Delmore Fast-Track

04/05/2026– Auckland Council Response

Annexure 2:

Economics

1.0 Technical Specialist Memo - Economics

From:	James Stewart – Economist, Chief Economist Unit, Auckland Council
Qualifications & Relevant Experience:	I hold the qualification(s) of: **Bachelor of Commerce (Honours) in Economics**, and have **eight** years of experience in economics of land use, transport and public policy I am a qualified independent hearings panel commissioner. I have prepared expert evidence and technical assessments for resource consent applications, plan changes, and fast-track applications, and have appeared as an expert witness before consent authorities on multiple occasions.
Preparation in Accordance with the Code of Conduct:	I confirm that I have read the Environment Court Practice Note 2023 – Code of Conduct for Expert Witnesses (**Code**), and have complied with it in the preparation of this memorandum. I also agree to follow the Code when participating in any subsequent processes, such as expert conferencing, directed by the Panel. I confirm that the opinions I have expressed are within my area of expertise and are my own, except where I have stated that I am relying on the work or evidence of others, which I have specified.
Signature:	
Date:	27/03/2026

2.0 Executive Summary / Principal Issues

The major issues I have identified that undermine the credibility of the results presented and therefore conclusions borne from them are:

1. Counterfactual not properly defined or applied.
2. Cost-benefit framework unclear and inconsistently applied.
3. Inappropriate and repeated use of multiplier analysis.
4. Assumption of additionality is not demonstrated
5. Calculation errors in "Method A" – magnitude and direction
6. Lower marginal cost producer claim not evidenced in "Method B"
7. Elasticity-based price suppression mis-specified and implausible
8. Construction activity is treated as a benefit rather than a cost – partly a function of relying on multiplier analysis
9. Opportunity costs not properly assessed

There are other minor issues with the analysis which are identified in the body of this review. Individually these minor issues may not be material to the results but cumulatively undermine the credibility of the results and therefore the conclusions borne from them. I have not repeated them here for sake of brevity.

3.0 Documents Reviewed

The following documents have been reviewed in preparing this memorandum:

- Kaye-Blake, W. (2025). Economic impacts of the Delmore development: A report for Vineway Limited. New Zealand Institute of Economic Research.

4.0 Specialist Assessment

Background and structure of this review

1. The Chief Economist Unit was asked to review an economic report "Economic impacts of the Delmore development" (the report) by Dr Kaye-Blake (NZIER) which is in support of a substantive application for a Fast-track Approvals Act application named "Delmore".
2. The Proposed Delmore development is a c. 1,200 dwelling unit peri-urban residential subdivision in Orewa West. The site is in Future Urban Zone land earmarked for release in the Future Development Strategy beyond 2050. If the application is successful, the land would be urbanised ahead of the planned timing and enable the development of the land.
3. I agree with the general approach that the applicant's economic expert has chosen, a cost-benefit analysis framework, in an attempt to demonstrate the economic trade-offs that arise from the Proposed Development. However, I have significant reservations on elements of the analysis that I believe undermine the results and therefore conclusions presented in the report.

4. I have structured this review by first addressing "Major Issues" - those that are most likely to impact the results and conclusion of the report based on the magnitudes of the purported benefits and costs identified in Table 4 and Table 5 (at page 27-28). I have identified several "Minor Issues" that are less likely to impact the overall result of the analysis, but cumulative undermine the credibility and robustness of the report's results and conclusions based on those results.
5. Overall, I am not convinced that the analysis in the report demonstrates that Delmore would result in a net benefit (benefits exceed costs) let alone whether it could be considered a regionally or nationally significant benefit.

Major Issues

6. The report does not fully articulate what counterfactual any incremental resource trade-offs (benefits and costs) are being measured against. A counterfactual is stated in section 2.1 (at page 2) but this appears to not be strictly adhered to (I address this further at my para 11, below). It would be useful if this could be clarified so we could understand the purported resource trade-offs with greater clarity.
7. Although the report discusses the need for a cost–benefit framework, it does not clearly articulate what this framework is. A clear framework identifying the relevant resource trade-offs relative to the counterfactual would clarify whether the Proposed Development is genuinely welfare-enhancing.
8. Section 4.5 (at page 8-9): the report is claims to adopt a CBA framework and appears to acknowledge the limitations and use of multiplier analysis, it relies on the results despite Treasury guidance[1] on CBA suggesting not to. I agree with the Treasury guidance on the issue. While I acknowledge that the report attempts to correct for some limitations, I do not consider these corrections adequately fix the structural issues with multiplier analyses.
9. I summarise the main issues with analysis for the purpose of an assessment of welfare effects arising from the Proposed development:
    a. No counterfactual scenario is defined so it is unclear what changes are being measured against.
    b. The result is strictly measure of activity, not economic benefit.
    c. The measure is gross in that it adds benefits, costs and transfers together.
    d. Resources are assumed to infinite (no opportunity costs) and prices unresponsive to changes in demand.
    e. Assumes the relationship between industries is constant / fixed with no pressure from substitutes, innovations or changing preferences
    f. Multiplier analysis adds costs and benefits together rather than subtracting costs from benefits to arrive at a net position.
10. Multiplier analysis is adopted several times throughout the analysis which has the general effect of overstating the benefits and costs where it is applied. The repeated use of multiplier analysis materially undermines the credibility of the resulting values and any conclusions drawn from them.
11. Section 5.1 (at page 10): "…housing is good and that more housing is better" requires the qualifier that all else remains equal i.e., that we do not consider trade-offs. The baseline that is established in section 2.3 (at page 2) is that the Proposed Development accelerates development of land, i.e., the report assumes the relevant benefit is acceleration but does not demonstrate that the

[1]The Treasury. Guide to Social Cost Benefit Analysis (July 2015). New Zealand Government, 2015. http://www.treasury.govt.nz/publications/guidance/planning/costbenefitanalysis/guide/ (at pages 19 & 54)

acceleration is net of displacement effects. In my view, the assumption of additionality is a bold assumption and is critical because underpins much of the analysis on the benefits of housing in all the identified methods (A-C) below.

12. Section 5.1.1 (at page 10): The report calls this "Method A". I question whether 120 additional houses in Orewa West in any given year (relative to c. 24,315 annual house sales) could realistically be expected to generate an Auckland-wide price effect of around -1.4%, particularly given normal volatility in annual sales volumes. The analysis is effectively treating all housing in Auckland as part of the same market, by way of example, the 120 new houses in Delmore each would cause the price of a Mount Eden villa to fall by 1.4%.
13. The consumer surplus change, $6.95million (at page 27), is too low due to only calculating only part of it. The producer surplus change should be a large negative value, not positive $2.8billion. In total, the result is that the sum of changes in consumer and producer surplus (i.e., the net figure) is substantially smaller than indicated.
14. Analysis undertaken by Dr Richard Meade demonstrates this calculation error. I have relied on this analysis in this review and provided it the original analysis in the supporting documents section of this review.
15. Additionally, if the market for dwellings in Delmore is, as alluded to above, smaller than the Auckland regional market, this has the effect of reducing consumer surplus benefit so the net surplus would be smaller still.
16. I have relied on figures provided Dr Richard Meade, summarised below in Table 1 (annualised figures) and Table 2 (present value figures), below. The table shows, once correcting for the identified calculation errors, the net present value of the consumer surplus less producer surplus is equivalent to c. $37 million annually or $249.1 million in present value terms – even when using the reports assumption that Delmore's market is 100% of Auckland's housing which, again in my view, is unlikely. This is a significantly smaller than the effect than represented in the report of $2.8 billion. I have provided the original analysis by Dr Richard Meade in the supporting documents section of this review.

Table 1: Corrected* surplus figures and sensitivity testing (figures presented in annual changes)

Delmore as % of Auckland Market	Consumer surplus ($m)	Producer surplus ($m)	Total (net) surplus ($m)
100%	$ 418.6	-$ 381.5	$ 37.1
20%	$ 422.8	-$ 389.7	$ 33.0
10%	$ 427.9	-$ 400.0	$ 27.9
5%	$ 438.2	-$ 420.7	$ 17.6
2%	$ 469.1	-$ 482.5	-$ 13.4
1%	$ 520.6	-$ 585.5	-$ 64.9

Source: Dr Richard Meade (Cognitus Economic Insight); table formatted (incl. rounding) by author (Mr James Stewart).

*Negative results partially an artifact of applying instantaneous elasticity changes to large (proportionate) quantity changes. Interpret results as indicative.

Table 2: Corrected* surplus figures and sensitivity testing (figures presented in present value terms)

Delmore as % of Auckland Market	PV Consumer surplus ($m)	PV Producer surplus ($m)	PV Total (net) surplus ($m)
100%	$ 2,809.0	-$ 2,559.9	$ 249.1
20%	$ 2,836.7	-$ 2,615.2	$ 221.5
10%	$ 2,871.3	-$ 2,684.4	$ 186.9
5%	$ 2,940.4	-$ 2,822.7	$ 117.8
2%	$ 3,147.9	-$ 3,237.5	-$ 89.7
1%	$ 3,493.6	-$ 3,929.0	-$ 435.4

Source: Dr Richard Meade (Cognitus Economic Insight); table formatted (incl. rounding) by author (Mr James Stewart).

*Negative results partially an artifact of applying instantaneous elasticity changes to large (proportionate) quantity changes. Interpret results as indicative.

17. Section 5.1.2 (at page 12): The report calls this "Method B". I take this method as illustrative that if marginal costs are lower, surpluses are mechanically larger. This assumes that marginal costs will be lower for this developer, which is asserted but not evidenced. Additionally, this is contingent on the developer for Delmore being the marginal supplier for the relevant market. Given the importance of these assumptions, I consider further supporting evidence is required.
18. Section 5.1.3 (at page 13): The report calls this "Method C", this is the report's preferred method (at page 14) to valuing the benefit of "more housing". I have three concerns with this method:
    a. This method does not consider any potential for transfers and assumes all economic benefits will be net additional. i.e., it assumes Buyer savings=△P×Q and ignores Seller losses=△P×Q. This assumes buyer savings are pure welfare gains which does not align with best practice.
    b. The formula applied for the calculation method is $\Delta P = \frac{\Delta Q}{|\varepsilon_d|}$ which is a simplification. which should include the elasticity of supply (ε_s) also, a term which acknowledges how the system responds – how easily developers are able to respond to demand signals. The formula should look more like, $\Delta P \propto \frac{\Delta Q}{\varepsilon_s - \varepsilon_d}$. The result of the misspecification may mean materially overstated price effects ΔP and therefore overstated benefits; it does not account for the extent to which developers can build more houses to respond to increases in demand.
    c. As stated in my critique of "Method A" above, it is implausible that 120 additional house sales would have a region wide housing market price effect of the magnitude estimate here. Comparing the sizes of the purported benefits, the report is estimating that the regional housing benefit is 30 times larger than the purported "consumer surplus" benefit and over ten times larger than the purported "affordability" benefit. In my view, a 1,203-dwelling development is unlikely to create a persistent, region-wide price suppression in the Auckland housing market.
19. Section 5.2 (at page 14-15): I note that multiplier analysis is used here. I have significant reservations on its use which are detailed above (in my para 8-10) and apply here.
20. Section 5.3.1 (at page 15-17): It is unclear on whether the stated OPEX costs for wastewater and fresh water are accurate and these may be better interrogated by other experts at Council,

Watercare and / or other expert submitters. However, I note that the CAPEX costs of the wastewater and water infrastructure appear to be omitted from the analysis and it is not clear why this is the case and could use clarification. It is possible, but I do not know, that the report treats these CAPEX costs as part of construction and therefore as a benefit which is not correct. Additionally, in my experience, CAPEX costs tend to be highly relevant to the commercial feasibility and economic viability of projects.

21. Section 6.4 (at page 22-23): The report makes two points regarding multiplier analysis for construction when assessing project opportunity costs:
    a. The possibility that there will be transfers from less productive industries to more productive industries, and
    b. Whether there will be an increase in overall employment.
22. Responding to both points it is plausible that there will be shifts from less productive (or even more productive) industries to construction and it is plausible that more employment (additionality) could be supported. However, in my view, it is not best practice to speculate on the size or direction of these effects unless it can be corroborated with evidence which is in line with Treasury guidance[2] on CBAs to ignore multiplier effects.
23. At face value it would seem implausible that the Proposed Development would be able to attract Construction labour from workers in other industries e.g., hospitality or healthcare, but rather from other construction or construction adjacent industries – bidding up the price of labour in those industries. This goes against a necessary and unrealistic key assumption of multiplier analysis: that there is an unlimited source of skilled labour and no reaction in prices.
24. Even if the multiplier analysis was found to be acceptable, the output per construction worker may be lower than the mean for Auckland[3] – which implies both the direction and magnitude of the effect is incorrect i.e., it should be a negative value.
25. In my view, all construction costs ought to be treated as costs and therefore subtracted from the purported benefits of housing.

More Minor Issues

26. Section 5.3.1 (at page 15-17): Regarding potential offsite connections to the existing reticulated networks. The discussion risks conflating transfers (charges) with welfare benefits; the report indicates it is excluded from the CBA, but the framing remains problematic.
27. Figure 5 (at page 16) shows the estimated capacity and usage of wastewater systems relevant to the area. While I am not an expert, I understand that water systems are not necessarily governed by average use but by peak use, so they do not fail under real world loads. Additionally, it is not clear why wastewater capacity is assumed to be absorbed evenly over the 20-year period. If demand for the catchment is higher than this average growth path, it implies that the capacity constraint will bite sooner, potentially displacing other development.
28. Section 5.3.2 (at page 17): I interpret this analysis as treating rates payments as a proxy for benefits that rates fund (e.g., Council services)[4]. These benefits would be received by the dwellings

[2] The Treasury. Guide to Social Cost Benefit Analysis (July 2015). New Zealand Government, 2015. http://www.treasury.govt.nz/publications/guidance/planning/costbenefitanalysis/guide/ (at pages 19 & 54)
[3] Huang, T., & Wilson, R. (2020). Auckland's construction sector: Industry snapshot and trends to 2019 (Auckland Council technical report TR2020/002, p. ii). Auckland Council.
[4] There is a risk of misinterpretation by including rates as a benefit. In a welfare CBA these are transfers and should be treated separately (fiscal impacts). Though I acknowledge and trust this is not what was intended.

within the Proposed Development but there is no adjustment for dwellings that are displaced by the Proposed Development i.e., those dwellings that are not built. The analysis also does not consider that that Council costs may be higher with the Proposed Development to finance the gap between funds from Development Contribution charges and accelerated infrastructure spending. This would appear as an increase in general rates but no additional benefit to ratepayers which may undermine this part of the analysis.

29. Section 5.3.3 (at page 17-18): I agree with the report that the cost of building a road is not the same as the benefit of the road itself. While the largest costs associated with roads is known with some precision, the benefits can be a little more difficult to quantify. A common valuation method is to calculate the travel-time savings expected from the road existing, relative to the road not existing. Given that very few people would use the road, outside those at the Proposed Development, it is unlikely that these roads would be particularly effective at generating travel time savings. The analysis treats these as if the benefits match the costs. In my view, this is a bold assumption, and it is entirely plausible that the proposed road costs exceed the benefits as only a few people will use them. The report likely overstates the value of the roads by treating the benefits equal to the costs.
30. It is also not clear if the OPEX costs were included in the costs for building the road. In my view these are relevant costs for a CBA on the urbanisation of land.
31. Section 5.4 (at page 18-19): Development Contribution charges represent a transfer from one party to another; not a change in resources from a societal perspective for a CBA. The cost of urbanising land should be included in the CBA (e.g., roads, three waters, parks, community facilities, planning / accelerating, etc.) but these costs differ from the cost recovery mechanism of Development Contribution charges. There is a risk of double counting the costs or, if only considering Development Contribution charges as a proxy for the cost, of undervaluing costs of urbanising land.
32. Section 5.5.1 (at page 19): I agree that wetlands have a resource value and the Treasury CBAx value seems to be a fair proxy for that. However, it is not clear if the opportunity cost of the land containing the Proposed new wetlands has been included in the cost-benefit analysis. In my view it should be included as wetlands effectively constrain the lands alternative uses.
33. It is not clear why the removal of wetlands on the Delmore site occurs at the end of the Proposed Development. Presumably this wetland would be removed before the development could occur and, if not removed, its value would presumably be compromised during development. By pushing the loss to the end of the period, the analysis is artificially discounting a cost and undervaluing it. This could use clarification.
34. Section 5.5.2 (at page 19-20): Implies there are marginal health gains from households choosing the Proposed Developments dwellings over other dwellings. In my view, any private health-related benefits are already internalised in household choices. People choose the housing they prefer, including any value they place on perceived healthier or higher-quality homes subject to their own budget constraints. Unless the development creates external health benefits, this does not increase societal resources.
35. Section 6.2 (at page 21): If the proposed resident fees represent a stream of cost to homeowners to lower the initial sales price they should be included in the analysis. Additionally, the remaining liability should be included as a terminal value – it is not clear if this has be done and would be useful to get clarity. It is also not clear if this relates to the lower marginal costs identified in Section 5.1.2.

36. It is possible that this stream represents ongoing OPEX costs for repairs and maintenance of roading and water solutions, it is not clear if that is the case and, for the avoidance of double counting costs, it would be useful to clarify.
37. Section 6.4 (at page 22-23): The report makes two points regarding multiplier analysis for construction when assessing project opportunity costs. I have already conveyed my view of these types of analysis for CBAs above (see my para 7) but address the two points made here, specifically:
    a. The possibility that there will be transfers from less productive industries to more productive industries, and
    b. Whether there will be an increase in overall employment.
38. Responding to both points it is plausible that there will be shifts from less productive (or even more productive) industries to construction and it is plausible that more employment (additionality) could be supported. However, in my view, it is not best practice to speculate on the size or direction of these effects unless it can be corroborated with evidence which is in line with Treasury guidance[5] on CBAs to ignore multiplier effects.
39. Section 6.5 (including subsections) & section 6.6 (at page 23-26): These sections are largely a repeat of section 5.3 - 5.5 (addressed above in my para 15-25), but framing costs as costs instead of as benefits. My view is that infrastructure costs should be treated as costs not as benefits. The CBA appears to assume that the benefit of infrastructure is at least equal to the cost of providing it, implicitly that all infrastructure spending will have neutral or positive Total Economic Value. This is a bold assumption.

Other comments on the analysis

40. I acknowledge the presence of Appendix E (pages 53-56) which sensitivity tests the valuation method of more housing value. In my view it is best practice to sensitivity test a broad range of values, particularly when the assumptions underlying values are strict. The report suggests that, (at section 7.4, page 29) "further analysis and sensitivity testing could be conducted and reported." This would be preferable to understand how sensitive the results are to underlying assumptions.
41. Related to this point, the report's CBA results table (Table 5, at page 28) shows point estimate values of the quantified benefits, costs and primary decision statistics (e.g., net benefit / cost value and benefit-cost ratios). It would be more useful to show these values as plausible ranges which express the uncertainty of the estimation. This would avoid the report giving a false impression of the level of precision of the estimates.

Conclusion

42. In my view, I cannot be confident that the Proposed Development represents a net benefit (benefits exceed costs) from a welfare perspective.
43. Additionally, in my view, the report does not demonstrate the Proposed Development is regionally or nationally significant.

[5] The Treasury. Guide to Social Cost Benefit Analysis (July 2015). New Zealand Government, 2015. http://www.treasury.govt.nz/publications/guidance/planning/costbenefitanalysis/guide/ (at pages 19 & 54)

5.0 Section 67 Information Gap

At the time of writing this Memo I have identified the information gaps which I have detailed in my assessment of the economic report above. The major issues I have identified, in my view, undermine the robustness of the results and therefore the conclusions that are borne from them. In summary, these are:

10. Counterfactual not properly defined or applied.
11. Cost-benefit framework unclear and inconsistently applied.
12. Inappropriate and repeated use of multiplier analysis.
13. Assumption of additionality is not demonstrated
14. Calculation errors in "Method A" – magnitude and direction
15. Lower marginal cost producer claim not evidenced in "Method B"
16. Elasticity-based price suppression mis-specified and implausible
17. Construction activity is treated as a benefit rather than a cost – partly a function of relying on multiplier analysis
18. Opportunity costs not properly assessed

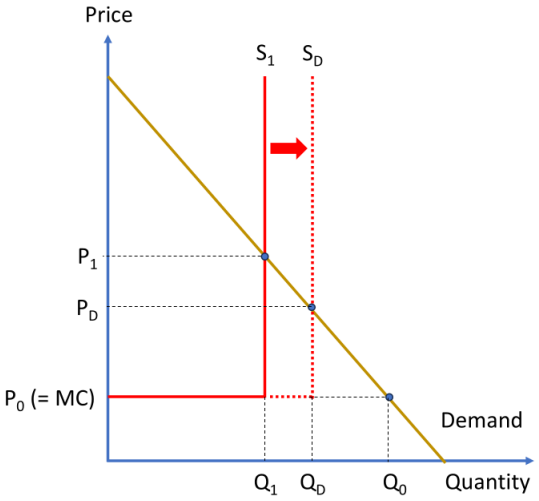
Additionally, I have identified several more minor issues in the assessment which, individually may not be material to the results, cumulatively could undermine the credibility of the results and therefore the conclusions borne from them. I do not reiterate these more minor issues here for sake of brevity but refer the reader to my above assessment.

6.0 Supporting Documents

Economic reasoning for corrected results by Dr Richard Meade (Cognitus Economic Insight)

Dr Richard Meade (Cognitus Economic Insight) provided these supporting materials solely to assist Auckland Council in formulating its response. He and Cognitus make no warranty or indemnity regarding the accuracy or completeness of these materials to any party other than Auckland Council.

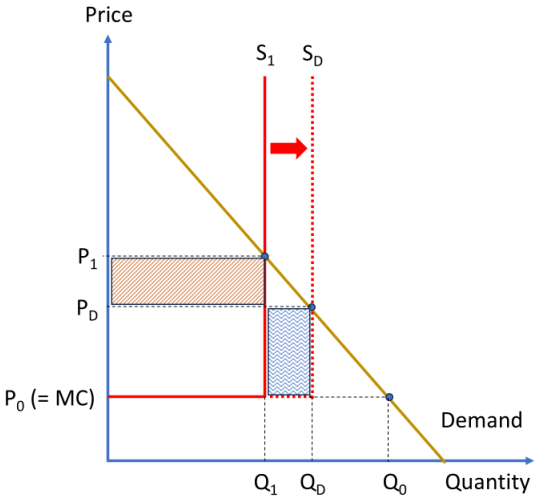
NZIER Method A - Modifying Denne (2025, pp 11-12) Model



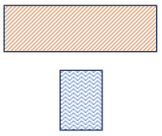
- Demand is as shown (for relevant market segment – NZIER assumes entire Auckland property market).
- With constant marginal cost and unconstrained supply, equilibrium is (P_0, Q_0) → notional only, since dealing with assumed supply constraints.
- Without Delmore, and assuming constrained supply, supply is S_1, producing equilibrium (P_1, Q_1) → as in Denne (2025).
- With Delmore, and assuming constrained supply and same marginal costs*, supply is S_D, producing equilibrium (P_D, Q_D).

* For convenience.

NZIER Method A - Modifying Denne (2025, pp 11-12) Model – Change in Producer Surplus from Adding Delmore



- Without Delmore, producer surplus is $Q_1 \times (P_1 - P_0)$.
- With Delmore, producer surplus is $Q_D \times (P_D - P_0)$.
- Change in producer surplus with Delmore is therefore: $Q_D \times (P_D - P_0) - Q_1 \times (P_1 - P_0)$.
- This change in producer surplus has two regions as illustrated and detailed below – a loss of PS due to lower price, but also an increase in PS due to greater quantity.
- Whether PS increases or decreases with Delmore depends on which of these regions is largest → since Delmore adds only 120 extra homes per year, the former region is likely largest.

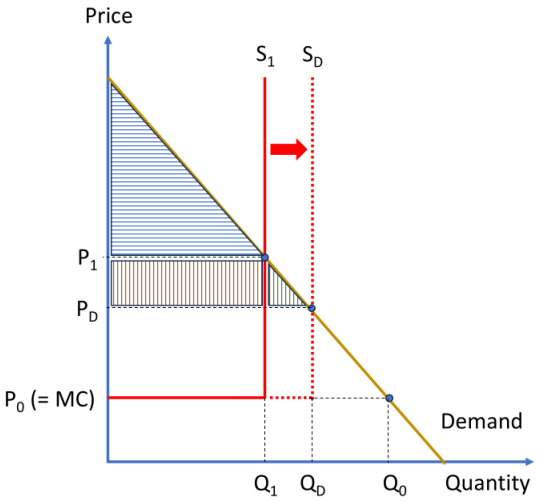


= Loss in producer surplus with Delmore (due to lower price)

= Gain in producer surplus with Delmore (due to greater quantity)

(Using current notation, NZIER p. 39 calculates change in PS as $Q_1 \times (P_D - P_1)$, and fails to account for this change being negative, both of which are incorrect. No assumptions regarding P_0 (= MC) are provided, hence $P_0 = 0$ is implicitly assumed (also incorrect). Denne p. 11 argues PS is competed to zero, though implausibly requires absence of supply constraints and perfect competition.)

NZIER Method A - Modifying Denne (2025, pp 11-12) Model – Change in Consumer Surplus from Adding Delmore



- Change in consumer surplus is as illustrated at left, and detailed below.

= Consumer surplus without Delmore

= Extra consumer surplus with Delmore

= $Q_1 \times (P_1 - P_D) + \{ 0.5 \times (P_1 - P_D) \times (Q_D - Q_1) \}$

(Using current notation, NZIER p. 39 calculates change in CS as { . } only, which is incorrect. Since Delmore adds only 120 extra homes per year (i.e. { . } is small compared with $Q_1 \times (P_1 - P_D)$), omission of the latter will significantly understate actual CS change – though Denne pp 7-8 argues using AMM reasoning that CS change ≈ 0.)

Corrected calculation sheet of surplus values by Dr Richard Meade (Cognitus Economic Insight)

Delmore FTAA - Calculating Changes in Consumer Surplus and Producer Surplus (Assuming NZIER Method A is Valid) - DRAFT

Richard Meade, Cognitus Economic Insight, richard.meade@cognitus.co.nz

Version : 26 March 2026, 9h50

Assumptions

Discount rate (real)	8%	
Delmore market as % of Auckland market	100%	<<< Sensitivity variable: NZIER assumes 100%, but Denne pp 8 and 10 argues large for Orewa, small for Auckland
Annual Auckland market sales (No.)	24,315	<<< Q_1 in Meade notation
Annual Delmore houses constructed (No.)	120	<<< Q_D - Q_1 in Meade notation
Implied sales with Delmore	24,435	<<< Q_D in Meade notation
Demore sales / Auckland sales	0.49%	
Price elasticity of demand	-0.35	
Average Auckland sale price ($)	1,218,000	<<< P_1 in Meade notation
Implied sale price change with Delmore	-17,175	<<< P_D - P_1 in Meade notation
Implied market price with Delmore	1,200,825	<<< P_D in Meade notation
Average developer margin on costs	25%	<<< midpoint as per: https://mhq.co.nz/tips-tools-strategies/property-development-nz-how-it-works-and-profits/
Delmore average selling price	985,000	<<< NZIER p. 4
Average cost advantage per Delmore house ($)	100,000	<<< NZIER p. 13 (treat as illustrative)
Illustrative MC of construction ($)	900,000	<<< P_0 (= MC) in Meade notation (= 985k / 1.25 + 100k, rounded to nearest 100k)

Year	1	2	3	4	5	6	7	8	9	10
Discount factor	0.9259	0.8573	0.7938	0.7350	0.6806	0.6302	0.5835	0.5403	0.5002	0.4632

Change in Consumer Surplus ($/Year, Years 1-10)

	Annual	*Present Value*	
$Q_1 \times (P_1 - P_D) + \{ 0.5 \times (P_1 - P_D) \times (Q_D - Q_1) \}$	418,630,475	2,809,044,563	<<< contrast NZIER p. 53 $6.9m PV

Change in Producer Surplus ($/Year, Years 1-10)

	Annual	*Present Value*	
$Q_D \times (P_D - P_0) - Q_1 \times (P_1 - P_0)$	-381,500,950	-2,559,902,428	<<< contrast NZIER p. 54 +$2.8 billion PV

Change in Total Susplus ($/Year, Years 1-10)

	Annual	*Present Value*
Change in CS + Change in PS	37,129,525	249,142,135

Sensitivity Analysis - Allowing Delmore to be Larger Share of Smaller Market

Note: Denne pp 7-8 argues using AMM reasoning that CS change ≈ 0, in which case only PS change (in supply-constrained and imperfectly competitive market) would apply.

Caveat: negative results partially an artifact of applying instantaneous elasticity changes to large (proportionate) quantity changes - treat as indicative/illustrative ony.

Delmore as % of Auckland Market	*Annual Changes*			*Present Value Changes*		
	CS	*PS*	*TS*	*CS*	*PS*	*TS*
	418,630,475	-381,500,950	37,129,525	2,809,044,563	-2,559,902,428	249,142,135
100%	418,630,475	-381,500,950	37,129,525	2,809,044,563	-2,559,902,428	249,142,135
20%	422,752,375	-389,744,750	33,007,625	2,836,702,848	-2,615,218,998	221,483,850
10%	427,904,750	-400,049,500	27,855,250	2,871,275,705	-2,684,364,711	186,910,994
5%	438,209,500	-420,659,001	17,550,500	2,940,421,417	-2,822,656,135	117,765,282
2%	469,123,751	-482,487,502	-13,363,751	3,147,858,554	-3,237,530,409	-89,671,855
1%	520,647,502	-585,535,003	-64,887,502	3,493,587,116	-3,928,987,533	-435,400,417