

Taming an Urban Frontier?

Urban Expansion & Metropolitan Spatial Plans in Perth 1970-2005

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Abstract: This research paper is concerned with the process of urban expansion as experienced in Perth, Western Australia between 1970 and 2005. Through an examination of urban and urban deferred rezonings to the Metropolitan Region Scheme, the focus is upon the effectiveness of two metropolitan spatial plans in *shaping* new urban development on the fringe of the metropolis. Drawing from growth coalitions and institutionalist theory in the construction of a theoretical backcloth for the investigation, the paper reports preliminary results which indicate that the spatial plans have been relatively impotent in determining the location and timing of urban expansion patterns – both at a metropolitan and sectoral scale. Urban development ‘breakout’ appears to have occurred consistently through the study period – pointing to actors or forces outside of the formal planning system being more influential than the spatial plans in determining outer area development outcomes.

Introduction

The rapid outward spread of metropolitan regions is one of the most distinctive features of twentieth century urbanization in the developed world. Fuelled by high population growth rates, increasing societal affluence and technological advancement (including access to private automobiles) cities around the globe have increased their urban area footprints in exponential terms. In the opening address to the UN Habitat’s 2003 World Urban Forum, Executive Director of United Nations Environmental program Mr. Klaus Toepfer stated that:

The growth and spread of cities is perhaps the most significant cultural trend of the last century. It is...the single most important development issue of today’s world...(with) 75% of people in the developed world living in urban areas (United Nations 2003).

Accordingly, the question of where future urban expansion should and could occur in Australian cities has emerged as a key issue for both academic and policy debate. All metropolitan areas around the nation currently have endorsed spatial plans which endeavor to strategically release urban land and shape future city growth in particular ways. Despite spatial planning visions regularly being refreshed - every fifteen to twenty years - limited work has been conducted into how effective these spatial plans have actually been in directing urban expansion patterns. Even less work has focused upon the socio-cultural and political milieus surrounding spatial plan implementation – especially outside of Melbourne and Sydney.

Perth

In 1970 the metropolitan region of Perth covered a land area of approximately 500 km² and contained 700,000 people. Thirty five years later the population of the ‘most isolated metropolitan region in the world’ had doubled and the areal extent of the metropolitan region had more than doubled. According to Demographia (2007) statistics, the urban area of Perth is now greater in areal size than a surprising selection of international cities with substantially larger populations including: Shanghai (9 million over 549 km²), Cairo (12.2 million over 712 km²) and Berlin (3.6 million over 984 km²).

With a population of just 1.4 million distributed over more than 1,100 km², Perth has been assessed as being one the most car dependant and ‘sprawling’ metropolitan regions of any city in the world (Newman and Kenworthy 1999; Kenworthy & Laube 2001). Perth is also distinguished

by having one of the world's lowest urban area footprint to population ratios – commonly referred to as urban density¹ (Demographia 2007).

The rapid urban expansion of the city through these years occurred under the 'strategic direction' of two major metropolitan spatial plans: *The Corridor Plan* (1970) and *METROPLAN* (1990). Each of these plans endeavored to shape the evolving metropolitan fabric in certain ways with each plan including clear spatial delineations for preferred future urban development areas. As in many localities around the world, the successful implementation of the spatial visions for future city growth in Perth embodied in the two spatial plans has proved problematic. Preliminary assessment of the urban spread of the metropolis between 1970 and 2005 indicates that there has been a significant disjuncture between State Government's spatial plans and actual urban development outcomes.

Notwithstanding some useful academic contributions to the planning and development landscapes of Perth over the years from authors such as Webb (1983), Yiftachel (1991), Alexander (1986), Hillier (2002) and Greive (2000), to date no comprehensive analysis has been conducted of the how regulation of outer area land release has been pursued and its relationship to what has been desired by the prevailing spatial policy and its formal regulatory structure. Accordingly there is a significant gap in the literature which this broader research project is aiming to address.

This paper reports on aspects of the wider study through a presentation of results of the analysis conducted of urban and urban deferred rezonings to the Metropolitan Region Scheme (MRS) through the operational life spans of the key metropolitan spatial plans. The objective of this analysis is to provide a foundation for the investigation into the effectiveness of the spatial plans in shaping urban expansion.

In order to adequately situate the analysis presented later in the paper, the following two sections briefly sketch aspects of the practical and theoretical context for the research project.

Planning for Urban Expansion

In instrumentalities around the world, planning for the future spread of cities has long been a concern of strategic urban planners. It has primarily been state, provincial or county strategic urban planners whose role it has been to provide 'visions' of how metropolitan areas would or could end up being developed by a pre-determined future time. Incorporating historical trends into their 'crystal ball-gazing' the articulation of each planning vision has often included the production of a spatial plan - which delineates where the urban fringe will be (or intended) to be in ten, twenty or even fifty years hence.

Spatial planning in broad terms can be defined as being about setting frameworks and principles to guide the optimal *location* and *timing* of new urban development and physical infrastructure. The rationale is that by clearly demarcating, in a metropolitan context, where future urban expansion could and should occur, a variety of economies of efficiency can be enacted – principally through outer area land release for housing and other urban development (such as road and rail construction as well as gas, electricity and water provision) occurring in a

¹ Urban density measures are a source of considerable academic and professional debate. Density measurements are perhaps most accurately produced as a net population density per hectare (or acre) with non-residential use land (such as commercial, industrial, parklands etc) removed from the calculation (see <http://www.sflcv.org/density/brookings.html> for a discussion). However although the simplistic population/urban area ratio is subject to criticism it provides a broad basis for comparison between metropolitan areas around the world.

coordinated manner (Tawdre-Jones 2004). In total, spatial planning endeavors to *regulate* where a city spreads within a geographic and temporal frame.

No matter the spatial or temporal context, the demarcation of urban boundaries in spatial plans has always been influenced by a mix of topographic and geographic as well as socio-political factors (Roscelli 1997). Generally speaking environmental constraints such as oceans, rivers, lakes and mountain ranges form the first layer of 'hard' geographical considerations limiting city expansion. Thereafter a raft of other 'soft' factors such as general economic conditions, existing settlement and ownership boundaries, plus projected population growth demands influence where future urban expansion limits might be set.

Finally there is always socio-political factors in the equation of strategic plan making. This emerges from the prevailing institutional and political landscape which envelopes the plan making process - and its implementation (Hamin 2003). The structure and powers of the governing body responsible for producing a spatial plan – whether it be in Western Europe, North America or Australasia - has always had a large part to bear on where the urban edge actually lies (Self 1988). This outcome emerges as planners are subject to various influences when preparing city plans (Bryson and Crosby 1992). Planners are rarely autonomous from the central state and are subject to various influences from within the formal governing apparatus – and from outside.

Strategic Planning and the Market

Policy documents generally assert that the production of spatial plans assists government to structure both land and property development activity throughout a city (Mant 1988). However, despite some apparent success with the London Greenbelt (Gallent et al 2006) and certain growth management efforts in the US (Pental and Martin 2002), the effective regulation of outer area land development in metropolitan regions which fully reflects a government mandated spatial plan has proved problematic. This is because in western democratic societies urban expansion is a process largely conducted by private firms and individuals who are essentially *market driven*. Whereas planning agencies devising and attempting to implement spatial visions are constrained by operating in a *regulatory driven* policy environment in which they generally do not hold much of the principal commodity they are attempting to regulate – this being urban land. Therefore there is an omnipresent tension between the process of urban expansion and the exercise of spatial planning.

The nexus between the market driven process of urban expansion and the regulatory driven exercise of spatial planning is surmised by urban geographer Michael Batty as such:

Cities have never grown in the way that urban planners imagined...The best that planners can hope for is to intervene at decisive points and let human nature and market forces do the rest (cited by Pearce 2006: 38).

Other commentators such as Gordon and Richardson (1999:18) follow this line and advocate that sprawl is in most contexts inevitable and that: "spatial policies (either direct [eg land use] or indirect [eg transit subsidies]) that attempt buck market trends and consumer preferences are likely to fail." Other free-market advocates such as Glaeser and Kahn (2003) and Cox (2002) suggest that sprawl's negative quality of life impacts are overstated.

At any rate, as a consequence of this tension between regulatory structures and the operation of market forces, significant difficulties arise in accurately predicting where and when urban areas will actually extend to into the future. This is because, as previously mentioned, the production of the built environment within the modern 'market city' is the result of the intersection of environmental, economic, social and political decisions and factors (Neutze 1973). In essence, strategic planners attempt to devise and implement spatial plans in an environment in which they hold only degrees of power and influence over actual development outcomes.

Institutionalist Theory

A theoretical perspective of how governments attempt the regulation of land development through the aegis of strategic spatial planning is specifically provided through institutionalist theory. As presented by Healey (1997) institutionalist theory is highly illuminating as it considers the way in which policy actors endeavor to conceive, prepare and implement strategic spatial plans within a *shared power world* (after Bryson and Crosby 1992). Healey (1997: 21) explains:

All actors in the shared-power world are constrained by the power relations that surround them – the power of other agencies, the power carried within resourcing regimes, or the rules and procedures they have to abide by, or the routinized ways of thinking about things and that they and others take for granted.

Institutionalist theory posits that spatial planning is a social practice in which those concerned with the quality of places and spatial organization of urban areas collaborate to create 'visions' of desired development outcomes (Healey 1996). This perspective further suggests that many of those involved in these interactive processes often seek to change the ways the things are done through the introduction of new ideas and policies and replacing one approach with another (Giddens 1984). Spatial plans thus reflect the prevailing policy environment in which they were prepared, and so alterations to the form of rules and the directional flows of resources – for example where urban containment lines should be set – is an outcome of these socio-political relations.

Accordingly, this manner of conceiving spatial plan making as a social process rather than purely as a technical exercise is the essence of the institutionalist approach. It seeks to identify both the general patterns in the form and contents of planning practices and the forces that drive them. So adherents such as Healey, Innes (1995) and Sager (1994) interrelate the active work of individuals within social processes (the level of agency) within the context of powerful systemic forces – economic organization, political organization, social dynamics and natural forces. This is a key idea as it relates to the urban fringe as this location has a multitude of public agencies (including road, rail and other utility and infrastructure providers) as well as different levels of government.

Importantly the institutionalist approach is careful to recognize that actual strategic plan making practices are indelibly influenced by local histories and geographies as well as by the capabilities of local actors involved (Healey 1996). Under this approach strategic spatial plan making practices are thus presented as contingent on local circumstances and are embedded in local relationships – but yet are structured and shaped by wider relations of power (Healey 1997). Accordingly, institutionalist theory assists in the researcher penetrating inside the 'black box' of government (after Hillier 2002: 195).

Growth Coalitions Theory

As this research project involves analysis of spatial planning performance by assessing urban development patterns, a theoretical perspective on urban development - and specifically how and why cities grow - is drawn from growth coalitions theory. Under the growth coalitions thesis, cities are seen as engines of economic development for business interests. The entire urban fabric is considered a mosaic of competing land interests capable of strategic coalition and action (Rosentraub & Helmke 1996). The theory is firmly focused on development politics and governing coalitions and attempts to explain why government must inevitably facilitate accumulation (Greive 2000).

The idea that a city is essentially a 'growth machine' in which on-going growth and development reflects the interests of certain groups within a community was originally championed by Molotch (1976). He asserted that:

A city and, more generally, any locality, is conceived as the areal expression of the interests of some land-based elite. Such an elite is seen to profit through the increasing intensification of the land use of the area in which its members hold a common interest...governmental authority, at the local and non-local levels, is utilized to assist in achieving this growth...Conditions of community life are largely a consequence of the social, economic and political forces embodied in this growth machine (Molotch 1976: 310).

This perspective has developed over the years into the internationally applied theory of growth coalitions. For Logan and Molotch (1987) growth coalitions are important as “the pursuit of exchange values so permeates the life of localities that cities become organized as enterprises devoted to the increase of aggregate rent values through the intensification of land use.”

The growth coalition concept was first recognized and proposed in the US urban context in explaining the association with property development interests and the long-tradition of ‘independent’ local government action. In other countries, stronger levels of state control, weaker economies and different opportunities have spawned a variety of responses and often involve more toned down variants of the growth coalition concept.

In essence, growth coalitions seek to maintain a ‘business climate’ which according to Lewis (1996) attracts business/industry/development through favourable taxation, law enforcement and good labour (to which we might add ‘good’ land control and regulation). Molotch (1976) explains how this will encourage the enhanced exchange of land, which will be recouped by property owners benefiting from growth related land sales. Within this context less advantaged groups may be attracted by the promises of improvements even though the benefits are ultimately limited (Leitner 1990).

For Purcell (2000) growth coalitions are important because the pursuit of exchange value inextricably permeates city life, so that localities become organized as enterprises devoted to increasing land value and output. Within this context the role of the local or state authority is reconfigured towards effecting and helping to guide more economically orientated policies and the pursuit of investment through policies of facilitation and the fast tracking of investment (Leitner 1990).

Accordingly, the concept posits that important determinants of urban policy and practice are influenced by individuals and institutions within growth coalitions who profit from the intensification of land use. Powerful actors from outside the formal channels, most notably the land development industry, are seen to influence and/or by-pass policy strictures in order to render profit on speculation. Greive (2000) usefully framed his sweeping historical work of urban governance in Western Australia on the central importance of growth coalitions being allied to land development. He asserts that:

...a very broad ensemble of social actors – individuals, corporations, institutions, and the like – are involved in shaping the course of development. Predominately they are place-tied actors...who, by their conscious decisions and direct actions, by their unconscious and tacit approvals and through their expressions of protest, formulated and participated in Western Australia’s system of urban governance and development (Greive 2000: 26).

So in summation, the growth coalitions theory calls attention to the way business elites exercise political power which may influence decision-making processes and arrangements – including land use regulation outcomes.

The preceding section has contextualized the research problem by outlining the scope of two key informing theories for the research endeavor. Institutional theory and growth coalitions theory provide the theoretical backcloth to the investigation and offer two compelling and complimentary perspectives on urban development and spatial plan implementation - which hitherto have not been widely applied to the Australian context.

Approach

In light of the broad introduction and background to the research topic provided above, the clear focus of this research endeavor is upon the battle the planning system has had in strategically shaping future urban growth through metropolitan spatial plans in Perth in recent decades. Thus the core research hypothesis can be succinctly stated as:

Urban expansion patterns in Perth have regularly not accorded to the prevailing spatial planning vision. Hence, a historic and on-going disjuncture exists between spatial plans and outer area development outcomes

The objective of the remainder of this paper is to report on the progress of the investigation by presenting the results of the analysis of urban rezoning amendments to the Metropolitan Region Scheme (MRS) since 1970, and in doing so test the validity of this hypothesis. Toward this end two main questions are considered:

- 1) To what extent did MRS amendments occur within designated urban expansion areas within *The Corridor Plan* and *METROPLAN*?
- 2) Does the urban rezoning 'picture' provide support for the institutionalist and growth coalitions theoretical postulations?

These questions were addressed by assessing urban change over time through the assembly and interrogation of two types of spatial datasets: snapshots in time of the MRS; and urban expansion areas designated within *The Corridor Plan* and *METROPLAN*.

The Metropolitan Region Scheme

In 1963 the current system of land use planning and regulation at the metropolitan scale came into being with the first gazettal of the Metropolitan Region Scheme (MRS). In essence the MRS is a very large land use zoning plan with every square centimeter of the metropolitan region accorded a zone or reserve category - such as urban, industrial, rural or state forest. The MRS is a statutory document and any substantial re-zonings need to go through a lengthy approval process culminating with the requirement of being approved by both houses of the State parliament.

Spatially referenced historic digital data of the MRS was only available from the Department of Planning Infrastructure (DPI). Although the precise years desired (start and end points for each of the plans) was not available, DPI were able to provide versions of the MRS at points in time usable for conducting the analysis. Accordingly, urban and urban deferred zoned land only was able to be 'extracted' from the 1971 and 1992 MRS for the *Corridor Plan* analysis, as well as for 1992 and 2005 for the *METROPLAN* analysis.

Spatial Plans

Whereas MRS spatial data proved to be relatively straight-forward to acquire and convert to a standard GIS platform, the urban expansion areas designated within both the plans had to be re-produced from hardcopy plans. The urban expansion 'shapes' were effectively digitized into a MapInfo format which then allowed the first phase of spatial analysis to proceed.

Results

The Corridor Plan

In 1971 there was 510 km² of urban zoned land throughout the metropolitan region with a further 65km² of urban deferred land. *The Corridor Plan for Perth* prepared and released by the Metropolitan Region Planning Authority (MRPA) in 1970 forecast very strong demand for the ensuing two decades. The planning strategy proposed that future urban growth should be funneled into four major corridors – in the north-west, east, south-east and south-west – all extending from the existing urban core. The principal spatial plan within the document earmarked a startling gross area of 630 km² for future urban development throughout the four corridors.

Figure Two and Three displays the distribution of the existing urban and urban deferred zoned areas under the MRS in 1971 and 1992 as well as depicting the designated urban expansion areas of *The Corridor Plan*.

Figure Two: Perth Metropolitan Region in 1971 with *The Corridor Plan* Expansion Areas

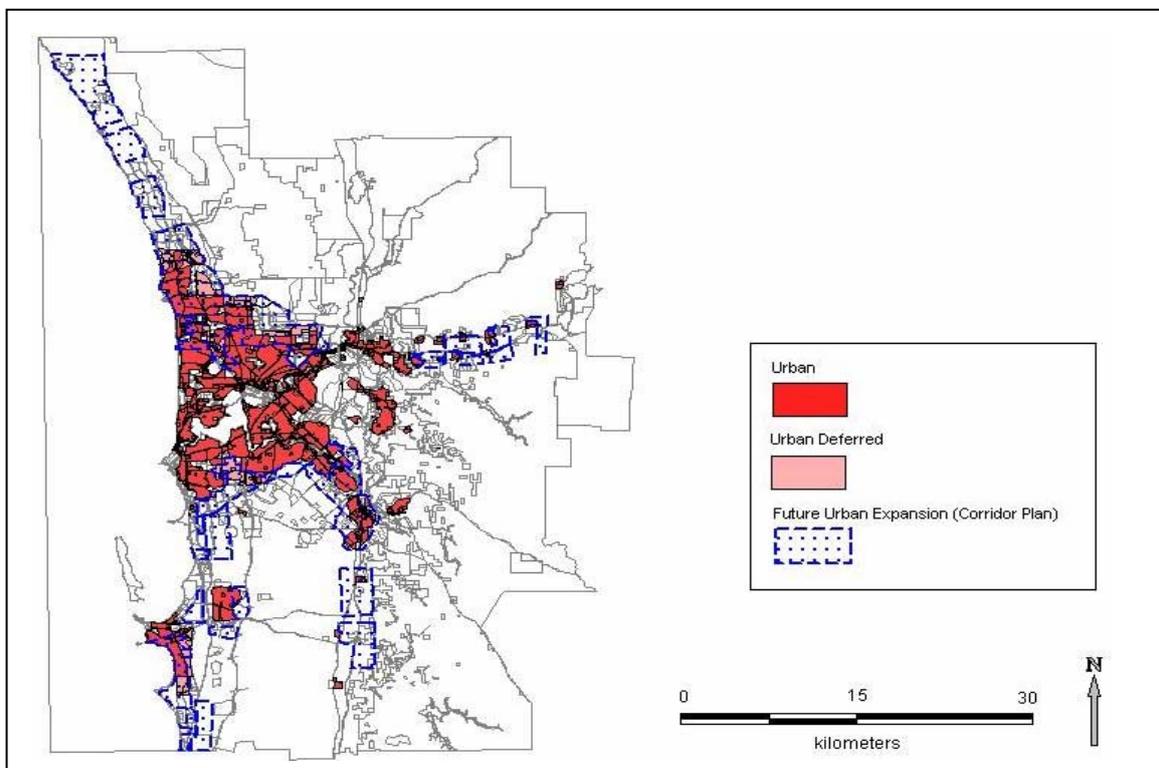
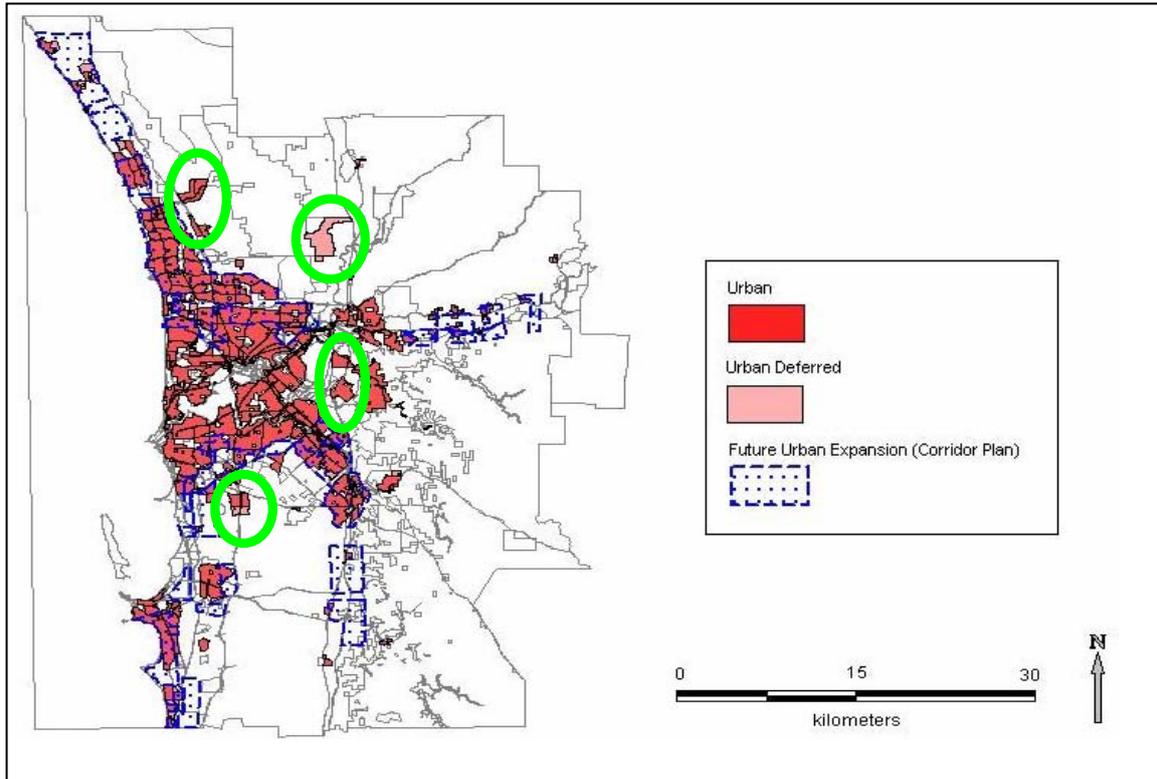


Figure Three: Perth Metropolitan Region in 1992 with *The Corridor Plan* Expansion Areas



By 1992 the urban zoned areas under the MRS had grown to a total of 670 km² with an additional 37 km² of urban deferred land zoned. As Figure Three reveals, despite portions of this urban zoning growth between 1971 and 1992 having occurred within the designated urban expansion areas – particularly in the north-west corridor - there were substantial areas where ‘urban break-out’ had occurred. The most substantial of these break-outs are circled in Figure Three and occurred around Joondalup/North Wanneroo in the north-west sector, Ellenbrook in the eastern sector, Forrestfield in the south-east sector and Atwell in the south-west sector.

For the entire metropolitan region, a total of 83 km² of urban and urban deferred zoning break-out occurred through *The Corridor Plan* time frame. This accounted for 52% of all urban and urban deferred rezoning through this temporal period. Table One sets out the results of this spatial analysis at the metropolitan and sectoral scales.

Table One: Urban and Urban Deferred MRS Rezoning Analysis under *The Corridor Plan*

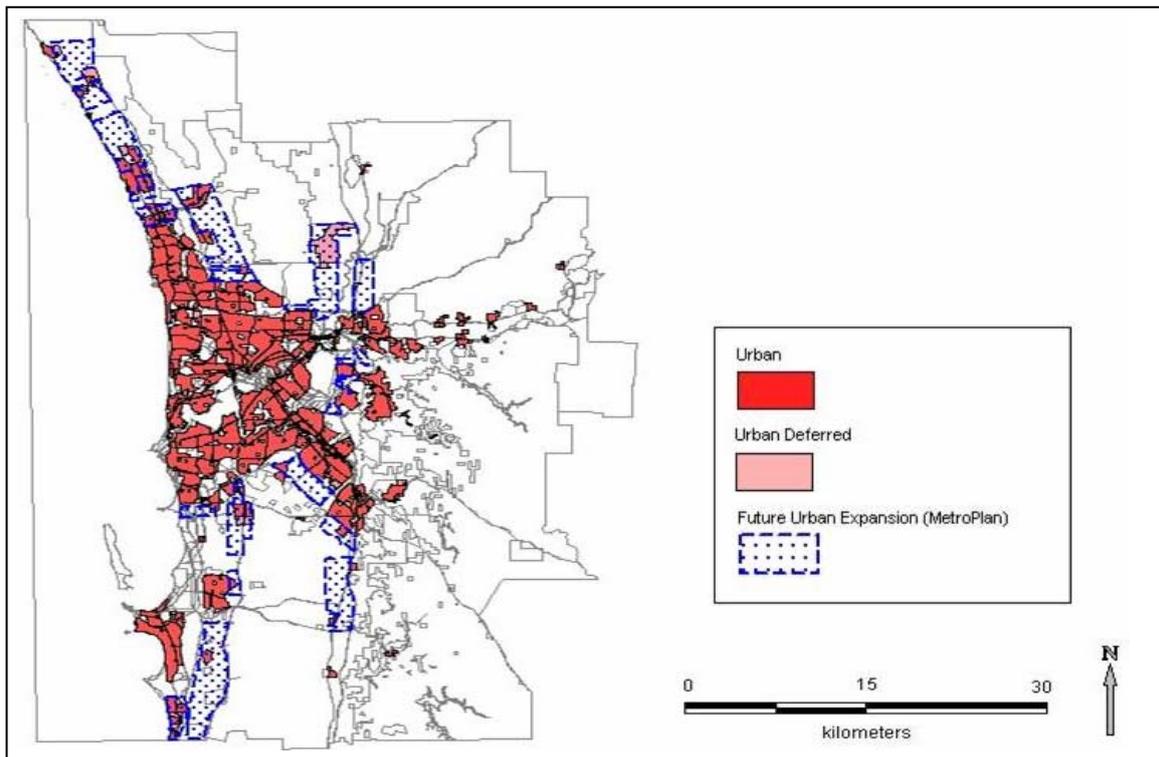
	Corridor Plan Designated Future Urban Area (km ²)	Urban zoning area change 1971 to 1992 (km ²)	Urban Deferred zoning area change 1971 to 1992 (km ²)	Total Urban & Urban Deferred Change	Total Break-out (km ²)	% Breakout
Eastern Sector	47.4	33.0	13.0	46.0	28.8	63%
North-West Sector	301.8	77.5	-18.9	58.6	21.5	37%
South-East Sector	129.6	20.9	3.3	24.2	14.7	61%
South-West Sector	150.4	36.9	-5.4	31.5	18.2	58%
TOTAL METROPOLITAN	629.2	168.2	-8.0	160.3	83.3	52%

The Eastern sector experienced the greatest gross area and proportional break-out with 29 km² or 63% of all urban and urban deferred rezoning occurring outside of areas designated in *The Corridor Plan* for urban expansion. The rezoning of 15 km² of state forest in the area to be renamed Ellenbrook represented the single greatest break-out incidence.

METROPLAN

In 1990 the State government released *METROPLAN: a planning strategy for the Perth Metropolitan Region* as a new strategy to guide the future growth of the city. Similar to *The Corridor Plan* the new spatial strategy had designated clear areas for future urban growth as depicted in Figure Four. *METROPLAN* substantially cleaved back on the overall area earmarked for future urban development as the planning concept of urban containment was promoted as a key policy measure. Future urban expansion was to be encouraged principally into a thickened north-west corridor (to accommodate the rapidly developing satellite city of Joondalup), into a newly created north-eastern corridor (up into the Swan Valley to incorporate Ellenbrook) and retained an emphasis on the growth potential of the south-west corridor. *METROPLAN* removed the eastern corridor for future urban expansion and substantially decreased the growth potential of the south-eastern corridor.

Figure Four: Perth Metropolitan Region in 1992 with *METROPLAN* Expansion Areas



By the end of 2005 there was now over 900 km² of urban and urban deferred zoned land distributed throughout the metropolitan region. Figure Five reveals that even accounting for a shorter time period of assessment (13 years as opposed to 22 years for *The Corridor Plan*) and with ample territory set aside in the new spatial vision (417 km²) again significant break-outs occurred. This time the principal break-outs were up in the far northern tip of the region around Two Rocks (which is about 70km from the city centre), out in the eastern sector around Stoneville, and around Canningvale in the south-eastern sector.

Figure Five: Perth Metropolitan Region in 2005 with METROPLAN Expansion Areas

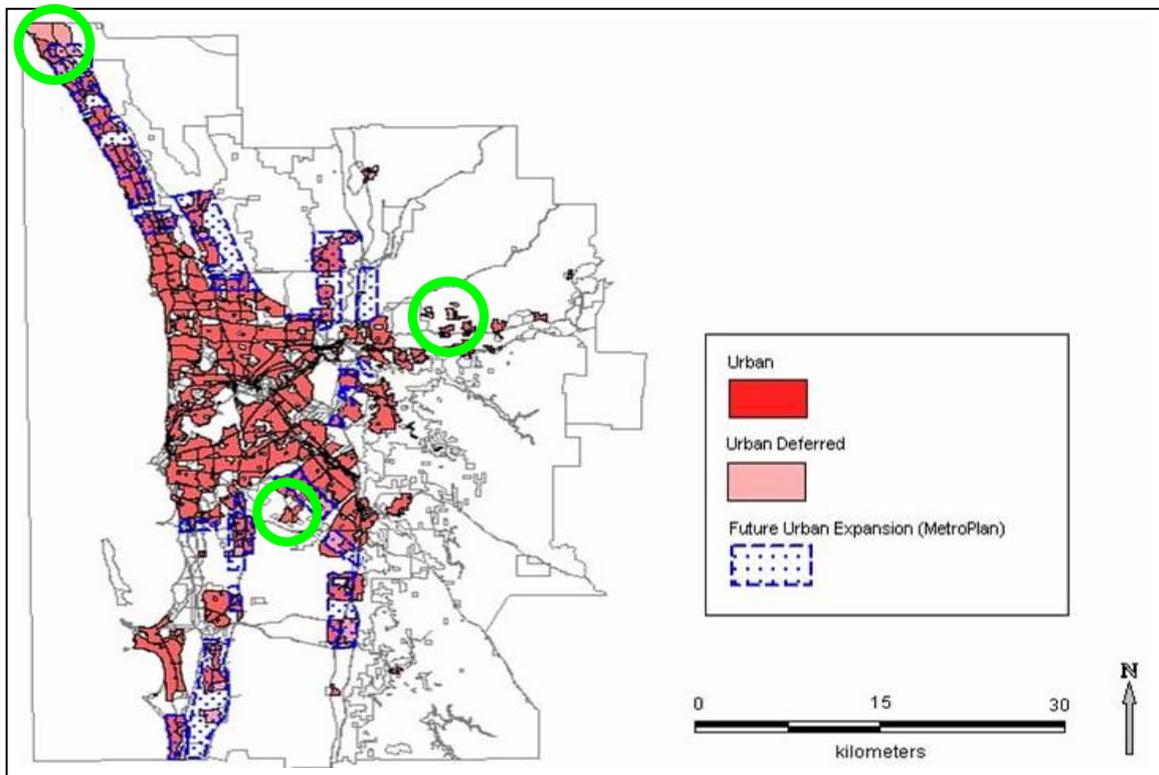


Table Two sets out the results of the spatial plan analysis for *METROPLAN* and reveals that between 1992 to 2005 over 50 km² of break-out occurred which accounted for 26% of all urban and urban deferred rezoning. Aside from the south-west sector, where limited breakout occurred, the remaining three sectors experienced a break-out result of approximately 30%. The largest gross break-outs occurred in the north-west sector where despite over 150 km² being earmarked for urban expansion in the spatial plan - still more than 23 km² of break-out occurred.

Table Two: Urban and Urban Deferred MRS Rezoning Analysis under *METROPLAN*

	Designated Future Urban Area (km ²)	Urban zoning area change 1992 to 2005	Urban Deferred zoning area change to 2005 (km ²)	Total Urban & Urban Deferred Change	Total Breakout (km ²)	% Breakout
Eastern Sector	70.8	37.7	-10.4	27.3	8.3	30%
North-West Sector	153.9	49.0	26.0	75.0	23.4	31%
South-East Sector	78.5	39.1	19.0	58.1	16.1	28%
South-West Sector	114.2	29.7	7.0	36.7	2.5	7%
TOTAL METROPOLITAN	417.4	153.4	41.6	194.9	50.2	26%

Conclusion

The Perth metropolitan region has evolved from having a relatively compact and contained urban footprint centred around the Swan River in 1970, to a sprawling elongated city in 2005, stretching virtually continuously from Two Rocks in the north to Rockingham in the south (a distance of over 115 km). The rapid outward spread of the urban fabric through the study period is preceded by amendments to the Metropolitan Region Scheme with residential development being the driver of urban and urban deferred rezoning change. *The Corridor Plan* and *METROPLAN* were both prepared in contexts of strong forecast demand and predicated upon the vast majority of the future population conducting daily commuter patterns in private automobiles. Accordingly, the spatial plans shared a vision for future urban expansion to occur ostensibly through a decentralized road hierarchy² based urban development model. Both plans therefore earmarked vast swaths of predominately rural lands in various growth corridors for future urban expansion to occur.

Despite the generous quantum of urban expansion potential earmarked within each growth corridor, the preliminary results and analysis provide ample support to the central hypothesis that there has indeed been substantial and potentially systematic departures from the desired urban development outcomes envisaged for both *The Corridor Plan* and *METROPLAN*. The power of the State Government's planning regulations to effect spatial visions for future urban expansion patterns therefore appears problematic. Following the institutionalist theoretical perspective on spatial planning suggests that the 'shared power world' of policy implementation may be heavily influenced by actors outside of the centralized planning structure. Building on this perspective growth coalitions theory then points towards actors from the land development and real estate industries potentially being the 'business elites' influential in the spatial plan obfuscation – in the form of urban and urban deferred break-outs.

Having now identified where the 'lines have been breached' – in a zoning capacity – the next stage of analysis involves conducting aerial image assessment of the development fronts to verify actual times of development. This 'picture' of urban expansion will then provide the basis for leading discussions in interviews to be conducted with State and local government planners and members from the land development industry. This historic investigation into how and why Perth has grown as it has will provide insights into spatial plan implementation and the broader process of outer area land development and regulation.

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² Centred around freeways and arterial spines connected by feeder roads into dormitory suburbs.

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