costed properly in a table rather than presented in qualitative terms and advised against without mentioning how much should be saved if there were cutbacks.

Did decision-makers have the right incentives to use the information they had?

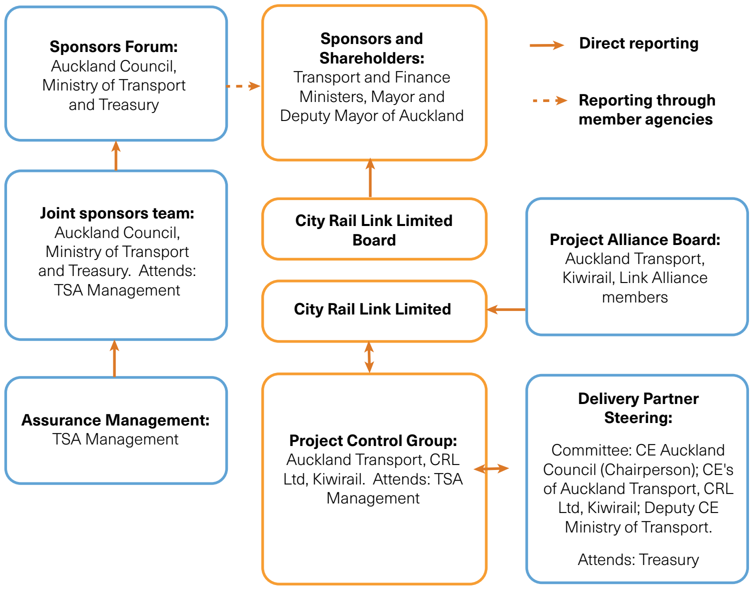
87. It should trouble taxpayers and Auckland ratepayers that all major decisions of City Rail Link Limited must be approved by both Cabinet and Auckland Council. Decision-making is rather centralised. This is a concern because are these two political bodies, which have a great many other calls on their limited time, well-informed enough to make good decisions in the public interest? As Froeb et al. remind:

    When you centralize decision-making authority, you should also figure out how to transfer information to the decision maker... When you decentralize decision-making authority, you should also strengthen incentive compensation schemes (Froeb et al. 2018 pp. 272).

88. There is reason to doubt whether the organisational architecture of the City Rail Link will transfer enough information up its hierarchy to ensure good decision making by Cabinet and the Council. The organisational architecture of a firm encompasses the assignment of decision rights within the firm, the methods of rewarding individual employees, and the structure of the systems that evaluate the performance of individual employees and business units (Brickley, Smith and Zimmerman 2004).

89. The audit office review described the governance of the City Rail Link as "complex" but did not undertake an economic analysis of that complexity (Auditor-General 2022). As the organisational flow chart below shows, many different bodies sidle-up into

the lines of accountability of City Rail Link Limited to its shareholders. The Assurance Manager, the Joint Sponsors Team, and the Sponsors' Forum all report in the end to the shareholding ministers and the Council. City Rail Link Limited has reporting lines from the Project Alliance Board, the Delivery Partners Steering Committee, and the Project Control Group. The only bodies in the organisational architecture of the City Rail Link with clear-cut decision-making powers are Cabinet and Auckland Council but they are busy with many other responsibilities.



Source: Auditor-General (2022) at https://oag.parliament.nz/2022/city-rail-link/part2.htm#governance

90. Once you peel back the formal governance structure what we have are a bunch of jumped-up inter-departmental committees reporting to ministers and the Council. Only City Rail Link Limited and its directors are personnel specialised in construction delivery. The rest are quite truly part-timers reviewing proposals and cost increase envelopes among many other responsibilities. At the top we have politicians with no real expertise in infrastructure delivery and a great many demands on their time. Designing, building and operating an underground rail network is not in their skill stacks.

91. Politicians have many irons in the fire and win no special gains from monitoring the City Rail Link closely. The decision ratification rights are mostly with the shareholding ministers and the Council; decision monitoring rights are spread across subordinate forums and committees involving Auckland Transport, the New Zealand Transport Agency, and the Treasury. These agencies do their best, it is hoped, but they report to distracted, even overwhelmed principals (Cabinet and Auckland Council).

92. If City Link Limited were a privately owned managerial firm, its owners would advance, withdraw, and redeploy capital, carry the residual investment risks of ownership, and have the ultimate decision-making rights over the firm (Klein 1999; Fama 1980; Fama and Jensen 1983a, 1983b; Jensen and Meckling 1976). (Entrepreneurial firms are owned and managed by the same people (Fama and Jensen 1983b)). Unlike City Rail Link Limited, the owners of a large private managerial firm delegates day-to-day control to managers appointed by boards of directors that are in turn elected by the shareholders (Fama and Jensen 1983a, 1983b). This separation of decision management rights, vested in hired managers, from decision control rights, vested in the board of directors, is a common governance safeguard against conflicts of interest in business, professional and non-profit organisations, large and small (Fama and Jensen 1983a, 1983b). Decision management rights cover the initiation and the implementation of decisions. Decision control rights involve the ratification and the monitoring of decisions. Large firms are run by managers hired by diversified

owners because this is the most inviting trade-off in raising capital and then finding the managerial talent to put this pool of capital to its most profitable uses (Fama and Jensen 1983a, 1983b, 1985; Demsetz and Lehn 1985; Alchian and Woodward 1987, 1988). The reward for forming a well-disciplined managerial firm despite the drawbacks of a diffuse ownership is raising large amounts in equity capital from investors seeking diversification and limited liability (Alchian 1969, Jensen and Meckling 1976; Fama 1980; Fama and Jensen 1983b; Demsetz and Lehn 1985; Tirole 2006).

93. Cabinet and Auckland Council share major decision ratification rights for City Rail Link Limited as the shareholders. In a private firm, these decision control rights are with the board of directors as they are the best-informed party. Private shareholders hold boards of directors to account and can replace under-performing directors. City Rail Link Limited refers back to its shareholders more than would a privately owned firm. This is because the City Rail Link is funded by parliamentary appropriations that must be sought by the Government annually as well as by allocations from Auckland Council's Budget. These constitutional encumbrances burden the City Rail Link with overly hands-on owners whose spans of control are thus stretched to breaking by this need to get deep into the details.

94. A challenge for City Rail Link Limited is this ease with which governments can intervene in its affairs. Private ownership such as under a public-private partnership for the City Rail Link can offer some insulation against political interference in the decisions the management teams make with the information before them. The private partner in a public-private partnership can push back and call on legal rights it might have under the overarching contract for the delivery of the project. These checks and balances as represented by the legal and contractual rights of the private partner are an important safeguard against changes to the City Rail Link don't add up in terms of possible patronage to justify the investment. The increase from six cars to nine cars to future proof the project would have been subject to greater scrutiny if there was a private partner whose payment over the life of the project was linked to patronage. They will check out the forecasts to see if they add up and push back if they do not.

95. The body with the better incentives to make good use of the information at hand is Auckland Council because it is pushing up against a hard budget constraint. Financing the City Rail Link is pushing it up against Auckland Council's borrowing limit of 265% of rate revenues. Cabinet has no similar hard budget constraint because it decides for itself what budget deficit it runs.

Can incentives to use the available information be changed for the better?

96. A private firm has many options to improve incentives to use information. Incentive contracts for managers could include performance pay, completion bonuses and share options. Mergers and takeovers are another option to sharpen incentives and share information better between buyers and suppliers. Public-private partnerships vest the design, building and operation of the service in the same vertically integrated firm which can then take a whole-of-life view on cost and quality control.

97. Government ownership encumbers the use of available information such as by City Rail Link Limited because of problems in defining the goals of that firm. Governments have objectives other than the simplicity of profit maximisation. Furthermore, the objectives of governments as the owner can change from one administration to the next. Governments have an inability to credibly commit to a policy and this can significantly reduce the efficiency of the operation of a government owned company.

98. In an ideal world, governments could write a detailed contract with the managers of City Rail Link Limited that mimics the incentive structures facing the management of a privately owned infrastructure delivery firm. But it is not possible to write a complete contract that adequately aligns the incentives of managers to the goals of government especially when there is this multiplicity of public goals. It is not possible to cover every contingency in a written contract. Indeed, it usually takes an extra 18 months to write a contract with the private partner in a public-private partnership because of the difficulties of writing into a contract even the major contingencies. The purpose of the detailed contract is to give the best available incentives to the private partner to deliver both good quality and lower costs.

Procurement as a game of incentives

99. The economic literatures on procurement (Rogerson 1994, 1995; Laffont and Tirole 1993) and on comparisons of public sector and private sector practices on procurement tendering (Tadelis 2012; Bajari and Tadelis 2001, 2006) offers lessons to the City Rail Link. The proposals that emerge from procurement economics are:

> Fixed price contracting with competitive tendering is recommended for simpler projects; but

> Cost-plus contracts negotiated directly with the more established firms who want to protect their reputations and win future business are suggested for the delivery of complex projects.

100. The idea behind different contracts depending on project complexity is to best mobilise dispersed knowledge and incentives in decentralised hierarchies. A cost-plus contract does not greatly encourage efforts to reduce costs or innovate but the contractually fixed fee plus a percentage share of realised costs to be reimbursed makes the sharing of cost overruns and changes in scope more predictable and less litigious (Laffont and Tirole 1993). This is valuable when the procurement design is expected to undergo major changes as the project unfolds (Tadelis 2012; Bajari and Tadelis 2001, 2006). Fixed price contracts rewards innovation and cost control more because the contractor keeps the entire profit but there is a risk of cutting corners on quality if this can go undetected (Laffont and Tirole 1993). Low-cost firms have an incentive to sign fixed-price contracts because they anticipate coming in under-budget.

101. More complex projects have more uncertain designs. They are more likely to be subject to surprises and a genuine need to renegotiate scope, design, costs, and

timelines (Tadelis 2012; Bajari and Tadelis 2001, 2006). More is to be gained from early collaboration with the more experienced contractors before and after the cost-plus contract is signed to share information about scope, design, and technology (Tadelis 2012; Bajari and Tadelis 2001, 2006; Laffont and Tirole 1993). The Link Alliance is on a cost-plus contract. This allows it to partially profit from delivering under-budget but at the price of having to share in any cost overruns. A cost-plus contract does not guarantee the Link Alliance a profit on the City Rail Link.

102. City Rail Link Limited must elicit the true costs of the Link Alliance prior to signing contracts and how much effort it has put into cost control once the cost-plus contracts are signed or a renegotiation is sought. The private contractors to City Rail Link Limited might be completely truthful about unexpected costs they might have encountered but the Link Alliance might struggle to find ways in which to convince each of City Rail Link Limited, Auckland Transport, Auckland Council and Cabinet that they are indeed telling the truth. City Rail Link Limited has reported 280 days of disruptions with effects such as the shutdown of the port of Shanghai stranding project materials and equipment for months (Niall 2022). The City Rail Link's CEO said that "The budget had planned for 2% inflation a year, now it's 20% and for some items 200%" (Niall 2022). On the other hand, the desire for more profit might be interwoven into the cost claim by embellishing the COVID-19 cost escalations or the unanticipated conditions or efforts by the Link Alliance to contain costs might have tapered off. There could be a lack of innovation, quality dilution, gold-plating and other cost padding. There is certain to be an honest disagreement between the Link Alliance and the City Rail Ltd about what is a reasonable rate of return, a reasonable rate of profit to be earned on the remaining parts of work to be done on the City Rail Link.

103. The screening of the initial and revised cost claims undertaken by City Rail Link Limited and the signals that Link Alliance send about their cost structures raise issues of adverse selection and moral hazard. Adverse selection and moral hazard are live issues in the current cost renegotiation as well as the initial tendering and the 2019 revised cost envelope. What distinguishes adverse selection from moral hazard is the kind of knowledge that is hidden. Adverse selection arises when the buyer cannot distinguish between high-cost and low-cost suppliers before buying because of information about cost and quality or other characteristics known only to the supplier. The buyer then is at risk of buying from the high-cost firm rather than the low-cost supplier. Moral hazard arises after the contract is signed where the buyer cannot ascertain how much effort, for example, managers, workers, or contractors are putting into cost and quality control or other actions hidden from the view of the buyer (Froeb et al. 2018).

104. Saussier and Tirole (2015) argue that procurement contracts are subject to asymmetries of information (in that the contractor is more familiar with their costs and the economic environment than the public agency) and contractual incompleteness (since it is impossible to foresee every possible event that might arise over the lifetime of the contract and agree how to write them down in advance). The economic literatures on the regulation of monopolies and network industries, state ownership and privatisation, and the economics of procurement have all converged on these same issues: asymmetries of information and contractual incompleteness in an agent-principal relationship where the government is the principal and the winning tenderer, the regulated firm or the state-owned company (such as City Rail Link Limited) is the agent (Laffont and Tirole 1994; Rogerson 1993,

1994; Armstrong and Sappington 2007). The joint conclusion of these three economic literatures is the regulator of a private monopoly or network, or the procurement agency such as City Rail Link Limited must leave enough profit to induce private contractors to stay in the business that is regulated or is supplying government, leave reasonable profit incentives from innovating and reducing costs, but the regulator or procurement agency must not allow exorbitant profits at the expense of the ratepayer and the taxpayer or the consumer.

105. The renegotiation of procurement contracts because of possible cost increases give rise to the same policy trade-offs as do periodic price cap reviews for the services of monopolies and networks. Both involve assessing what returns might be earned on new investments and/or network extensions. It is a game of cat-and-mouse in taming market power while leaving enough incentives to innovate (Laffont and Tirole 1994). The regulator or procurement agency wants to stop excess profits without getting rid of the profit motive altogether all while not knowing how much it costs to make things or induce innovation. The nub of the matter is how much profit should the Link Alliance earn given the cost overrun given it is part and parcel to a cost-plus contract to share any cost overrun.

106. The regulator or procurement agency such as City Rail Link Limited observes realised production costs, but not how much effort the private firm such as the Link Alliance has put into cost-reduction. The regulated firm or the private supplier such as the Link Alliance and its six constituent construction companies knows more about their cost-reducing technologies and the true extent of COVID-19 and other cost pressures than the regulator or procurement agency before and after signing any contract.

107. The tender stage must be organised in a way that the lowest cost firm is awarded the contract rather than a less able firm that under-bids by intending to cut corners on quality either by design or through incompetence. There is also the risk of an expert firm spotting major design flaws and bidding low in anticipation of profiting from large changes in the contract specifications (Bajari and Tadelis 2006). Two companies bid for the tunnelling contracts for the City Rail Link with the Link Alliance winning. The presence of this second bidder allowed for some competition to force down prices.

108. At the renegotiation stage of any large procurement, and we are at the end of a second major renegotiation of the costs of the City Rail Link, there must be screening to ensure that a low-cost firm does not pass itself off as a higher-cost firm and bluff its way through to a generous allowance for the cost increases to date and in prospect. (Screening describes the efforts of a less informed party (City Rail Link Limited) to gather information about the more informed party (Link Alliance)).

109. Indeed, asymmetries of information are so central to monopoly regulation and procurement that the main rationale of government ownership has evolved into information extraction about costs and quality (Schmidt 1996a, 1996b; Laffont and Tirole 1991, 1993; Martimort 2006; Shleifer 1998). Does government ownership increase the effectiveness of regulators in extracting truthful information about the costs of a natural monopoly or network to prevent overcharging, a lack of innovation, service quality dilution, over-capitalisation, gold-plating and other cost padding behaviours? The elicitation of information about costs and quality of a monopoly is similar to the asymmetric information challenges facing sponsors of megaprojects such as the City Rail Link. How can contracts and organisational forms be designed to uncover hidden and uncertain knowledge? Can a Crown-owned company such as City Rail Link Limited do better than a public-private partnership?

Flat-footed by a soft budget constraint

110. The ability of the City Rail Link Limited to tease out the true extent of COVID-19 cost pressures on the Link Alliance is limited by its soft budget constraint. A soft budget constraint arises whenever a funding source such as a government finds it impossible to keep an enterprise to a fixed budget (Kornai 1986; Kornai, Maskin and Roland 2003). The discipline enforced on private firms by the capital markets and the banks and by the threat of financial distress and bankruptcy are all less important for state-owned firms such as City Rail Link Limited. Privately owned firms can be bailed out too, but usually this is at a higher political cost so bailouts of the private firms should be less frequent (Laffont and Tirole 1991, 1993; Boycko et al. 1996).

111. The revised cost envelope in 2019 and the 2023 cost update were both negotiated in the shadow of the soft budget constraint of City Rail Link Limited. City Rail Link Limited couldn't say that it cannot pay any more because its investors and its bankers have said no more money or bankruptcy is threatening. As Froeb et al. note:

> *The strategic view of bargaining envisions bargaining as a game of chicken where the ability to commit to a position allows a player to capture the lion's share of the gains from trade. However, credible commitments are difficult to make because they require players to commit to a course of action against their self-interest* (Froeb et al. 2018, p. 211).

112. Neither the Crown nor Auckland Council can tie their own hands to not fund the City Rail Link beyond a pre-specified cost overrun; the Crown nor Auckland Council cannot say with credibility that it will walk away because it has hit a hard budget constraint. This inability to threaten to walk away gives private contractors a big advantage in renegotiations of costs such as for the 2019 cost envelope and the 2023 cost update. City Rail Link Limited is not the private partner in a public-private partnership that can be penalised or replaced for falling to deliver.

113. Failures of City Rail Link Limited to hold the line in renegotiations with the Link Alliance, a failure to hang tough, are not disciplined by the threat of bankruptcy or a corporate takeover. Instead, taxpayers and Auckland ratepayers will, in the end, underwrite most of the overrun. City Rail Link Limited might have information to hand to which suggests that the Link Alliance would accept a lower renegotiation price currently or for the 2019 revised cost envelope, but it may not be able to hang tough enough for long enough, playing a game of chicken, to secure that price concession because of its own soft budget constraint.

114. Renegotiations of existing contracts are fraught with difficulties because the public sector procurement agency such as City Rail Link Limited cannot threaten to close-down unless its latest counter-offer is accepted. It cannot do that either as a negotiating bluff or as a reality because it has run out of money. The Taxpayers' Union can only speculate that negotiations over the 2022 cost update have dragged out from the middle of last year to now because the Link Alliance is calling City Rail Link Limited's bluff.

Downtown besieged

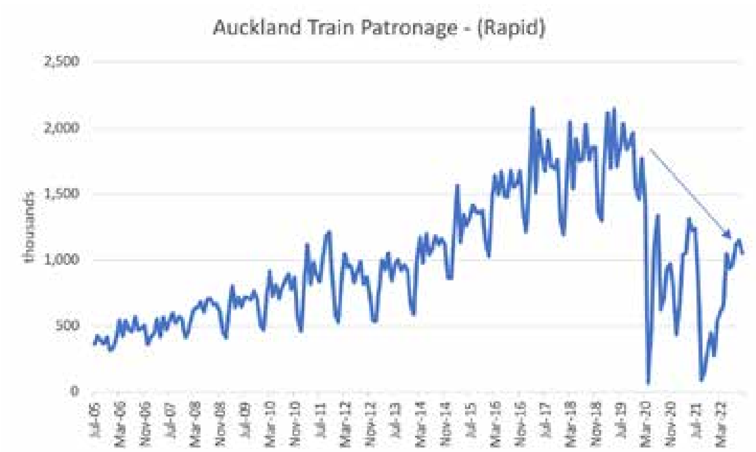
115. The then Auckland mayoral candidate Wayne Brown doubted the value of the City Rail Link because the project was designed for a pre-Covid world, and will not deliver the benefits originally promised:

> *I think you'll find when the city rail finishes, when the costs have gone up, the times have gone up, and the passengers will go down* (Hawkesby 2022).

116. The COVID-19 pandemic triggered a lasting, large shift to working from home. COVID-19 compelled many to work from home. This experimentation generated much new information on the practicality and effectiveness of working from home. Individuals and their employers have now had time to adjust in the long-term to choose much more working from home than before the pandemic.

117. As the figure below for Auckland monthly train boardings up to October 2022 shows, monthly rail patronage has dropped by 40% on pre-Covid levels; ten years of growth lost. These numbers are inflated because train fares are still half price so the long-term drop in patronage should be greater.

118. Instead of having decades to adapt to the latest urban trends, cities including Auckland were given weeks to adapt to a radical change in work and commuting patterns brought on by COVID-19 (Glaeser and Cutler 2022; Kahn 2022). Rail infrastructure such as the City Rail Link is particularly vulnerable because it is a fixed-point network. This is different to bus networks which have a greater ability to adapt their routes to changed patterns of passenger demand and urban land use.

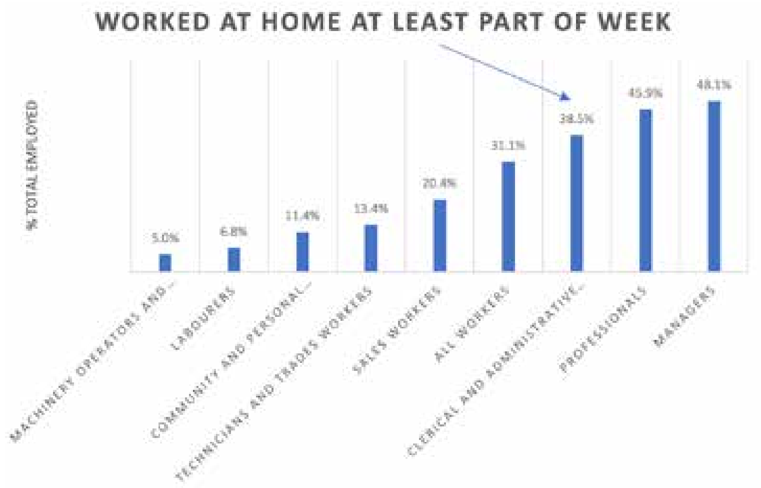


Source: Auckland Transport at [https://at.govt.nz/about-us/reports-publications/at-metro-patronage-report/ accessing file https://at.govt.nz/media/1990737/at-monthly-pax-october-2022.xlsx] *last updated 7 December 2022.*

The hollowing-out of city centres

119. The nature of the agglomeration spillovers from highly educated workers working near each other and near potential new employers, which was central to the business case for the City Rail Link will change rapidly because so many more commuters zoom from their home offices. As Aksoy et al. noted:

> *The COVID-19 pandemic triggered a huge, sudden uptake in working from home, as individuals and organizations responded to contagion fears and government restrictions on commercial and social activities. Over time, it has become evident that the big shift to work from home will endure after the pandemic ends. No other episode in modern history involves such a pronounced and wide-spread shift in working arrangements in such a compressed time frame. The shift from farms and craft production to factory jobs that accompanied the Industrial Revolution played out over roughly two centuries. The later, ongoing shift from factory work and other goods production to services is many decades in the making. While these previous*



Source: Statistics New Zealand "Household Labour Force Survey: March 2022 quarter - supplementary tables", Table 6 at https://www.stats.govt.nz/information-releases/labour-market-statistics-march-2022-quarter/

transitions brought greater changes in skill requirements and business operations, their comparatively slow unfolding afforded much more scope for gradual adjustment (Aksoy et al. 2022, p.2).

120. The figure on the previous page, which is the latest available occupational data, shows that working from home is pervasive among the very types of workers who create and/or benefit from agglomeration spillovers. Almost one in three workers works part of a week at home but there are important occupational differences. A near majority of professionals and managers and 38% of clerical workers work from home for at least part of the week. These professional, managerial and clerical workers are the source of much of the agglomeration effects central to the economic payoff of the City Rail Link into the CBD.

121. Almost as many workers work from home now as did in June 2020; one-third of workers are working from home now they have a choice about it and their employers can adapt better (Statistics New Zealand September 2022). Job ads routinely tout work-from-home options and whether the employer is an essential employer. With so many workers going remote, further investments in rail networks must be greeted with great scepticism. There may be excess rail capacity for a generation. The working from home revolution has turned the City Rail Link into a cost with no benefits to taxpayers and ratepayers.

122. Urban economists talk of a doughnut effect where the main economic activities of cities are no longer in the centre but in a ring around the inner suburbs because so many of the well-educated, well-paid workers that account for much of the value of working in a city work from home and spend their money in the suburbs for a good part of the week (Glaeser and Cutler 2022; Kahn 2022).

123. Survey evidence from over two dozen countries collated by Aksoy et al. (2022) confirms that there is a lasting uptake of working from home and those working from home are usually the well-educated workers. Working from home will stick because workers want it and US surveys show that they are willing to give up 5% of their salary or change jobs to get it; employers found that workers are as productive or even more productive when they have options to work from home several days a week (Aksoy et al. 2022; Barrero, Bloom and Davis 2021). To quote Aksoy et al. again

The COVID-19 pandemic catalyzed a large and enduring uptake in work from home, bringing major lifestyle changes to millions of workers, a scramble to adapt managerial and personnel practices, major operational challenges for organizations that embrace hybrid or fully remote working arrangements, the redirection of worker spending away from city centers, declines in urban real estate values, and outmigration from some cities. The broader economic and social consequences will unfold for many years to come (Aksoy et al. 2022, p. 31)

124. With working from home going to stick, many of the trip time savings and agglomeration spillovers from the City Rail Link will not materialise. The downtown areas around the world are besieged by the economic and social effects of working from home (Glaeser and Cutler 2022; Kahn 2022). Landlords, employers and retailers all have to lift their games. Working from home, workers are no longer tethered to choosing among homes close to where they work in the central business district. They have more control over their commuting schedules and can avoid commuting at all on some days.

The missing benefit-cost ratio must be underwater

125. With a price tag of $5.5 billion and running, the City Rail Link must have exceeded any reasonable estimate of its benefits. Cabinet was advised in May 2019 that the benefits were $5.1 billion. The Auckland Council was told that the benefits of the project with updated passenger forecasts of 20% more passengers put the benefits of the project at $5.8 billion.

126. With rail patronage down 40% on pre-Covid levels, the benefits of the City Rail Link must now be south of $5 billion as a reasonable speculation. The $866 million dollars in agglomeration benefits and $1.3 billion in travel time savings must be down by at least 40%. Perhaps more so because the professional workers who are the key to the urban agglomeration benefits often work from home.

127. No information has been released by City Rail Link Limited on a revised estimate of the benefits of a project. Though it may be a little bit early to work out how the working-from-home revolution changed commuting and agglomeration, at least they should have tried. Taxpayers and Auckland ratepayers deserve to know whether they are still supporting the project which still has net benefits or not.

The need for a public inquiry

128. The Taxpayers' Union has shown that there was a massive cost overrun before any tunnelling commenced. Another large overrun of a billion dollars or more was announced on 15 March 2023. Megaproject cost overruns overseas usually lead to public inquiries or audit office investigations such as the Edinburgh tram inquiry and the Muskrat Falls inquiry. There must be accountability for the massive cost overruns in the City Rail Link both before and after it started digging and before and after Covid.

129. There should be an audit office inquiry into the City Rail Link reviewing the 2015 business case, the 2019 revised cost text envelope, the 2022 cost update, the benefit-cost analysis that supported the 2015 business case and the revised cost envelope. That inquiry should get to the bottom of why there was 61% cost overrun. The ideal candidate to lead the first inquiry is the Audit Office because it can build on its June 2022 report on the governance of the City Rail Link. That report by the Audit Office did not cover the 2015 business case or the 2019 revised cost envelope.

130. A public inquiry by the Productivity Commission needs to spell out the implications for cost and benefit estimates for major infrastructure investments such as the proposed light rail to the Auckland airport from the reshaping of urban land use patterns because so many workers are working from home. The agglomeration effects of cities are no longer focused on the CBD but is more of a doughnut around the CBD spread across many suburbs (Glaeser and Cutler 2022; Kahn 2022). Such land use patterns are far more amenable to buses and cars as ways of moving and connecting people than for trains.

131. There should be a review of the case for any further rail investments because of the upheaval from working from home. At least we should wait and see for a few years before committing more taxpayer and ratepayer dollars to transport infrastructure to service what is a hollowing out downtown.

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