

Liveable Neighbourhoods

Evan Jones

Abstract

Liveable Neighbourhoods is a new policy of the Western Australian Government to combat the high car dependency, lack of public transport and poor walking conditions in suburban sprawl. This paper gives an overview of the urban design and structuring principles behind the policy.

Liveable Neighbourhoods is based on an urban structure built with walkable, mixed-use neighbourhoods. These neighbourhoods cluster around a town centre to give sufficient population catchment to support main street retail, office and community facilities, and support public transit.

A traditional movement network in Liveable Neighbourhoods overcomes the disconnected street system, lack of footpaths, unsafe routes and long walking distances to most destinations that characterise conventional suburban developments. Liveable Neighbourhoods encourages people to walk by providing an environment of high pedestrian amenity and efficiency, and one that is stimulating, legible and safe for pedestrians.

Liveable Neighbourhoods recognises the complexity of daily movement patterns and the need to make pedestrian trips as short and pleasant as possible. The primary pedestrian network is the street system, which is detailed to support pedestrian movement.

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Evan Jones holds qualifications in town planning and urban design. He has extensive experience in urban design, economic development and planning throughout Australia and internationally.

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Introduction

The Western Australian Government is countering suburban sprawl through a new policy called *Liveable Neighbourhoods*. The policy promotes sustainable growth practices at the urban fringe of Perth and country regional centres through an holistic approach at regional and local scales.

Liveable Neighbourhoods introduces a compact urban structure based on walkable towns and neighbourhoods, and includes the mixture of land uses, and the interconnecting of street patterns to facilitate all modes of movement. Residents are encouraged to walk because facilities and amenities can be provided in reasonable proximity to most houses, and routes are made direct, safe, amenable and interesting. If many people are encouraged to walk in pleasant and safe streets for every day needs as well as recreation, it is argued that community life is improved, and personal safety levels increase.

Liveable Neighbourhoods promotes safe, stimulating and sustainable urban environments, and ones that are friendly for pedestrians.

Background To Liveable Neighbourhoods

Perth has a unique planning and development history compared to other Australian capitals in several respects. The residential base of Perth has a comparatively small traditional inner suburban component, with rapid suburbanisation occurring later than other Australian cities in the 1960's. The spatial layout of these suburbs was very responsive to the garden city movement, segregation of land uses and modern transport engineering principles to cater for a rapid increase in car ownership and usages. Perth has embraced suburban development much more strongly than other cities in Australia and its influence on lifestyle and quality of life is pervasive.

The Western Australian community is changing and planning needs to respond to these changes. The majority of households are one and two person households and yet the majority of houses built are three and four bedroom with two car garages. This does not reflect as good a fit as is needed. In Western Australia, 95% of new jobs are now in the service sector. Of new businesses, 97% are small firms, and 21% of all businesses are home-based, with self-employment increasing by 59% between 1976 and 1991. Older women aged between 45 and 54 now constitute a major proportion of the workforce. By 2010, some sources estimate that the majority of the workforce will be part-time workers. It is likely that more people will work at, or near home and will demand more goods and services at the neighbourhood level.

The design of Perth's residential suburbs has a direct influence on the issues that Perth faces, and, in turn, on the sense of community and quality of life. Conventional

suburban subdivision and development in Perth and elsewhere is characterised by several factors which are increasingly being questioned. These include enforced segregation of land uses through zoning, low residential density, lack of local employment and long commute distances, lack of services, high car dependence, disconnected street systems, limited public transport and poor walking environments.

There has been considerable community discussion on the need for planning to respond to these issues and, at the same time, improve the design of suburban development to make it safe, sustainable, attractive and memorable. We need to create a strong site responsive identity supportive of local community. Although re-urbanisation is taking hold, the majority of the production of the built environment in Perth still occurs at the metropolitan fringe. Therefore it was for greenfields developments that sustainable development policies were first been created and applied through *Liveable Neighbourhoods*.

The policy is also sufficiently flexible to be used for cities and towns in regional Western Australia where climatic conditions vary considerably, but the need for community and walkable environments does not.

Urban Form Comparison

There are two organisational systems for the structure of urban places. The first is the 'traditional' city that has been with us for many hundreds of years. It includes those cities and areas of cities that were based on walking and, when it became available, fixed transit. These places were characterised by nodes of development on streets that connected to other places in the district, concentration of uses and activities that were often densely mixed, a network of streets and lively public places, and ease of pedestrian movement throughout the whole system.

The second urban place structure is the rigid systems of conventional suburban development (suburban sprawl). This structure typically has peripheral expansion and hierarchical and curvilinear residential streets with dead-end culs-de-sac, segregation of land uses, large single ownerships and privatisation of public meeting spaces into shopping centres surrounded by car parking.

The comparison of urban structures has been graphically portrayed by Duany and Plater-Zyberk as follows. In the diagram, land to the north of the arterial is structured on the conventional suburban development (suburban sprawl) model where access from one land use to another is only available by driving via a busy arterial road, forcing congestion, pollution and social isolation. Land to the south of the arterial is configured in the traditional urban structure where the same uses are compatibly mixed on an interconnected street system. Access to facilities and services are within walkable proximity of where people live. Traffic congestion is relieved through less need of the use of cars and by diffusion throughout the street network.

Evidence of the comparative performance of the two types of urbanism is also portrayed graphically for Perth in the following diagrams. They show a comparison of the availability of daily needs (such as milk) in the conventional and traditional suburbs of Perth.

Figure 1 shows Perth's northern suburbs, which have been designed on the conventional suburban development model. Figure 2 shows the Perth CBD and traditional neighbourhood suburbs.

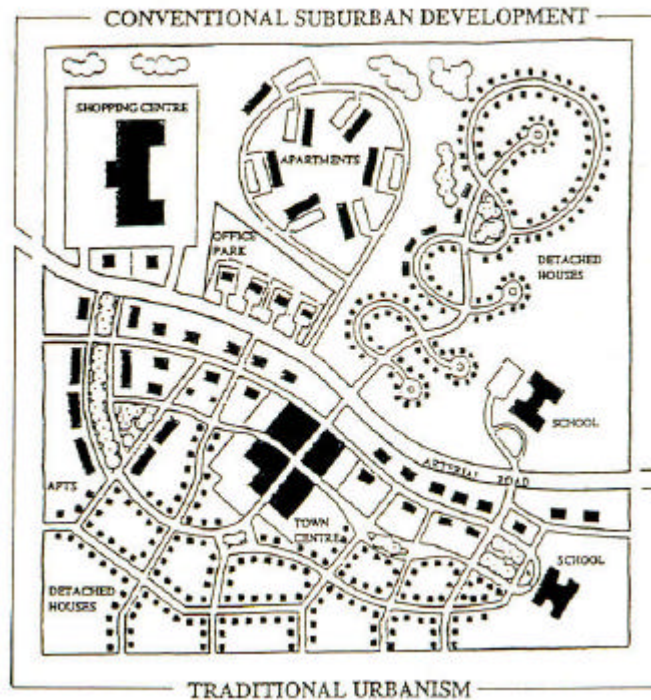


Figure 1. A comparison of conventional suburban and traditional urban development



Figure 2. Availability of daily needs (milk) in Perth's northern suburbs

Access to shops in the conventional suburbs is very difficult for people without a car. Here the shops are infrequent, virtually impossible to access other than by car for most people, often even if they live nearby. The young, the elderly, people with disabilities that prevent them from driving, and those without the financial means to afford a car (or a second car) are isolated from essential facilities. Access to local shops for daily needs by people without access to a car is relatively easy in the traditional suburbs, as the shops are frequent and well located in accessible locations. Even if shops are nearby, access to the front door by non-car means may not be easy.



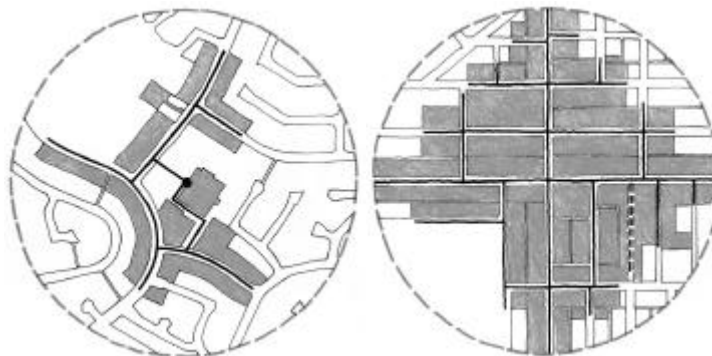
Figure 3. Availability of daily needs (milk) in Perth's CBD and traditional inner suburbs

Ped Sheds

Walkable catchments, sometimes referred to as “ped-sheds”, are maps showing the actual area within a five-minute walking distance from any centre, or ten minutes from any major transport stop such as a railway station. The centre could be a neighbourhood or town centre. The walkable catchment is simply a technique for comparative evaluation of how easy it is to move through an urban area in order to get to and from these centres or facilities. These maps are the best estimates of walkability, and as such are an indication of energy efficiency.

Walkable catchment calculations are expressed as the actual area within five-minute walking distance as a percentage of the theoretical area within five-minute walking distance. The theoretical five-minute walking distance is shown as a circle with a radius of about 400 m drawn around any particular centre. This is an area of 50 ha. When calculating a ten-minute walking distance, the radius used is about 800 m, resulting in a circle area with an area of 200 ha.

The higher the percentage, the better the walkability and hence the likely energy efficiency of any urban area. A good target for a walkable catchment is to have 60 per cent of the area within a five-minute walking distance, or ten minutes in the case of stations. The following diagrams compare the walkability performance using ped sheds of a new Perth neighbourhood based on the conventional development pattern and a traditional neighbourhood in an old established suburb in Perth.



Figures 4 and 5. Ballajura Neighbourhood Centre, Shenton Park Neighbourhood Centre

In the case of the Ballajura neighbourhood centre on the left, the ped-shed is very poor at only 17 per cent. The curvilinear road system and culs-de-sac make accessibility from the adjacent housing very difficult. The measured performance could be increased if the existing pedestrian access ways are included; but these have been excluded as they are considered unsafe for many users because of their narrowness, the lack of sight lines and surveillance, particularly in the evenings and at night. Footpaths are generally not available, making the journey less comfortable for those people who do choose to walk.

The neighbourhood centre of Shenton Park on the right performs dramatically better with a ped-shed of 65 per cent due to the more direct street connections. Walking is supported by the detailing of the street with footpaths and shade trees.

The considerable challenge facing Liveable Neighbourhoods is to reverse the post-war urban structure of conventional suburban development and reintroduce traditional neighbourhood structure in contemporary circumstances.

Liveable Neighbourhoods

Structuring at the Regional Level

A contemporary approach to traditional urban structure has been developed in *Liveable Neighbourhoods* to achieve relative self-sufficiency for likely densities at the urban fringe of Perth.

The *Liveable Neighbourhoods* approach calls for an urban structure based on walkable, mixed use neighbourhoods with locally based employment and facilities. Neighbourhoods cluster around a town centre to give sufficient population catchment to support main street retail, offices and community facilities. The neighbourhood and town centres are located at junctions of arterial routes or important local streets, rather than having such roads define the edge of development. For transit oriented development, a rail station anchors one end of the town centre main street, if rail is available.

Arterial streets are well managed as ‘integrator’ streets and traffic lights provide for safe pedestrian crossing across arterial roads to neighbourhood centres.

The town centre acts as a district level community focus with a compatible mix of uses which provide a range of weekly shopping needs, community facilities and local employment, whereas the neighbourhood centre caters more for the daily needs of a community.

Movement Network

Liveable Neighbourhoods promotes several major differences from conventional suburban street systems. It emphasises connectivity, amenity, and integration to achieve safe, efficient and attractive street networks. The priority is to develop a street network that not only works for vehicles and public transport provision but specifically aims to attract a high level of use by pedestrians, cyclists and the disabled.



Figure 6. Liveable Neighbourhoods Regional Structure Diagram

The street system in *Liveable Neighbourhoods* is highly interconnected. Arterial routes generally form the core or spine of neighbourhoods and towns, rather than the edges. Arterial streets are detailed to ‘integrate’ rather than divide with the use of service roads or other lot layout techniques to enable development rather than back fencing to front arterial routes. Culs-de-sac become less frequent, are located on the edge of neighbourhoods and are connected by a well surveilled minor street or laneway enabling safe pedestrian and bicycle access. Traffic is distributed more evenly through a flatter hierarchy of streets.

Bus routes are provided in a ‘spider network’ focussed on the town centre, with as many neighbourhood centres as possible connected en-route to other destinations.

Pedestrian Network

In recent conventional development walking has been made difficult or is simply not a feasible option for many journeys because of the disconnected street system, lack of footpaths, unsafe routes (such as pedestrian access ways and segregated linear trails) and long distances to most destinations. To encourage people to walk, a place must have high pedestrian amenity and efficiency, be stimulating, legible and safe for pedestrians. *Liveable Neighbourhoods* recognises the complexity of daily movement patterns and the need to make pedestrian trips as short and pleasant as possible.

The primary pedestrian network in *Liveable Neighbourhoods* is the street system, which is detailed to support pedestrian movement. Streets have a significant role to play in relation to social interaction, public safety and amenity, but require contiguous development frontage to do this effectively. Development with frontage onto streets provides surveillance, activity and visual interest and, on busier streets, exposure which can assist commercial viability. Provision of frontage helps build community focus and enables streets to act as an integrating element within neighbourhoods and towns, rather than as a divider, which has often happened in conventional development.

Narrow pedestrian underpasses with poor sightlines are discouraged because of personal security problems. Traffic signal control rather than roundabouts is encouraged on major roads to improve pedestrian crossing opportunities both at the lights and in breaks of flow mid-block.

Footpaths should ideally be provided on both sides of all streets. However, for cost reasons, footpaths may be omitted from one side of a street where vehicle volumes and speeds are very low, and where use of the street is considered safe and comfortable for pedestrian use and by people with disabilities. Footpaths should have ramps at all kerb corners for wheelchairs and pram access and cater for people with disabilities. Street lighting should be present in all streets. Pedestrian crossing distances in local streets should be limited through kerb extensions and tight turning radii, which can cause vehicular traffic to slow to negotiate the tighter corners.

Safe routes to schools, bus stops and stations

A network of quiet local streets focussed on schools should be traffic calmed to ensure safe use by young pedestrians and cyclists. Secondary and private schools should be located to benefit from good public transport access with safe pedestrian routes between transport stops and schools.

Safe routes to stations require more consideration of surveillance to provide night time safety. Main routes should be fronted by housing and uses that are open at night (e.g. delis, gyms, recreation centres), with minimal gaps in surveillance. Bus stops and approaches thereto should be located with good surveillance and provided with adequate lighting.

Cyclist movement network

Good cycling conditions and encouragement of cycling should be designed into the urban fabric. This includes such measures as bike parking facilities, slower vehicle speeds and low traffic volumes, appropriate lane widths along local streets to allow cyclists to share travel lanes with cars, wide kerbside lanes on busy streets, and routes parallel to arterials with less traffic.

Much cycling for daily activities will be on streets. On busier streets close to schools, wider footpaths designed for dual use by cyclists and pedestrians are appropriate.

Long distance commuter cycling and recreational cycling may justify provision of special dual use paths, usually in accordance with a regional structure plan.

Movement network for users with disabilities

Access to and ease of use of the movement network for users with disabilities is an important emphasis of *Liveable Neighbourhoods*. Journeys can be carried out with dignity on the street network rather than through a separate open space network which is often poorly maintained and lacking surveillance. Footpaths are required for most roads on at least one side of the street, making journeys more comfortable and safer. Access to public transport is easier, more direct, closer and at grade. Finally, public transport should be more efficient and therefore more frequent.

Jindalee Comparison

An ‘Inquiry-by-Design’ exercise was undertaken to demonstrate a design based on the sustainable development principles being promoted in Liveable Neighbourhoods. This approach was compared to the built form which would result from conventional planning based on the present subdivision policies.

To make these comparisons, a 453 hectare site was chosen at Butler in the North-West Corridor of Perth. The site was chosen as it is at the next stage of one the fastest moving development fronts and because there were preliminary conventional design proposals available for comparison. These design proposals were indicative of the likely form of conventional development that would result from the current suite of Commission residential policies. The site became known as Jindalee during the design exercise. The designs were measured and the relative performance of the conventional and *Liveable Neighbourhoods* designs were compared to establish the relative performance between the two approaches.

The design approaches are summarised as follows:-

Characteristic	Conventional	Liveable Neighbourhoods
Land use diversity	Single use: Predominantly residential, with designated areas of clustered retail; segregated use base	Integrated mixed-use: Neighbourhood based with integrated residential, retail, commercial, and service industrial
Street pattern and type	Curvilinear and hierarchical from district distributors, to collectors, to access streets, to A dead-end ≡ culs-de-sac; traffic collected and channelled	Inter-connected network; flatter hierarchy of types; traffic dispersed.
Residential lot size and housing density	Average lot size: 600m ² Typical density: 11 lots/ha	Average lot size: 500m ² Typical density: 14 lots/ha
Dominant retail type	Regional serving: “big box” shopping centres, chain stores	Neighbourhood serving: independent retailers
Dominant planning objective	Create comfortable housing	Create community; create affordable housing; jobs containment

The conventional design is set out below.

A *Liveable Neighbourhoods* option (refer to Figure 6) was developed that had regard to the natural land form and vegetation, gave a central rail station catchment, and was best able to be structured into an efficient system of towns and walkable neighbourhoods. It also afforded the best employment opportunities and was therefore the most likely to be optimally self-contained for community, economic and environmental sustainability.



Figure 7. Conventional Design Diagram

In the *Liveable Neighbourhoods* option nine neighbourhoods of around 50 hectares, totalling around 20,000 people support a town centre located at a railway station. This size is sufficient to attract key retail components such as a discount department store, and a large supermarket. Workplace has many locational opportunities, including at neighbourhood centres, clustered in the town centre, or by taking advantage of the exposure and mobility for regional distribution, offered along the highway. Significant retail and workplaces enables the development to become more than a dormitory suburb and be a town in its own right

Neighbourhood centres were located at crossroads, on relatively main streets, to help support their local retail. They are capable of supporting a deli, next to a bus stop, as well as a number of workplaces that choose to locate locally, and within walking distance. Highly interconnected streets, small street blocks and perimeter block development are used throughout the design.

Land form was carefully considered with streets leading directly to the ocean to create a sense of place and identity and to share this significant amenity throughout the area.

Qualitative and quantitative measurements of the performance of the two design approaches indicated that the *Liveable Neighbourhoods* design approach was a more efficient layout for pedestrian movement with ped-sheds ranging from 41% at the coast to 75% at the town centre compared with 33% to 55% in the conventional design approach. Solar orientation, lot diversity and access to public transport were all far superior in the *Liveable Neighbourhoods* design approach. In terms of employment, *Liveable Neighbourhoods* should result in a significant improvement in terms of job self containment as follows:-

	Conventional Design	Liveable Neighbourhoods Design
Population	29,259	30,234
<i>Dwellings</i>	9,753	11,768
Jobs Needed	14,629	17,652
Proposed Jobs	2,612	11,306
Containment Factor	18%	64%
Study Area	1883ha	1883ha

Implementation

Liveable Neighbourhoods is on trial and will need to earn its place to overturn conventional design practices and approaches. The trial has engaged many developers to test the policy on actual projects, and the response of the market has been encouraging. Developers have also been responding to changing household sizes and new employment and work practices, with the creation of new house types and the inclusion of work spaces for home based businesses.

Conclusion

The provision of sustainable communities on the fringe of Perth requires a paradigm shift away from conventional development practices. Using traditional urban forms in a contemporary way, *Liveable Neighbourhoods* provides for an integrated approach that provides for walkable towns and neighbourhoods, employment and mixed use, the promotion of public transport and pedestrian friendly environments based on safe and amenable streets. It is a model that should be useful for similar circumstances in other cities.