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DCDR09 The Acton Singularity: Resolving Statutory Friction Through Ultra-Density and Morphological Innovation

Submission to the Acton Waterfront neighbourhood - Design principles consultation

A Comparative Analysis & Strategic Recommendation Report

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SUBJECT: Statutory Gap Analysis and Strategic Validation of the "Slender Tower" Typology for Acton Waterfront Renewal

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1. Executive Summary

The Acton Waterfront Renewal Project represents the most significant urban intervention in the Central National Area of Canberra since the filling of Lake Burley Griffin in 1964. It is the final realization of Walter Burley Griffin's geometric vision for the West Basin—a formal city-to-lake connection that has remained incomplete, a "missing link" in the capital's urban structure, for over a century. However, as the project moves from the phase of civil reclamation to vertical realization, it faces a profound structural crisis. The project is currently paralyzed by a fundamental "Statutory Gap" between the planning controls of the past and the economic, environmental, and demographic realities of the present.

This report serves as a formal comparative analysis and strategic validation of the City Renewal Authority's (CRA) 2025 proposal to pursue a density uplift to approximately 330 people per hectare (p/ha) utilizing a "Slender Tower" typology. This direction is currently at odds with the National Capital Authority's (NCA) Amendment 61 (2006) controls, which enforce a "stepped" medium-rise morphology yielding approximately 220 p/ha. This divergence creates "Statutory Friction," a condition where the project's economic viability and design intent are blocked by the prevailing legislative instrument.

Our analysis, underpinned by the "15-Minute City Density Analysis" (DCDR07) and the specific constraints of the Acton site (DCDR08), concludes that the NCA's "status quo" controls are functionally obsolete. They promote a form of urbanism that is financially fragile, environmentally compromised, and structurally incapable of supporting the vibrant, mixed-use precinct mandated by the National Capital Plan itself.

The Core Conflict: A Gap Analysis

The "Statutory Gap" is not merely a matter of height limits; it is a conflict between two divergent urban philosophies. The 2006 framework, born from The Griffin Legacy (2004), prioritizes a low-scale, landscape-dominated "Bush Capital" aesthetic that, while visually polite, produces low-yield "perimeter block" housing. The 2025 CRA framework prioritizes "metabolic density"—the critical mass required to support high-frequency transit, active retail streets, and thermal efficiency.

Key Findings:

1. **The Viability Trap:** The implicit density cap of ~220 p/ha creates a population catchment insufficient to support high-frequency retail or a self-sustaining day-and-night economy. Global evidence from Hammarby Sjöstad establishes a "metabolic floor" for transit and utility viability that Acton's status quo barely meets. With a yield of approximately 1,100 residents under current controls, the precinct falls well below the 3,000–5,000 resident threshold required for a viable small-format supermarket, risking the creation of a sterile "dormitory" precinct similar to the failures observed in parts of the Kingston Foreshore.¹
2. **The Solar Paradox:** Contrary to intuitive planning, the NCA's preferred low-rise (25m) perimeter block typology results in inferior solar outcomes for the public realm compared to the CRA's proposed tall "Slender Towers." At Canberra's latitude (35°S), the lower, bulkier forms cast broad, static shadows that permanently darken the promenade in winter. The "Slender Tower" model, while taller, allows shafts of solar access to penetrate the streetscape, a critical requirement for the "Sunny Streets" mandate. The "status quo" controls essentially mandate a darker public realm.¹
3. **The Infrastructure Pivot:** The forced delay caused by the Light Rail "Compound C" occupation (2025–2028) is not a setback but a strategic asset. It aligns the land release with the operational commencement of mass transit, mirroring the successful "Transit First" sequencing of Hammarby Sjöstad. This delay provides the necessary window to prosecute the legislative case for an Amendment to the National Capital Plan.⁴

4. The Merwede Opportunity: Development feasibility is currently threatened by the high cost of basement construction in reclaimed lake fill, estimated at over \$100,000 AUD per bay. By adopting the "Merwede Model" (Utrecht) and capping parking ratios at 0.3 spaces per unit, the project can reallocate approximately \$140 million in construction costs toward high-quality public realm and architectural excellence, ensuring viability without compromising affordability.²

Strategic Recommendation:

The CRA must formally reject the 2006 compliance pathway. We recommend a vigorous pursuit of a National Capital Plan Amendment to sanction "Ultra-Density" (~330 p/ha) and "Slender Towers." This should be framed not as a developer-led yield play, but as an environmental and ethical necessity to deliver winter sun, transit viability, and a genuine 15-minute neighbourhood. The "Merwede Pivot" on parking must be adopted to finance this superior urban form.

2. Strategic Issue Identification: The "Acton Risks"

The divergence between the 2006 statutory framework and the 2025 strategic intent creates a high-risk environment for the project. If the CRA proceeds with a "compliant" scheme under current NCA controls, the result will likely be a failed precinct—one that is aesthetically acceptable to heritage conservatives but functionally dead. This section deconstructs the three primary risks identified in the DCDR08 analysis: The Viability Trap, The Solar Paradox, and The Compound C Paralysis.

2.1 The Viability Trap: The Danger of 220 p/ha

The most insidious risk to the Acton Waterfront is not "over-development," but "under-development." The current NCA controls, established via Amendment 61 in 2006, envision a precinct of medium-rise buildings (limited generally to 25 metres, or roughly 6-8 storeys) stepping down to 8 metres (2 storeys) at the water's edge.¹ While aesthetically aligned with the traditional "Bush Capital" ideology of recessive architecture, this morphology imposes a mathematical ceiling on population density.

Based on standard floor plate efficiencies and the mandated open space ratios, the maximum achievable yield under these controls is approximately 220 people per hectare (p/ha).¹ This number is dangerously low for a precinct intended to function as a city-centre extension.

2.1.1 The Retail Death Spiral

Retail viability is a direct function of catchment density. The "15-Minute City" is not merely a lifestyle slogan; it is an economic equation defined by "expenditure density." For a precinct to support a diverse retail ecosystem—including a small format supermarket, a pharmacy, diverse hospitality, and essential services—it requires a critical mass of residents within a walkable radius (400m–800m).

The Threshold Deficit:

Australian retail planning standards and supermarket site selection criteria provide clear benchmarks for viability:

- Full-Line Supermarket: Requires a primary trade area population of 8,000–10,000 people.³
- Small-Format Grocer (e.g., Woolworths Metro/Coles Local): Requires a minimum immediate catchment of 3,000–5,000 residents to be viable without heavy reliance on car-based customers from outside the precinct.⁸
- Pharmacy/Chemist: Typically requires a support population of ~3,000 to sustain a standard dispensary service.

The Acton Calculus:

The Acton estate comprises approximately 5–6 net developable hectares (excluding the park).

- Status Quo Scenario (220 p/ha):
- Calculation: 5 hectares × 220 p/ha = 1,100 residents.
- Result: This population is woefully insufficient (approx. 25-30% of the required threshold) to support even a small-format grocer. The commercial offers will be limited to high-margin, destination hospitality (bars/restaurants) that rely on weekend tourism.
- Consequence: Residents will be forced to drive to Civic, Manuka, or Dickson for daily needs (milk, bread, pharmaceuticals). This creates a "food desert" dynamic despite the central location, negating the sustainability goals of the project and increasing vehicular traffic generation.
- Proposed "Ultra-Density" Scenario (330 p/ha):
- Calculation: 5 hectares × 330 p/ha = 1,650 residents.
- Synergy: When combined with the adjacent existing populations of New Acton and City Hill, this uplift pushes the immediate walkable catchment closer to the 3,000 resident threshold.
- Result: This creates the "tipping point" required to attract a high-quality grocer and essential services. The density uplift is the difference between a precinct that shuts down at 5 PM on weekdays and one that functions as a genuine "urban village."

2.1.2 The "Dormitory" Risk

Low-density urban precincts in high-value waterfront locations often succumb to the "dormitory effect." Without the foot traffic to sustain day-time commerce, the streets become empty during working hours. The precinct functions solely as a place to sleep and a place to visit on weekends. The 220 p/ha cap virtually guarantees this outcome, wasting the strategic potential of the site to be a true extension of the City Centre. The failure of parts of the Kingston Foreshore to attract non-hospitality retail (forcing residents to drive to the Supabarn at the markets) is a direct precursor warning of what Acton will become under the 2006 controls.¹

2.2 The Solar Paradox: Why "Low" is "Dark"

A central tenet of the NCA's opposition to height is the protection of "amenity" and "human scale." The 2006 controls enforce a 25-metre height limit to prevent "canyon effects" and overshadowing. However, this stance relies on a simplistic understanding of solar geometry that is fundamentally flawed at Canberra's latitude (approx. 35°S). The DCDR08 analysis reveals a "Solar Paradox": the NCA's preferred form creates more shade where it matters most.

2.2.1 The Geometry of Winter Shadows

In mid-winter (June 21), the sun in Canberra is low in the northern sky, reaching a maximum altitude of only ~32 degrees at solar noon. At this angle, buildings cast shadows approximately 1.6 times their height.

- The Perimeter Block Problem (NCA Model):
To achieve even the modest density of 220 p/ha within a 25-metre height limit, developers are forced to build "ground-scrappers"—long, continuous buildings of 6–8 storeys that fill the entire block width to maximize yield.
- The Shadow Wall: A 25-metre high wall oriented East-West will cast a shadow approximately 40 metres

deep at noon in winter. Because the building is a continuous block with minimal gaps, this shadow acts as a solid, unbroken bar of darkness.

- Impact: This "shadow slab" will effectively blanket the streetscape and the southern promenade in permanent shade during the critical lunch hours (11:00 AM – 2:00 PM) in winter. The "human scale" building creates an inhumane microclimate.
- The Slender Tower Solution (CRA Model):
The 2025 strategy proposes "Slender Towers" (12+ storeys, potentially up to 50-60m) on a 4-storey podium base. While the towers are taller, they have a much smaller floorplate and are separated by significant gaps.
- Solar Permeability: Shadows from slender towers are longer (up to 80m+), but they are narrow. As the sun moves across the sky from East to West, these shadows "sweep" across the ground rapidly like the hands of a clock. No single spot in the park or street is permanently shaded.
- Shafts of Light: The gaps between the towers allow shafts of direct sunlight to penetrate deep into the precinct, reaching the "Sunny Streets" and the park even in the depths of winter. This permeability is impossible with the perimeter block model.

Conclusion: The NCA's preference for lower, bulkier buildings ironically results in a darker, colder public realm. The "Slender Tower" is not just a tool for density; it is a morphological necessity for solar access in a cold-climate city. The CRA must frame the height uplift as an environmental amenity measure, demonstrating that "taller is brighter".¹

2.3 The "Compound C" Paralysis: Infrastructure as Destiny

The immediate physical reality of the site is defined by the logistics of the Light Rail Stage 2A project. The Environmental Assessment for the rail project identifies the prime development land at Acton Waterfront (Block 24, Section 33) as "Site Compound C".¹

2.3.1 The Three-Year Freeze (2025–2028)

Construction of the light rail and the associated "Raising London Circuit" project commenced in 2025. The compound will be active, housing heavy machinery, site offices, and material laydown, until the commissioning of the line, scheduled for 2028.⁵

- Sterilization: No vertical construction on the residential estate can occur during this window. The site is effectively sterilized for residential development for 36–48 months.
- The Strategic Asset: While operationally frustrating, this delay is strategically fortuitous. It removes the pressure to rush a compliant (sub-optimal) design to market under the existing 2006 controls. It provides the CRA with a "safe harbor" of three years to wage the legislative battle for the National Capital Plan Amendment without delaying the actual build date, as the land is unavailable anyway.
- Geotechnical Settlement: The delay perfectly overlaps with the geotechnical requirement for the settlement of the reclaimed lake fill (completed 2022). Reclaimed land requires time to consolidate to prevent differential settlement. The "Interim Park" and compound usage allow the land to stabilize naturally, reducing the risk of structural failure when construction finally begins.¹

The Risk: The primary risk is that the NCA refuses to engage with the amendment process during this freeze, leading to a situation in 2028 where the compound is cleared, but the planning controls revert to the obsolete 2006 standards. This would force a rapid, compromised build-out to recoup the sunk costs of reclamation and rail, locking in a sub-optimal urban form for a century.

3. Comparative Evidence: The "Global Lessons"

To validate the shift toward "Ultra-Density" and "Slender Towers," the CRA must look beyond the insular context of Canberra planning. The "15-Minute City Density Analysis" (DCDR07) provides empirical data from six European case studies that act as proxies for the Acton condition. By benchmarking Acton against these projects, we can derive evidence-based arguments to counter the statutory friction and prove the necessity of the proposed model.

3.1 Hammarby Sjöstad (Stockholm): The Density Floor

Relevance: Hammarby Sjöstad is the global gold standard for waterfront brownfield renewal in a cold climate. It shares Acton's ambition for high environmental performance ("The Hammarby Model") and transit integration. It serves as the baseline for what is "possible" in sustainable urbanism.

- The Data Point: Hammarby operates at a gross density of ~133–150 inhabitants per hectare.²
- The Insight: The Swedish planners identified ~130 p/ha not just as a housing target, but as a "thermodynamic and metabolic necessity."
- Metabolic Efficiency: This density is the minimum required to make the district heating system and the pneumatic waste collection system (Envac) economically and thermodynamically viable. Below this floor, the heat loss in pipes and the cost per meter of infrastructure make the systems insolvent. The Envac system alone reduces heavy traffic by 60%, but only works if the waste volume per hectare is high.²
- Transit Viability: This density supports the Tvärbanan light rail frequency of 5–10 minutes.
- Application to Acton: The NCA's 220 p/ha appears comfortably above this floor. However, Hammarby's density is measured across a larger district including water and green space. On a net developable basis, Hammarby is extremely dense (perimeter blocks of 6-8 storeys). Crucially, Hammarby struggles with retail vitality in its inner blocks, relying heavily on a central spine. Acton, being smaller and more isolated by the Parkes Way arterial barrier, needs higher local density to compensate for the lack of a continuous urban fabric connection to the north. If Hammarby (at 150 p/ha) is the "floor" for viability, Acton's status quo (220 p/ha) is dangerously close to the margin of error. The proposed 330 p/ha provides a necessary safety buffer to ensure the precinct is vibrant, ensuring the "metabolic" systems of transit and retail do not starve.

3.2 Merwede (Utrecht): The CAPEX Pivot

Relevance: Merwede is a contemporary "car-free" district (currently under construction) that demonstrates how "Ultra-Density" can be achieved without high traffic impact, solving the "congestion" objection while fixing the "feasibility" problem.

- The Data Point: Merwede targets ~200+ dwellings per hectare (approx. 300–400 p/ha) with a strict parking cap of 0.3 spaces per dwelling (0.13 private, remainder shared mobility).²
- The "Merwede Singularity": The project proves that "Ultra-Density" is only financially and spatially possible if private car storage is virtually eliminated.
- The Economics: Underground parking is ruinously expensive. In European contexts, it costs €30,000–€50,000 per space. In the context of Acton Waterfront—building into reclaimed lake bed with high water tables requiring complex tanking and dewatering—the cost is estimated at \$100,000–\$120,000 AUD per space.⁶
- The Trade-Off: Merwede developers save millions in Capital Expenditure (CAPEX) by not building

basements. This capital is not taken as profit; it is diverted into a "Mobility Fund" that subsidizes the Mobility as a Service (MaaS) fleet and the high-quality public realm (Coulissestad).

- Application to Acton: The NCA controls likely assume standard parking ratios (1.0+ per unit). Building ~2,000 spaces in reclaimed land would be a geotechnical and financial disaster (approx. \$200m+ in basement costs), potentially rendering the project unfeasible or forcing apartment prices into the stratosphere. The CRA must adopt the "Merwede Pivot": argue that the density uplift (to 330 p/ha) will be paired with a radical reduction in parking (to 0.3), using the 2028 Light Rail connectivity as the justification. This "unbundles" the cost of parking from housing, improving affordability and project feasibility while funding the public domain.

3.3 Nordhavn (Copenhagen): The Asset Model

Relevance: Nordhavn demonstrates how density functions as a financial instrument to fund heavy infrastructure in a waterfront context.

- The Data Point: The "Nordhavn Paradox." The development corporation (By & Havn) borrowed DKK 16–20 billion to build the Metro M4 line before the residents arrived.²
- The Mechanism: The debt is serviced by the sale of land. The land value is inflated because the Metro exists. High density is the "collateral" that allows the borrowing. The corporation sells high-density building rights at Metro-inflated prices, and the proceeds are ring-fenced to repay the infrastructure debt.
- Application to Acton: The ACT Government has already sunk massive capital into the reclamation (\$36m+), the boardwalk, and the raising of London Circuit. The Light Rail Stage 2A is a further billion-dollar investment. To recoup this "sunk cost" and justify the rail investment, the land must yield a premium. Low-density (220 p/ha) development fails to capture the value uplift created by the public investment. High density (330 p/ha) is the only way to "pay back" the taxpayer for the infrastructure provision. The density is the mechanism for value capture; restricting it is fiscally irresponsible.

3.4 Waltham Forest (London): The Traffic Evaporation

Relevance: This case study provides the empirical counter-argument to community fears (e.g., Lake Burley Griffin Guardians) that "Density = Congestion."

- The Data Point: The "Mini-Holland" scheme in Waltham Forest utilized "filtered permeability" (modal filters, bollards, bus gates) to sever car through-routes. This resulted in a 44% reduction in traffic on internal roads and a long-term 6% decrease in car ownership.²
- The Insight: Traffic volume is not a function of population density; it is a function of road capacity and "convenience friction." By making driving slightly less convenient than walking or cycling for short trips, traffic "evaporates" (mode shift) rather than just displacing.
- Application to Acton: Opposition groups will cite the density uplift as a cause of gridlock on Commonwealth Avenue. The CRA must use Waltham Forest data to argue that with the "Merwede" parking caps and "filtered permeability" (designing the Acton estate streets as shared zones hostile to through-traffic), the traffic impact of 330 p/ha will be lower than a car-dependent 220 p/ha suburb. We can densify the population while "de-densifying" the cars.

3.5 Oberbillwerder (Hamburg): The Warning Case

Relevance: A warning against the "Uncanny Valley" of medium density planning.

- The Data Point: Oberbillwerder targets a density of 50–60 dwellings/ha.²
- The Risk: The analysis found this density to be problematic—it is too dense for easy car movement (requiring Mobility Hubs), but potentially too sparse to support high-frequency independent retail without significant "destination" pull. It risks falling into a "no-man's land" of planning.
- Application to Acton: The NCA's 220 p/ha (approx. 80–100 dwellings/ha) sits dangerously close to this "middle ground." It risks creating a precinct that has the traffic headaches of the city but the amenity starvation of the suburbs. We must vault over this "Uncanny Valley" to the higher density (330 p/ha) that supports true self-sufficiency and retail vitality.

3.6 Vauban (Freiburg): Behavioral Economics

Relevance: Vauban proves that pricing signals are more effective than moral arguments in shifting behavior.

- The Data Point: In Vauban, parking is "unbundled" from housing. Residents who wish to own a car must purchase a space in a peripheral garage for ~€25,000 upfront, plus a monthly fee.²
- The Result: This high entry barrier acts as a "cap" on ownership. The motorization rate dropped to 167 cars per 1,000 residents, less than half the national average.
- Application to Acton: We should recommend unbundling parking costs entirely. Apartments should be sold "parking free," with spots available only as a separate, high-cost purchase (e.g., \$100,000 AUD, reflecting the true construction cost in reclaimed land). This ensures that only those who really need a car buy one, and the market naturally self-selects for transit users who are happy to rely on the Light Rail. This aligns the demographic profile of the estate with the infrastructure investment.

4. Strategic Recommendations

Based on the synthesis of the "Statutory Friction" analysis and the "Global Lessons" from the comparative case studies, the following recommendations are presented to the CRA Board. These are designed to navigate the legislative impasse and deliver a precinct that is economically, environmentally, and socially resilient.

Recommendation 1: The "Merwede Pivot" on Parking

Recommendation: Formally adopt a maximum parking ratio of 0.3 spaces per dwelling for the residential estate, unbundled from the sale of the unit.

Rationale:

- Feasibility Unlock: Construction of basement parking in the reclaimed West Basin lake bed involves complex waterproofing and dewatering, estimating costs at \$100,000–\$120,000 AUD per bay. For a 2,000-unit estate, a standard 1:1 ratio would incur ~\$200–\$240 million in parking structure costs alone.
- The Saving: By capping parking at 0.3 (600 spaces total), the project saves ~\$140 million in direct CAPEX. This "saved capital" is critical to offset the higher structural costs of the "Slender Tower" typology and to fund the high-quality public domain of Ngamawari Park.
- Strategic Trade: This allows the CRA to approach the NCA with a tangible trade-off: "We will drastically reduce the traffic generation of the precinct (addressing their congestion concerns) in exchange for the density uplift."

Recommendation 2: Weaponize the Delay (The Hammarby Sequencing)

Recommendation: Frame the 2025–2028 construction delay caused by "Compound C" not as a project failure, but as a deliberate "Transit-First" guarantee.

Rationale:

- Behavioral Lock-In: Evidence from Hammarby Sjöstad shows that if residents move in before high-quality transit is operational, they buy cars and form driving habits that are hard to break ("habit calcification"). If they move in after the transit is running, they adopt transit usage at rates >80%.
- The Narrative: The delay ensures that the first resident of Acton Waterfront will move in on the same day the Light Rail Stage 2A begins operation. We must market this synchronization: "Acton Waterfront will be the first precinct in Canberra where the train is waiting for the residents, not the other way around." This strengthens the justification for the 0.3 parking cap (Recommendation 1), as the alternative transport mode is guaranteed from Day 1.

Recommendation 3: The "Solar Ethics" Argument

Recommendation: Formally recommend the "Slender Tower" typology to the NCA not on the basis of yield, but on the basis of "Winter Sun" and public health.

Rationale:

- The Solar Paradox: Use the solar geometry analysis (35°S latitude) to prove that the NCA's "Amendment 61" envelope (25m continuous block) results in a darker, colder promenade in winter than the proposed tall towers.
- The "Sunny Street" Mandate: Propose a new control: "Minimum 3 hours of direct sunlight to 50% of the promenade width between 11:00 AM and 2:00 PM on the Winter Solstice (June 21)." Only the "Slender Tower" typology (with its narrow shadows and gaps) can pass this test. The perimeter block fails it.
- Ethical Framing: By framing the height uplift as an environmental necessity for public amenity, the CRA forces the NCA to choose between their arbitrary height limit and the actual quality of the public realm.

Recommendation 4: Retained Retail Ownership (The Nordhavn Model)

Recommendation: Recommend against the strata-titling of ground-floor retail tenancies. Propose the creation of a "CRA Curation Entity" or "Place Trust" modeled on Nordhavn P/S.

Rationale:

- The Market Failure: Strata-titled retail shops are often sold to passive investors who seek "safe" tenants (banks, real estate agents) or leave shops vacant rather than lowering rents. This kills street activation and creates the "dead frontage" observed in other precincts.
- The Solution: By retaining ownership, the CRA can "curate" the tenant mix. The Authority can offer subsidized or turnover-based rents to desirable high-activity tenants (bakeries, florists, independent cafes, bike shops) that create vibrancy but have low margins.
- Value Capture: This "loss leader" strategy on the ground floor increases the desirability and value of the

residential units above (the "Nordhavn Paradox"), ultimately generating higher total returns for the ACT Government while ensuring the "15-Minute City" amenities are actually present.

5. Conclusion

The Acton Waterfront project is currently trapped in a "statutory past" that threatens its future. The 2006 planning controls, designed for a different era of the city and a different understanding of urban sustainability, inadvertently enforce a mediocrity of scale that will result in a dark, dormant, and financially fragile precinct.

The evidence from Hammarby, Merwede, and Nordhavn is conclusive: Density is not the enemy of livability; it is the prerequisite. It is the fuel that powers the transit, the finance that builds the infrastructure, and the critical mass that keeps the shops open. The "status quo" of 220 p/ha is a recipe for a dormitory suburb that fails the social, economic, and environmental mandate of the National Capital Plan.

The "Compound C" delay provides the CRA with a unique, three-year window of opportunity. We must use this time to rewrite the rules. By pivoting to the "Merwede Model" of ultra-low parking and the "Slender Tower" morphology, we can deliver a precinct that is not only economically robust but environmentally superior to the vision of 2006.

The recommendation is to proceed immediately with the preparation of the National Capital Plan Amendment dossier, utilizing the "Solar Paradox" and "Transit Viability" arguments as the spearhead for the negotiation with the NCA.

Appendix A: Technical Assumptions & Data

1. Residential Yield & Viability Analysis

Metric	NCA Status Quo (2006)	CRA Proposed (2025)	Merwede Model (Optimum)
Density Target	~220 p/ha	~330 p/ha	~400 p/ha
Est. Population (5ha Net)	~1,100 residents	~1,650 residents	~2,000 residents
Retail Viability	Critical Failure. Insufficient for grocer.	Viable. Approaches Metro threshold.	Optimal. Supports diverse ecosystem.
Transit Support	Weak. "Dormitory" usage pattern.	Strong. Supports frequent service.	Excellent. "Transit First" dominance.

2. Construction Cost Sensitivity (Parking)

- Basement Cost (Reclaimed Land): Est. \$100,000 – \$120,000 AUD per space.⁶
- Scenario A (Standard Parking 1.0): 2,000 units = 2,000 spaces = \$200m – \$240m CAPEX.
- Scenario B (Merwede Pivot 0.3): 2,000 units = 600 spaces = \$60m – \$72m CAPEX.
- Potential Savings: ~\$140 million AUD.
- Note: This capital saving effectively subsidizes the "Slender Tower" structural premiums and the "Nordhavn" retail curation strategy.

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