Green Infrastructure Lab

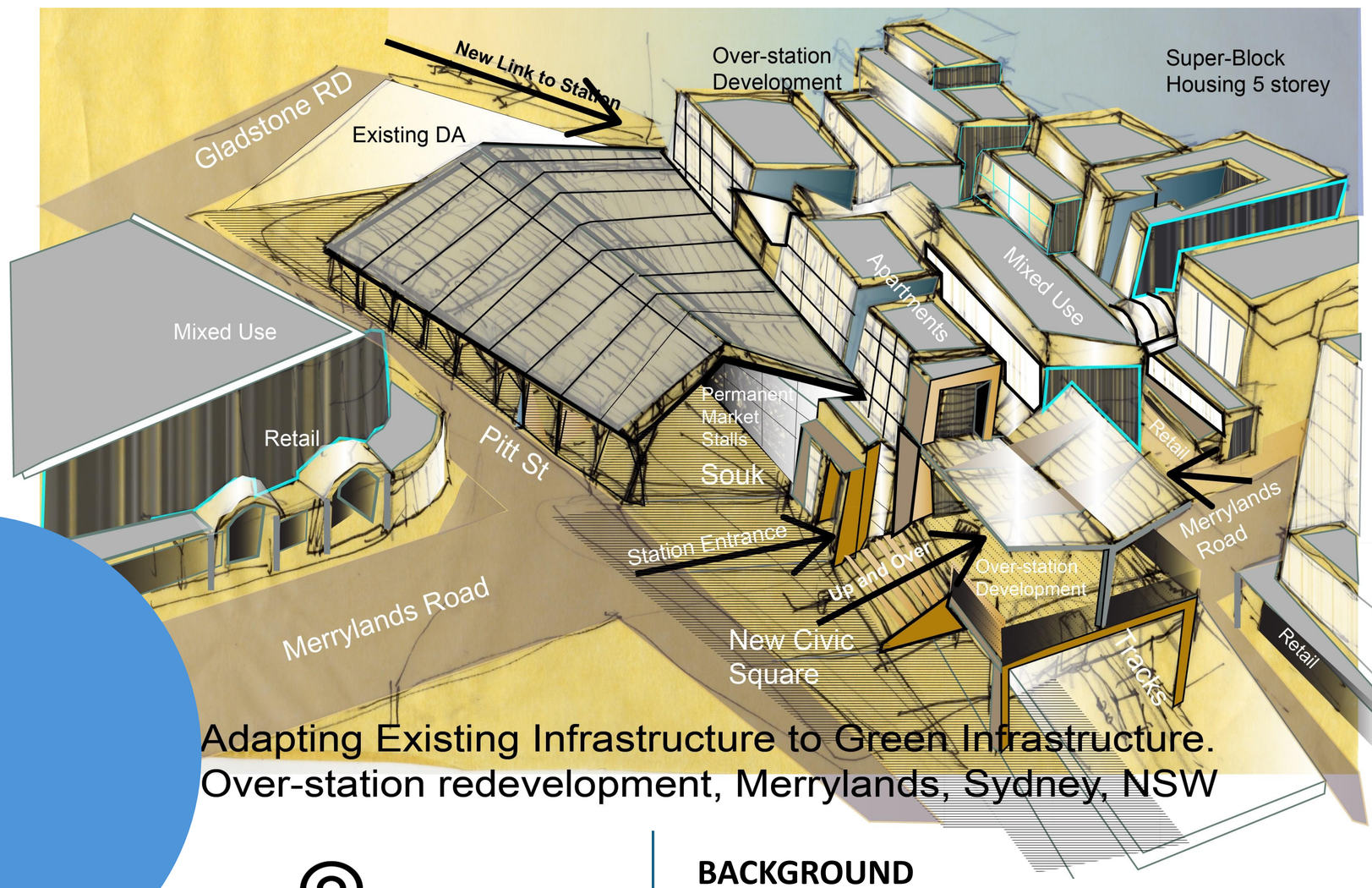
STUDENT RESEARCH

Research into the implementation of Green Infrastructure to facilitate Triple Bottom Sustainability in Australian Neighbourhoods.

The research examines the changes required for sustainable urban development and infrastructure in our suburbs, transforming Australian cities for environmental, social, and economic growth and prosperity through Green Services and Transport.

My research will focus on the neighbourhood, the building blocks of any great city, new urban development and infill, and the uncoupling and devolution of services to local government and individual communities. How do we develop infrastructure, giving power generation, delivery, control, and responsibility back to the immediate user - the household and local community?

I will use evidence-based research to interrogate the urban design and procurement of volume and infill housing. It will lead to the formulation of Green Infrastructure strategies to help solve our omnipresent housing and environmental crises.



Adapting Existing Infrastructure to Green Infrastructure.
Over-station redevelopment, Merrylands, Sydney, NSW

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AFFILIATIONS

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OBJECTIVE

To understand the effect of the unsustainable cost of housing, reconcile the perceived cost of green initiatives with the need to produce cheaper shelter when the market decides that the creator of individual wealth is private property – not superannuation.

METHODOLOGY

Undertaking evidence-based research to show climate change inaction and lack of proper understanding of the implications of low-cost housing, its construction, and how the market reacts to government intervention has led us to this position and to find solutions through urban design.

ESTIMATED RESEARCH LENGTH

Market research: 6 months. What are the triple bottom line implications and cost-effective housing: 6 months?
Evaluating and testing solutions and alternatives with industry and focus groups: 6-12 months.
Further research and correlation of data: 6 months.

REFERENCES

- ESG Summit Europe. (2023, 04 23). Beyond Profits: How the Triple Bottom Line Theory is Transforming Business for a Better World. Retrieved 01 16, 2024, from Linkin
- Hammer, J. H. (2016, 11 10). The Triple Bottom Line and Sustainable Economic Development Theory and Practice. (S. Journals, Ed.) Economic Development Quarterly,
- Tangestanizadeh, N. P. (2017). Sustainable urban design with an approach to sustainable urban development. Conference: the 4th international conference sustainable architecture & urbanism (pp. 1-13). Dubai: Research gate.

BACKGROUND

The market evaluation of Australian new housing is predominantly four by two, and the average size of Australian housing is the world's largest. How can we achieve sustainable urban design for both brownfield and greenfield sites? Government and commentators in the media discuss affordable and low-cost housing imprecisely with little discussion of typology. Architects talk about individual social and housing projects but not in concert with the area's infrastructure. Designers and developers must contend with the knee-jerk response to increased density. Our professional bodies remain publicly silent about the crises. The lack of growth in infrastructure strangles green initiatives.

Cheaper housing is consigned to the margins and outskirts of our cities, creating a dependence on fossil fuels (our most inflationary weekly purchase) and yet-to-be-built train lines. Infrastructure is a distant dream.

EXPECTED RESEARCH CONTRIBUTION

- Help define what low-cost housing is in the context of sustainable neighbourhoods, precincts and associated infrastructure.
- Undertake market research into the volume of housing products to interrogate what Australians see as their dream, considering all the costs especially unsustainable infrastructure. Evaluate solutions to the current triumvirate of crises leading our planet to demise, environmental, social and economic. Research cost-effective Green Infrastructure urban design solutions that are industry-based and concurrent.
- Can our current governmental models effectively handle this crisis? What are the alternatives? An understanding that pump priming more often results in inflationary housing costs and distorted markets with stretched infrastructure.
- Investigate urban design solutions that tend to be inner-city-based on the fringes of our cities and see housing as one part of an overall response to the triple bottom line.
- Seeing Green Infrastructure as a solution, not a problem.
- Examine ways in which increased density is not immediately rejected in our second-ring suburbs and adapting existing infrastructure to green as density increases.

Residential Real Estate Underpins Australia's Wealth

Ecosystem services provided by green and blue infrastructure: (a) regulation of microclimate, (b) noise reduction, (c) food production, (d) carbon storage and sequestration, (e) habitat provision, (f) run-off retention and water filtration, (g) recreational and cultural values, and (h) air purification
(image modified from Macrovector/Freepik, Russo, A & Cirella, G. (2021). Urban Ecosystem Services: New Findings for Landscape Architects, Urban Planners, and Policymakers. Land. 10. 88. 10.3390/land10010088.).