

THE EFFECTS OF INFILL ON NEIGHBORHOODS IN PERTH METRO WESTERN AUSTRALIA TO SUPPORT GROUPED DWELLINGS IN LOCAL HOUSING INFLUENCING LAND USE PLANNING FOR SUSTAINABLE AND ENVIRONMENTALLY RESPONSIBLE RESIDENTIAL DEVELOPMENT

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Abstract: — The direction towards urban infill and compact living is being exhilarated around the world. The population growth in Perth, Western Australia, is steadily increasing in all directions. According to World Bank statistics, Perth, Australia, in which the need to maintain the possible conflict among increasing urban concentrations, is projected to be the fourth-largest metropolitan area in Australia by 2020. Directions 2031 and Beyond forecast that an additional 328,000 homes will be needed over the next 20 years to accommodate people, with 47% of those homes being located in the current metropolitan area, resulting in significant infill development in the current decade. Western Australia's Local Government has taken a game-changing action in association with state policy tools to meet this strategic requirement without compromising the negative impacts on the community and environment. Grouped residences are the fastest-growing housing type in the city, and before the Design WA reaches medium density level, the local planning structure must react to the State Planning Policy (SPP 7.0). This should guarantee that the SPP 7.0 design concepts may be efficiently applied throughout the interim period. This will give a stronger foundation for achieving well-designed residences that offer high levels of amenities for tenants, respect treasured community characteristics, and assist in creating diversified and high-quality housing to meet the needs of members of the public. To retrieve this discrepancy, this paper describes the local authority activity in Perth, Western Australia, and the steps taken to analyse the nature and degree of statewide policies. According to the report, newly introduced compact urban units will represent the next stage of infill development. It will produce improved residential and employment alternatives in the inner city. The study concluded that urban density decisions should be made more logically and strategically. It should be easier to understand and feel various density choices. More research in the future should be continued that is necessary.

Keywords: Planning Strategy, Metropolitan Regional Scheme, grouped dwelling, Infill development, Sustainable development

I. INTRODUCTION

Perth Metropolitan Area's infill settlement pattern has been progressively increasing, with a smaller urban footprint and many more residential alternatives close to public transportation options. According to studies conducted throughout the Western Australia Metropolitan Council, residents like living in areas that are convenient to access local

transportation options, their place of employment, their families, and other amenities. Attitude and subjective data point to an individual taste among younger Australians for inner-city neighbourhoods that are aligned to public transit, are nearer to places of employment and are walkable and bikeable [4]. The local government wants to use the Infill Strategy to promote a system that fosters and promotes the condition of this crucial piece of community infrastructure, even if the state

and federal governments both play a large role in the supply of "special needs" accommodation.

Neighbourhood as an Urban Planning Method is Another way to look at the neighbourhood as a planning strategy or an architecture and planning concept [6]. This strategy is different from the one mentioned earlier. The neighbourhood social component serves as a system for planning the assimilation of land use patterns, facilities, mobility systems and inhabitants within an area designated by some urban planning criterion; it is much more than a 'location'. About sustainable urban system applications, including the notion of "sustainable," urban metabolism, and feasible and habitable cities, Thomson and Newman claim that infill decisions may support the promotion of a more self-sustaining, habitable, and thriving Perth. It also reveals the considerable possibility that higher-density infill presents for fostering sustainability and livability [18].

Neighbourhood planning method establishes borders using calculable, reasonable variables like walkable or school catchment areas. It is generally a process utilised during the pre-planning of major development areas. Hence, the neighbourhood unit may be considered a valuable, practical development and planning tool for land use patterns and mobility systems. Although it may have some connections to desired social characteristics, its bounds are based on logical spatial planning principles. Even though it has been incorporated into more contemporary urban design and planning techniques, the underlying ideas remain controversial [13]. Urban density and urban design might be dramatically impacted by infill development. However, the impact of upcoming residential development depends on how complex economic, political, and regulatory forces interact. The research begins by reviewing the arguments made in the economics, policy, and planning literature about the potential advantages of infill development, the variety of strategies that have been used or suggested to promote infill, and the potential grounds for opposition to infill. Then, look at some data about the percentage of action infill and analyse approaches to quantify infill development. Also crucial are infill characteristics, which are discussed together with factors affecting trends in infill development density and difficulties that affect their extent. Lastly, it evaluates the literature on the impact of urban initiatives, especially infill, on local housing as there is such resistance to infill developments because of the expenses it might incur for local *group dwellings**[12].

* *Grouped dwelling* – A housing that is one of several on a single piece of land, with no one structure standing wholly or partially vertically above any of the others (barring exceptional topographical or geographical conditions). A dwelling located on a survey strata that contains shared areas is also included in this criteria.

II. LITERATURE REVIEW

From statistics and literature review towards direction 2031 forecasts, the building development and approval process trend have primarily reflected the rate of greenfield subdivisions in the last decade. In addition, over this time period, 20,046 construction permissions were given, and 90% of these approvals were for single-family homes,

demonstrating the dominance of single-family homes and the absence of variety among living spaces in the Swan municipality[20].

Owing to the present Infrastructural provider's restricted budget, schedule and expenditure fees are incurred to connect additional services. In this context, the Urban Housing Strategy's long-term strategic relevance will offer service providers early information and rationale for capital expenditures, which will facilitate planning for the longer-term improvement of their services. Without a housing plan, infrastructural service companies may be reluctant to invest in infrastructure investment in anticipation of future development projects. The Western Australia Local Government Authority (WALGA) metro council document analysis revealed that Local authorities had adopted the Local Housing Strategy to deal with the demand and challenges [20]. The Local Housing and Local Planning Plans and Programmes will provide the WA Planning Commission with information on subdivisional applications. They will also influence suggestions from the private sector, such as structuring plans for land use planning [10], wherever high-level State housing plans and initiatives are implemented via the Local Housing Plan. It will guide the actions of the proper agencies and be an essential part of the Local Planning Strategy that will provide the basis for a better District Planning Scheme. According to Peter Newman, WA has a polycentric compact city with new emerging technology, and its community-based planning is the current policy in practice in various local government boundaries as detailed in the figure;

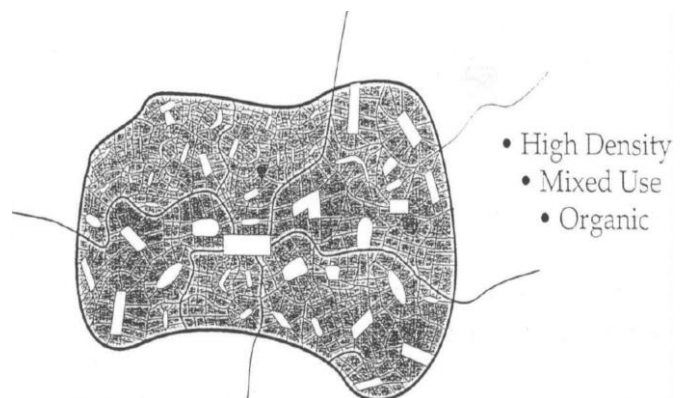


Figure 1. The Traditional Walking City, Digital Image Reproduced from [14]

Directions 2031 offers a moderate planning timeframe for Perth and Peel, but the Department of Planning believed it was necessary to look past 2031 to longer-term growth issues so that Perth can react sustainably and plan ahead for a city of 3.5 million at any point in time. Strategic planning for the whole metropolitan area is difficult; the Department of Planning decided to use sub-regional strategies to meet population increase pressures to reach 3.5 million people [20]. Infill improvement sites could also be constrained by outdated infrastructure networks devised for fixed capacities, which would then be subjected to additional loads. Now, there appears to be sufficient capacity for additional expansion, although these infrastructures may require improvements in the future. Even though most infrastructure networks may be

improved, a landowner or developer should enquire directly with the relevant service provider authorities about local availability and capacity limits at the stage of subdivisions or construction. Existing service infrastructure will be impacted less by the installation of new dwellings in existing neighbourhoods. In Perth, Western Australia, new residences must have more efficient, sustainable, and resilient infrastructure. It also revealed from various literature review and lessons from higher density development from UK that there is no negative consequences on quality living or utility demand or energy resources, but provide places to live with quality of internal design and external space as a matter of the way they managed day to day[5]. Additionally, soft infrastructure services, including public transportation, garbage collection, libraries, entertainment and recreational facilities, are affected by population decline and growth, depending on the region. When the demographics of a community shift, for instance, the athletic facilities constructed for a mostly youthful population may need to be changed or replaced with facilities more suited to an older population. It is also acknowledged that an ageing population needs an expansion of social assistance and services for home care. Under the city's community facility plans, the city monitors usage and considers proposals for such upgrades[20].

The Infill Strategy to drive planning policies and plans comprises of, but is not limited to, the following elements to achieve the primary goals[20][10][1]

- Increasing housing concentrations encompassing activity centres and areas with convenient access to public transportation, schools, stores, and job hubs;
- Incentives to offer single-bedroom dwellings, housing for the elderly/disabled/persons with special needs;
- Understanding the community's demand by increasing housing options for seniors who prefer to stay in their areas,
- Promotion of site assembly to maximise development potential and improve built-form outcomes,
- Leading the delivery of a diverse housing stock that is affordable and accessible,
- Encouraging the implementation of more ecologically responsible and sustainable built forms throughout the Perth metropolitan area,
- Trying to address the existing Town Planning Scheme's ineffectual programming arrangements,
- Promote residential construction that safeguards amenities and guarantees sustainable growth,
- Determine regions where the present housing assets and household density should be kept for the upcoming housing demand of families to satisfy the increasing social and economic demands of the population,
- Develop procedures to guarantee that new infill construction adheres to sound design standards, therefore enhancing the aesthetics of existing neighbourhoods,
- Provide the council with a consistent framework for implementing residential density rules and building control within the new District Planning Scheme and

for deciding and documenting future development proposals,

- Ensure that a variety of housing options are available to satisfy the shifting economic and social demands of the community, and assess the community's attitude towards housing choice,
- Guarantee a sufficient quantity of affordable housing is available, primarily for first-time buyers,
- Encourage creative, cost-effective, and well-designed dwelling types that include ecologically advantageous aspects,
- Encourage suitable kinds of housing in close proximity to current and planned community resources and services (e.g., employment centres, transportation hubs) to allow more effective and efficient use of such resources and amenities,
- Provide an overall density that enhances the feasibility and variety of transit options,
- Offer more confidence to entrepreneurs and the communities in the construction of new and redeveloped housing areas,
- Provide the council with a stronger foundation for making development application and rezoning proposal decisions,
- Offer an element of a prospective Local Planning Strategy to enable a future revision of the district town planning scheme for the city,
- Enhancing the design and quality of developments in accordance with the selected policy's objectives,
- Improve the constructed structure and appearance of structures and streetscapes, as well as the public areas they designate,
- Encourage projects that will have a lasting benefit to the community,
- Maximise comfort, safety, and security; promote sustainable home design,
- Suggest varying degrees of intensification of adjacent Districts, Neighborhood, and Local Centres,

III. STATE AND METROPOLITAN PLANNING CONTEXT

State Planning Strategy

To establish a framework for land-use growth and strategic planning in Western Australia, the state legislature passed the Planning and Development Act in 2005, in addition to the connected purposes. To assist these goals, the Western Australian Planning Commission (WAPC) is permitted to, among other things, start preparing and evaluating a State strategy for the development of guidance for public authorities and local government agencies[17].

State Planning Strategy 2050 was issued by the WAPC in 2014 to offer an overview of present and future issues, particularly land-use development and planning, which have become progressively complex and require a more coordinated and planned response. This long-term strategy addresses when and where the state must grow. In addition, it provides the framework for organising a sophisticated planning system that routinely makes choices about allocating land, setting

environmental objectives, funding infrastructure, and dispersing economic development initiatives[22].

The Australian Bureau of Statistics identifies greater Perth as the old Perth metropolitan area, plus Mandurah and Pinjarra. The State Planning Strategy 2050 strategy for Western Australia, encompassing greater Perth, strongly emphasises housing affordability. The plan recognises that higher living/transportation expenses and cheaper property on the city's periphery contribute to home affordability difficulties. As the principal answer to affordability issues, the policy promotes housing variety and compacts towns concentrated on mixed-use transportation hubs/activity centres[23].

Regional Strategies

1. Metropolitan Region Scheme[7][11][22][22]

Future land use in the Perth metro area is outlined in the Metropolitan Region Scheme (MRS), a State-mandated urban planning scheme that uses "sectors" and "reservations."

Maps and project descriptions are included in the MRS, just as they are in local plans. All municipal planning projects must adhere to the MRS. The Stephenson/Hepburn Report from 1955 serves as the basis for the current MRS. The MRS, first released in 1963, has been the gold standard for urban land use planning ever since. The MRS map is updated on occasion to reflect changes in strategy execution needs or reasonable new insights. Because of the complexity of the MRS amendment process, it must be approved by both houses of the state legislature.

2. Directions 2031 and Beyond [22]

Directions 2031 and Beyond is a long-term blueprint for the growth of Perth and the surrounding Peel region. The report detailed several concerns about urban condensing principles affecting infill development.

- Maximise the utilisation of and add benefits to existing facilities, including transportation, community/social, and services, where urban and employment possibilities are concentrated.
- Provide a range of housing styles with well-designed, highly concentrated housing to meet the needs of a changing population. This housing should take into account the contextual factors, location, form, facilities, and environment..
- The focus is on higher-density residential projects near transportation hubs that are promoted as highly desired places to live by trying to maximise their accessibility to public transportation while minimising potential negative impacts on the surrounding urban fabric and the city's service quality of transportation networks.
- Rebalancing greenfield and infill development.
- Enhance the number of persons who live near their place of employment.

The "connected city concept" suggested in Directions 2031 and Beyond envisions a more equitable distribution of homes, people, and jobs across the metropolitan area. In Greenfield,

there will be more residential housing density and focused infill buildings.

3. Liveable Neighbourhoods [11]

Liveable Neighbourhoods is the developmental control strategy of the Western Australian Planning Commission for creating and approving structural plans and subdivisions to encourage sustainable urban growth and Smart Growth in Perth, Peel, and the state's rural towns. It pertains to urban development planning and directs greenfield subdivisions.

Liveable Neighborhoods mentions the fact:

- *"The Western Australian population is undergoing change." Most households today consist of one or two people, although most newly constructed homes have at least three bedrooms and two-car parking. The mismatch between housing supply and household composition may not benefit our community."*

The objective of Liveable Neighborhoods is:-

- *"To offer a range of lot sizes and types of house to accommodate the different housing demands of the population at a concentration that can eventually sustain the delivery of services".*

Liveable Neighbourhoods incorporates six design features. "Design Principle 6" outlines issues pertinent to the Local Housing Strategy regarding concentration and variety to fulfil the evolving requirements of the community (29). It encourages the development of walkable neighbourhoods in metropolitan areas. The community's amenities and services are accessible by foot, bicycle, and public transportation via an effective, integrated mobility network. A logical hierarchy of activity hubs enhances employment prospects and economic viability.

4. Local planning strategy[8]

Every Local Government Authority (LGA)/city's long-term planning plans and goals are outlined in the Local Planning Strategy. Specifically, it outlines the organisation's goals, policy statements, and proposed actions for the next 10 to 15 years in terms of housing, commercial real estate, recreation, transit, environmental, and historical concerns. The Local Planning Strategy illustrates an integrated planning strategy, taking into account societal, environmental, cultural, and economic considerations.

5. Local planning scheme [15][9]

Local planning schemes must conform with the Planning and Development Regulations 2015 when land is zoned or classified. Part 5 of the 2005 Planning and Development Act governs the creation of local planning initiatives., which outlines the overall objectives of strategies, the issues that may be addressed, and the requirements for a review. Importantly, certain aspects of the system are immutable "deemed provisions." The plans comprise a number of zones and related legislative planning rules, which together allow for the regulation of how land is used and developed. In order to fulfil the goals of the plan, which are drawn from the long-term vision of the Local Planning Strategy, this combination represents a predetermined combination of land use options and zoning configurations.

6. Town Planning Scheme[19]

The LGA/local city's planning system controls how land is utilised and developed. It is made up of a Map and Scheme code. Many planning processes are governed under the system, including:

- Placing area aside in reserves for community use
- Zoning property inside the Scheme Region for the objectives outlined in the plan
- Managing and directing land development
- Outlining processes for evaluating and deciding on planning applications
- Including measures for the scheme's execution and management
- Dealing with additional issues referred to in Schedule 7 of the 2005 Planning and Development Act.

According to[23], each LGA adopts a Local Planning Policy to ensure that 10 recommendations of State Planning Policy 7.0, "Design of the Built Environment," are adhered to medium-density projects (LPP). The 10 principles of outstanding design create the basis for incorporating design evaluation into the evaluation process. The 10 design guidelines listed below should be adhered to:

1. Context and character
2. Landscape quality
3. Built form and scale
4. Functionality and build quality
5. Sustainability
6. Amenity
7. Legibility
8. Safety
9. Community
10. Aesthetics

These concepts may be applied to any construction; nevertheless, they are presented at a high level, making their precise application difficult. The design concepts should ideally be suitably incorporated into the local planning framework in order to assist implementation. This adjustment is recommended as part of that local planning framework integration. The strategy specifically seeks to guarantee that development aids in:

- The neighbourhood's planned character and the local surroundings;
- The variety and richness of the city's available housing, which offers residences that are sustainable, secure, and pleasant;
- Tree coverage and reducing the impact of the heat island effect;
- A secure environment for cyclists and pedestrians;

The following figure represents the typical top-down process among state and local planning.

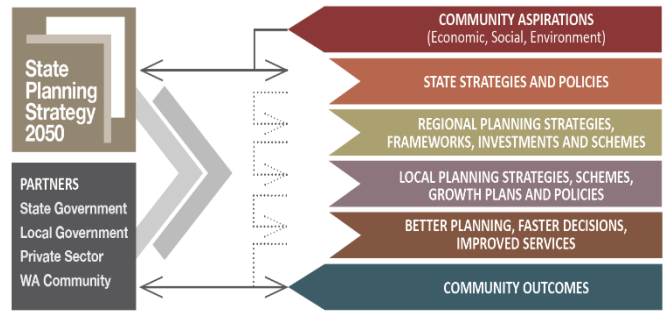


Figure 2. The State Planning Strategy Hierarchy. 2014, Digital Image Reproduced from [23]

Finding synergy between conflicting, complicated, and frequently connected land-use planning and construction challenges across state and local planning systems can be done using a framework of state design guidelines, strategic objectives, and ambitions.

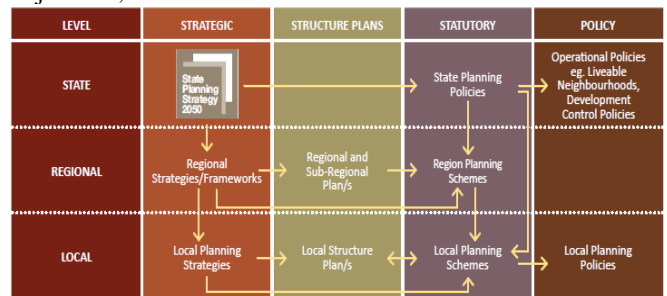


Figure 3. Western Australia planning system. 2014, Digital Image Reproduced from [23]

To clarify and better understand the current challenges and conflict at state and local government level, this study details a few context-sensitive Q and A for the readers to know the study direction clearly. This Q and A was retrieved from community consultation conducted by the city of Cockburn during the amendment of the Local planning policy to adapt better neighbourhood guidelines [2].

What are the proposed changes?

Proposal to require grouped residences to offer a 9m² garden space (minimum dimensions of 3m or as stipulated by the unique local context) that can accommodate a small-to-medium tree. These criteria would be in addition to those for open and recreational living spaces. This is intended to maintain the green, leafy nature of neighbourhoods, offer shade and improve the street environment, restore trees and landscaping lost to construction, and mitigate the heat island phenomenon.

What is the current issue with the planning framework for grouped dwellings (i.e. unit/villa developments)?

Presently, grouped homes in Western Australia are governed by State Planning Policy 7.3 'Residential Design Codes – Volume 1' (R-Codes). The R-Codes sets out key requirements for grouped dwellings, and one of the key issues is that the 'open space' requirement includes driveways and parking areas, which has often resulted in extensive hardscaping/paving and limited areas for gardens or trees.

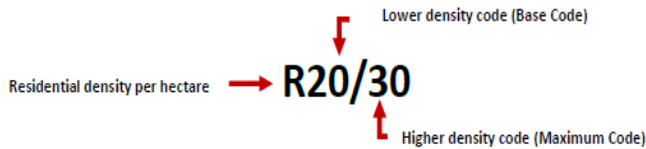


Figure 4. Dual Residential Codes. Digital Image reproduced from [20]

It is emphasised that this plan does not contain any modifications to residential zoning or code, and it is recommended that these standards apply to newly grouped units where they are currently authorised under the existing zoning.

What is the LGA doing to improve infill development and get better-grouped dwelling outcomes?

The LGA has first identified the currently valued neighbourhood character, considering ongoing community feedback and feedback received through the revitalisation strategies and other planning projects.

The community has told us they highly value the greenery in their suburb and the leafy streetscapes. The proposed changes seek to ensure that this character is protected by infill development.

Why has a garden area of 9m² (3m x 3m) been chosen?

Based on arborist advice, an area of 9m² will enable successful cultivation of a small-medium tree if sited appropriately. Draft LPP 1.2 sets out guidance for the siting of this area. In proposing this size, the city has been mindful of the following:

- Ensuring the garden area is large enough to accommodate a tree of a size appropriate to be sited within close proximity to grouped dwellings, recognising that large trees often on larger properties are not necessarily suitable on smaller strata lots.
- Not impacting on the potential lot yield – i.e. if a lot has the potential for three grouped dwellings currently, then the proposed requirement of dedicating a 9m² to a garden area for each dwelling will not reduce that potential, and it will still allow single-storey development if that is the preference.

Why is the city not requiring the retention of mature trees on development sites or offering an incentive for them to be retained?

This matter has been carefully considered, and realistically, the likelihood that a mature tree is an appropriate species and located in an appropriate location to be retained on an infill grouped dwelling is very low. In order to circumvent such a requirement, a site may be cleared early in order to circumvent it.

As trees have a finite lifespan, it is difficult to provide an incentive for preserving mature trees because it is not feasible to guarantee their continued existence. This is why the city is proposing an approach that instead ensures the provision of garden areas large enough to accommodate the right type of tree in the right location for each dwelling. Trees with heritage significance can be protected on the 'Significant Tree' list.

Will the requirements apply to apartments/multiple dwellings?

The requirements will apply to any multiple dwellings in areas coded R30 or lower; however, in areas coded over R30, the new SPP 7.3 (Vol 2 Apartments) will apply. This includes requirements for 'deep soil zones' for trees.

Why aren't the requirements proposed to also apply to single houses?

In the majority of circumstances, single houses do not require planning approval. Therefore, there would be no opportunity to impose the new requirements. While it is noted that new single houses (particularly on smaller lots) can also result in loss.

METHODOLOGY

The questionnaire and accompanying fact sheets were made accessible online via each city's official website and Facebook page. In order to reach as many people as possible, hard copies of the survey and accompanying informational sheets were made available at the Council Administration Building, local libraries, and other strategic locations. In addition to the online versions, hard copies of the Surveys were handed out at the session. The whole survey's worth of data was coded and analysed. The findings show the number and percentage of respondents to each question thanks to a frequency analysis that was performed.

CASE STUDY

The study location was selected in Western Australia, one of the states of Australia, and the capital of the State is Perth. This study has conducted a case study among three Perth metro councils to examine the demand for sustainable living in the grouped dwellings (units). It is announced that a Local Planning Strategy is being drafted to help with this endeavour; it will be the guiding document for the New Town Planning Scheme. Accommodation, public well-being and health, employment and economic growth, history, ecology, transportation, and many more sectors are just a few of the many for which LGAs have developed a participation strategy to better understand community values and views. In responding to generating jobs to ensure the LGAs' security and prosperity, relevant open-ended survey questions were asked both within and outside the particular LGAs.

The study has detailed three LGAs, the City of Cockburn, the City of Rockingham, and the City of Swan, community engagement, participation, and stakeholder engagement outcomes to explain the subject matter discussion as part of this study.

City of Cockburn:

In order to adopt SPP 7.0, the city of Cockburn spoke with the local community, made necessary changes to the local planning system, and improved infill development and grouped dwelling outcomes in response to COVID-19, acknowledging disruptions. A notice was sent through the Cockburn Gazette and 'Comment on Cockburn'; promotion on social media; brochures and displays at the administration building, a short survey seeking community feedback, and notices in Cockburn Soundings and Cockburn e-newsletter. A consultation with all of the city's community/resident groups, providing a FAQ guide and extending an invitation for City Officers to attend an upcoming meeting; consultation with builders/developers of grouped dwellings (approximately 60) with FAQs explaining the proposal and its implications [16]. The result: Four written submissions on the reform proposals to LPP were received. Two were from community members, one objecting and one supporting more trees across the city. One submission was received from the Department of Communities supporting the proposed approach and providing comments on the policy, with these comments addressed in the Schedule of Submissions. One objection was received from a building company; an email was sent to approximately 60 builders/developers who had lodged development applications for grouped dwellings with the city over the past two years, seeking feedback on the proposal [16]. One response was received from a building company objecting to the proposed garden Area on the basis that the R-Codes already provide for outdoor living areas/open spaces, where this area will remove a bedroom (or two) from each dwelling. The proposed garden area requirement will likely result in smaller dwellings; however, it was not considered that it would affect lot yield or force two-story development. Achieving housing diversity: One of the strategy's main goals was to increase the number of smaller properties; therefore, this idea was determined to contribute to that goal consistently [16].

This mandate aimed to preserve and improve the planned identity of the city's residential areas. Community feedback shows that this planned future character has widespread backing [16].

A total of 93 per cent of respondents agreed that green, leafy streets were a key feature valued and supported across most suburbs. Trees and garden areas on private property were valued by 75 per cent of respondents [16]

City of Rockingham:

The community engagement project featured seminars, online surveys, social media, and public displays. In addition to contributing to resolving the State Government's housing density objective and assisting the revitalisation of regions that have small older style homes on large lots, excluding those with eight-story apartments or higher R-codes (30), survey

queries were organised around the motif "live, work, play and other liveable aspects" to elicit the community's views and ambitions on how the distinctive LGAs should grow over the next 10 to 20 years and even beyond (CSR 2013).

The number shown below pertains to assistance for the future building of houses in Rockingham;

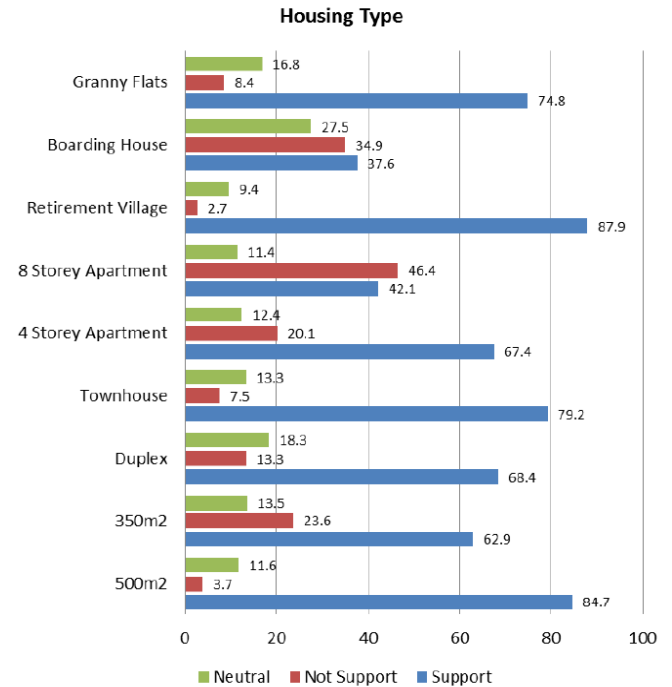


Figure 9: Future housing demand in Rockingham. Digital Image, Reproduced From [3]

City of Swan:

Swan is geographically located on the northeastern fringe of the Perth metro area. Despite the fact that about 60% of the city's territory is rural, the bulk of the present population lives on the city's traditional "edge" in the south and south-west.

The City of Swan conducted an extensive discussion exercise between October 2010 and January 2011, sending 17,000 letters to landowners and inhabitants of the selected sites and those located close. Six open houses were held in strategic locations around the council, and the consultation programme was highly publicised through a series of press releases [20].

The Local Housing Plan website got upwards of 1,900 unique visits, and the municipality received over 1,500 calls. We obtained 446 valid survey responses, of which 46% were submitted online. Also received were submissions from community residents, service providers, important stakeholders, community organisations, and groupings of residential property owners [20].

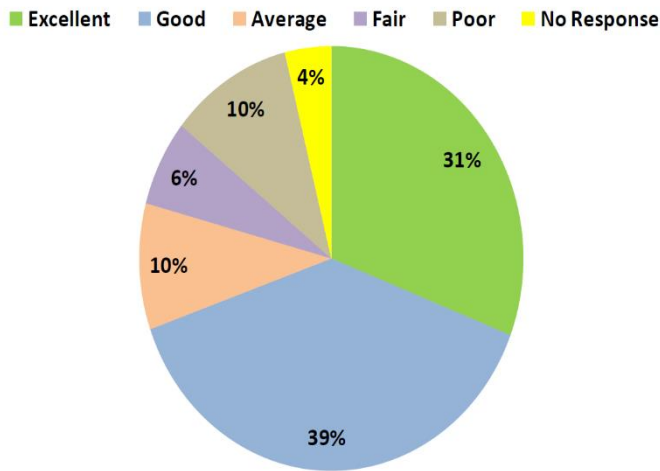


Figure 10: Community response to the proposed strategy. Digital Image, Reproduced from [20]

The majority of answers were favourable to the city's efforts. Principal concerns voiced included the strategy's aims, development potential, and anticipated residential density. Additional concerns highlighted concerned infrastructure. As a consequence of the process of community input, the infill sites were modified to suit a variety of community proposals [20].

DISCUSSION

It has been observed that the quality of grouped homes in the metropolitan region of Perth varies greatly from one location to the next. Several infill developments have not been site-responsive and have not blended in well with the nearby single-family houses. Nonetheless, many of these developments have been successful. As a consequence of this, it is essential to give priority to infill areas that include a greater amount of stakeholder engagement. By way of illustration, the Housing Midcoast Council decided to embrace the following degree of input from a variety of stakeholders:



Figure 11: Consultation inputs to the Housing Strategy. Digital Image, Reproduced From [15]

As well as key partnering among various government levels and PPP as showed in the following image



Figure 12: Key partners moving forward with implementation. Digital Image, Reproduced From [15].

Moreover, the strategy should also consider various factors, as discussed in the previous section. For instance, the midcoast council strategy highlighted the demand addressed in their strategy,



Figure 13: Addressing Housing need. Digital Image, Reproduced From [15]

It is also revealed that the significant number of policy and strategy are adopting by the local council to meet the community demand as part of local planning strategy. Therefore, there needs to be systematic integration among strategies and policies so that the outcome can be efficient and sustainable to achieve the goal of current and future land-use planning. For instance, the following figure shows the current consideration in local planning strategy in the City of Canning;

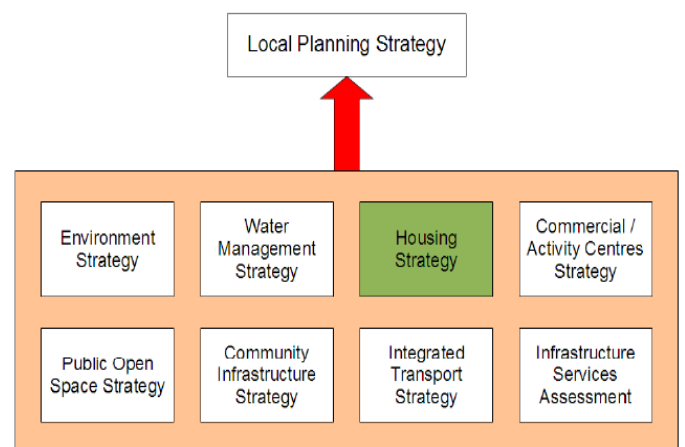


Figure 14: Local Planning Strategy Framework. Digital Image, Reproduced From [8]

In the Perth metropolitan region, infill construction and clustered residences have had the following detrimental effects in certain instances:

- Not having a positive impact on valued neighbourhood character can create against for neighbourhood residents and businesses,
- Community-valued landscaping and tree cover, integral to the identity of many long-standing Perth suburbs, are being lost,
- Houses that don't provide enough amenities for their occupants because they lack usable and practical outside space and landscaping,
- Residences that do not satisfy the demands of inhabitants because of inadequate internal layouts and a lack of adaptability to suit future needs or the needs of diverse occupants/households,
- Infill development can affect established communities, changing traffic patterns, noise, congestion, and capacity, increasing risks and safety concerns blocking lanes or driveways,
- New urban development is typically more expensive than suburban development. Regarding surface and subsurface facilities where current infrastructure must be upgraded or moved, the expense of improving infrastructure can be problematic,
- Residential property owners may be required to subsidise commercial expenditures by contributing more than their fair share to the master property owners' association's levies,
- Retail and eatery business tenants with minimal profitability and no realistic strategy to attract clients who are not from the community may struggle to exist,
- Residents in close proximity to commercial usage may be exposed to disruptions such as sound pollution, unpleasant odours, bright lights, and other annoyances to their quality of life,
- Parking is either scarce or extremely expensive,
- Congestion worsens in suburban areas when public transportation is absent,
- Residents in working-class and low-income neighbourhoods are frequently priced out of newly created dense housing areas,
- Residents of high-rise buildings have limited daylight exposure in metropolitan areas,
- It is challenging to manage stormwater and minimise flood dangers because of the abundance of hard surfaces and the lack of green space,
- The two biggest obstacles to increased density are cultural acceptability and aesthetic buildings,
- Crime is not a result of density. The management and construction of high-density housing are essential to preventing crime,
- An increase in population will result in overcrowding in schools Unless the neighbourhood that moves to higher densities has very few kids or none at all,
- Planning theory and practice continue to struggle with how high-density development relates to sustainability issues,

- The locals will be impacted by the market, shopping, entertainment, work opportunities, etc,

By comparison, [18] note that Greater Perth lacks housing variety in comparison to certain other Australian capital cities, with a large share of detached residences. In Greater Sydney, for instance, only 55% of residences are classed as detached houses, but in Greater Perth, this percentage is 75%. Thus, it is essential that the local planning framework be adequately applied throughout the interim period. This will give a stronger foundation for achieving well-designed residences that provide elevated amenities for occupants, respecting treasured neighbourhood character, and assisting in constructing a range of high-quality dwellings that meet the community's aims. The Vision For Perth region stated in "Directions 2031 and Beyond" suggests that the strategy ought to have a number of specific actions, which are described below [22]:

- Increasing the diversity of housing form by encouraging additional medium-density dwellings, a maximum ratio of low-rise to medium-rise habitations between designated civic integrated venues, and the chances for high-density living in Perth's urban core.
- Inspiring establishers and founders to raise the source of reasonable accommodation along in the area, concentrating on other construction theories and providing top-quality, cheap habitats in city-integrated regions.
- Simplifying quick reaction of the development and establishment industry to switching demographics frames and client demands through eradicating obstacles to adaptable recycling or working housing stock and creative application of unnecessary business places or empty ground

LIMITATIONS

The research acknowledges a number of research constraints in Perth; there are 139 metro and non-metro councils, whereas this study has to be conceptualised based on three case studies. Yet, this study included numerous metropolitan councils with the same conclusion. Due to space and time limits, only a brief description of the findings and supporting information is provided. More research should be conducted to reflect a variety of environments, densities, and building types so that qualitative and quantitative comparisons may be made.

CONCLUSION

In the context of increasing urban sprawling, a shift towards infill with grouped dwellings should seek better integration among other planning aspects in achieving sustainable, efficient, safe residential infrastructure development. It is mentioned that the Western Australian Planning Commission has developed "Greater Perth, Population and Housing Discussion Paper Two," which considers the necessity for proper planning regarding the different kinds of housing that should be supplied for Perth in the future. The State

Department of Housing and Works' Office of Policy and Planning is currently preparing the State Housing Strategic Plan. Technical documents issued on that approach further reaffirm the necessity for rigorous strategic planning with respect to the provisioning of housing, in particular, to guarantee that there will be sufficient and affordable accommodation for future communities[10]. Consequently, other variables such as planning path, design, groundwater, noise, security, illumination, waste disposal, Transport Strategy, Speed, parks and surroundings, quality of water, quality of air, environmental degradation, overcrowding, sustainability, community preferences, strategy, and governance issues that are anticipated to influence urban densities will keep having an effect on high-density living possibilities inside the Perth city (metropolitan and non-metropolitan) until a number of key issues are addressed.

This study provided advice on the following topics: a shift to a sustainable urban development framework that puts more importance on the social and environmental factors associated with strong laws and regulations designed to sustain these objectives; the power to enforce these, especially in risky areas such as privately owned land in old suburbs; and significantly larger consideration of the interplay between urban planning policy initiatives. Postponements in implementing these measures will likely raise the danger of densification or high-density living.

Since extensive community outreach by multiple councils, it became clear that the Local Housing Strategic approach would play a major role in the Local Planning Strategy in addressing issues like community demand, initiative on policy, standards, governance, scientific studies, education, regulatory oversight, strategic plan, law and prosecution, resilient infrastructure, and a slew of other sub-strategies at the state and local level, taking into account shifting contexts every two years. From review it is revealed that WA State policies and strategies have framed and outlined in such category that will ease to adapt high-density expansion in local planning context. Hence, local authorities will be able to follow the strategic planning guidance provided by the Local Planning Strategy for high-density expansion or higher dwelling codes in the area. A preferable course of action and incorporation in residential development would be for councils to adopt a local housing policy over a 10-year period via a reassessment of their Town Planning Scheme.

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