

“Manukau is determined to develop the transport system that is required to meet the needs of its businesses and residents.”



Chapter

3

Environment, Land Use and Urban Form

- Reduce environmental impacts and increase the use of more sustainable transport
- Integrate land use and transport
- Develop intensive growth centres which are supported by measures that promote walking, cycling and use of passenger transport
- Develop Flat Bush as a good example of increasing the use of more sustainable transport.

3.1 Introduction

Reducing the Environmental Consequences of Transport

Manukau is determined to develop the transport system that is required to meet the needs of its businesses and residents and at the same time address the environmental consequences. This strategy includes policies and actions to achieve this in three broad ways:

- Integration of land use and transportation
- Shifting a proportion of trips onto more fuel efficient and environmentally sustainable modes of transport, and reducing the need for some vehicle trips altogether
- Mitigating the adverse effects that the transport system imposes on the natural environment.

These three approaches are the council's commitment to participate in the concerted effort by transport and environment agencies at all levels to address environmental issues relative to transport. The first two of the three broad emphases will be used to make a very real contribution in the medium to long term to the environmental objectives of Tomorrow's Manukau, regional and

national policies and plans. The third approach involves a range of measures to address those environmental effects that can realistically be addressed at the local level.

The concerted effort by all agencies is reflected in their objectives, for example:

- The Land Transport Management Act requires national and regional transport strategies to address how they contribute to:
 - “Protecting and Promoting Public Health”
 - “Ensuring Environmental Sustainability”
- The Energy Efficiency and Conservation Strategy includes related objectives:
 - “Reduce energy use through reducing the need for travel”
 - “Progressively improve the energy performance of the transport fleet”
 - “Improve the provision and uptake of low energy transport options”
- Tomorrow's Manukau emphasises the city's aspirations for:
 - “Sustainable Environment and Heritage”
 - “Healthy People”.



“It is practical to manage some of the adverse effects on the environment caused by transport.”

Integration of Land Use and Transportation

A fundamental principle of this strategy is the recognition that the future urban form of the city and its land use/activity pattern is interrelated with the transport system. Emphasis is placed on planning and implementing new urban development areas, and accommodating population and employment growth in an integrated manner with the transport system that services them. In particular, land use policies will direct a large proportion of future population into more intensive, mixed-use nodes and corridors in accordance with the Auckland Regional Growth Strategy. This style of development will be much more conducive to walking, cycling and passenger transport use. Development of the new greenfields suburb at Flat Bush, which will be home to 40,000 people, will be a model of ‘new urbanism’ in a suburban context and of reduced emphasis on the private motor vehicle.

This approach will deliver a more sustainable transport system.

Although it forms an essential part of this strategy, much of the implementation of this land use policy will be funded through non-transport related budgets.

Increasing the Use of More Sustainable Modes and Managing Travel Demand

Provision is included for application of significant effort and expenditure to achieve greater use of environmentally friendly and energy efficient modes of transport - passenger transport, walking and cycling (Chapters 5 and 7). It also provides for work to be done to develop travel demand management plans for the city (Chapter 8). Measures to increase walkability, use of cycles and passenger transport will support public health goals to increase the levels of physical activity and use of active transport modes in Manukau.

Shifting a much larger proportion of local and short distance trips to walking and cycling instead of private motor vehicle will

directly decrease adverse environmental and health effects. Although passenger transport is currently predominately powered by diesel engines that generate greater emissions, overall an increase in patronage will be environmentally beneficial. This is because more people are carried per passenger transport vehicle trip than per private vehicle trip (i.e. pollution per person carried will be reduced). A significant shift towards walking and cycling to local shops, schools, and entertainment instead of riding in cars will involve extra activity and exercise for most people with consequential increases in fitness and general health levels.

Specific measures to achieve this are detailed in Chapters 5, 7 and 8.

Managing the Environmental Effects of Transport

It is practicable to manage some of the adverse effects on the environment that are caused by transport. These are actively managed by a range of council policies and actions. Examples include protection of water quality through management of roading stormwater and the use of environmentally responsible methods for construction of transport infrastructure.

However, there are other effects which cannot be significantly influenced through direct intervention within the bounds of any one geographical area and which are therefore more appropriately addressed at the regional and national level. These include measures such as vehicle emission standards to maintain air quality and standards to achieve fuel-efficient engines. The council's most effective role in such issues is to work with and support regional and central government agencies to develop appropriate standards and regulations.

Figure 3.1 summarises the means by which the council manages the adverse effects on the environment that are generated by transport.

Figure 3.1: Management of Adverse Effects of Transport

Adverse effect	Manukau City Council intervention
Consumption of Non Renewable Energy	These global effects will not be influenced significantly by direct local interventions. However, by “thinking globally while acting locally” the council can contribute to improvement in the longer term. Integrated land use - transport planning and shifting more travel to energy efficient and more sustainable modes is the core of the council's strategy in this regard. Advances in engine technology are expected to deliver increasingly efficient vehicles, and vehicles powered by non fossil fuel energy sources.
CO ₂ Emissions and Global Warming	These global effects will not be influenced significantly by direct local interventions. However, by “thinking globally while acting locally” the council can contribute to improvement in the longer term. Integrated land use - transport planning and shifting more travel to energy efficient and more sustainable modes is the core of the council's strategy in this regard. Advances in engine technology are expected to deliver increasingly efficient vehicles, and vehicles powered by non fossil fuel energy sources.
Noise	<p>The District Plan does not specifically regulate transport noise. Experience has shown that noise-attenuating barriers/walls require very careful design and placement in order to avoid reflecting the noise to what would have been otherwise lesser-affected locations and to maintain access to property.</p> <p>The nature of road surfaces is also a factor in noise generation by traffic, with chip seal being noisier than asphaltic concrete. Harder wearing asphaltic concrete is routinely used on the highest volume roads but not lower volume local streets because of higher cost and ineligibility for LTNZ subsidy on such roads.</p> <p>Matters such as noisy vehicles are more appropriately dealt with by way of national regulations.</p>
Water Quality	Manukau utilises urban stormwater catchment management techniques that include collection of stormwater from road surfaces. Pollutants settle and are periodically pumped out of cesspits and detention ponds. In older areas some locations such as busy intersections may represent a greater environmental risk, so other collection and treatment options (e.g. filtered catchpits, swales) are being investigated with respect to their effectiveness and cost.
Air Quality	This is not a city specific issue and regulation of fuels and vehicle emission standards are more appropriately applied nationally. Cleaner fuels are coming on-stream with upgrading of the Marsden Point refinery, vehicle engines are becoming progressively cleaner and more efficient, and vehicle emission standards for vehicle WOF tests are being introduced in 2007.
Effects of Construction of Transport Infrastructure	The District Plan contains well-developed policies and rules to eliminate, mitigate or manage the adverse effects of all types of development, including transport infrastructure. It is not necessary for this transport strategy to develop additional policies and performance standards other than to require all new transport related developments to follow the District Plan processes and comply with the resource consent conditions. Related costs are borne by the infrastructure projects.

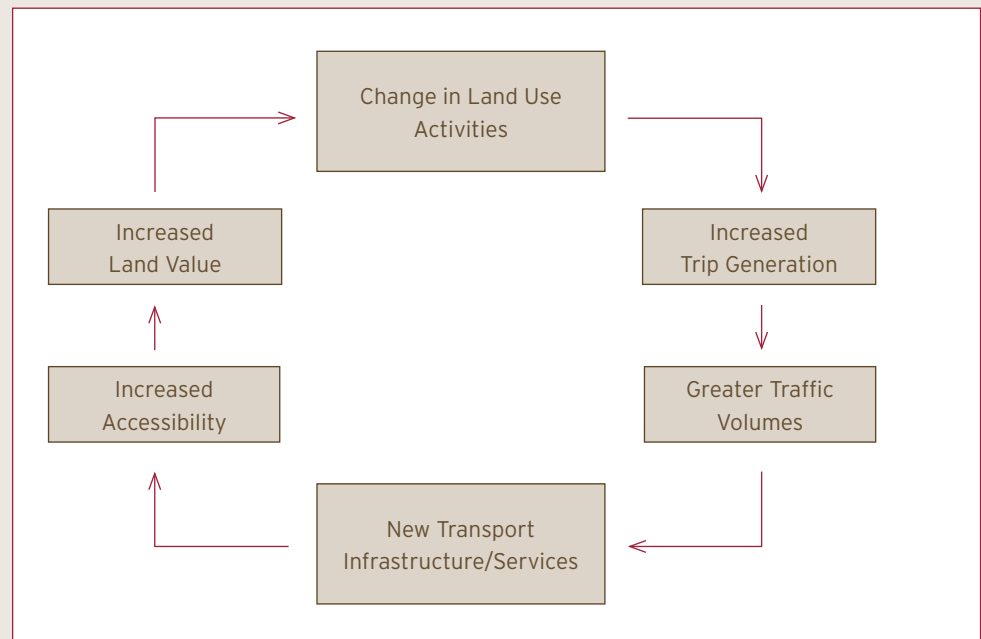
3.2 Land Use Patterns, City Form and Transportation

Land Use and Transportation

The city's urban form and structure, including the disposition of various land use types is in a fundamental and dynamic relationship with its transport system. The transport system influences accessibility and land use activities.

These activities generate and attract trips and in turn influence the shape of the transport system. Figure 3.2 shows how a change in either land use or transport, affects the other.

Figure 3.2: Land Use - Transport Interrelationship



It is inappropriate to regard transport just as a separate piece of urban infrastructure that follows and serves land use activities. The transport system is influenced by the pattern of land use as it is used to satisfy the demand for travel between different land uses and areas. However, the decision on where to locate a particular land use activity is also influenced by the degree of accessibility of one area relative to another. That accessibility is a reflection of the transport system.

Once the relationship between transport and land use is recognised, the transport system can be used to shape the location and distribution of land uses activities. Conversely, the distribution of activities

and the trips they generate can influence the transport system. The influence of land use on transport has always been recognised to some degree. For example, Manukau City Council has long pursued a policy of zoning land for employment in strategic locations throughout the city. This links the ratio of jobs to the available labour force and the need for residents to commute beyond the city for work.

Development Patterns within Manukau

Transport has played a key role in the development of Manukau. The development that has occurred in Manukau city centre, Wiri and East Tamaki industrial areas, has partially resulted from the accessibility of these areas to strategic transport corridors such as the Southern Motorway and the Pakuranga Bridge.

Development in Manukau since the 1960s and 1970s has been characterised by low-density suburban development that is heavily dependent on private vehicles. This is the result of planning, development processes and consumer demand geared towards the private motor car. Prior to the 1990's zoning was heavily used to separate industrial, residential and commercial land uses. The separation of homes from work and other travel destinations necessitated travel.

The opportunity to change planning practices came from the Resource Management Act 1991, and the subsequent development of a new District Plan which places less emphasis on zoning and separation of uses, and greater emphasis on controlling adverse environmental affects. Zoning and segregation of certain activities is still appropriate in some circumstances. It is now better recognised that the planning and development process needs to take into account other modes of transport, i.e. passenger transport, cycling and walking.

The Role of Higher Densities and Mixed-Use Development

There are two elements of the land use pattern/urban form that are fundamental aids to influence and support the achievement of transport balance, so that the system does not continue to so overwhelmingly comprise the use of private motor vehicles. These elements are: increased densities and mixed-use development. The low density, roading orientated type of development which has predominated in the past in Manukau is not particularly conducive to passenger transport because it is difficult to efficiently serve highly dispersed passenger origins and destinations.

There is a strong relationship between the success of passenger transport services and the density of development within the area it serves. A higher density of residential dwellings, employees or possible destinations within an area increases the potential number of passengers using the service. This is more cost effective to operators, who achieve a higher return for much the same operating costs.

In contrast to the traditional separation of different activities by means of zoning, mixed-use development comprises a mix of residential, employment, retail and other activities. This is quite different to the scattered and piecemeal establishment of commercial uses within residential areas that is more difficult to effectively service by passenger transport modes.

Compact high-density, mixed-use areas can more readily support passenger transport. For example by providing reverse ridership and two way travel. The more mixed-uses developed along a route, the greater all day ridership is likely to be achieved. Additionally mixed-use development can reduce demand for travel through provision of jobs, shopping, services and homes in close proximity.



“More business and mixed-use development will be provided in specific employment zones.”

3.3 The Form of Future Development in Manukau

Auckland Regional Growth Strategy

The ARC and local authorities of the Auckland region have agreed on a Regional Growth Strategy for managing the future growth of the region that will accommodate a total population of 2 million by 2050. This strategy places much less emphasis on the principal means used to accommodate growth in the past, namely: greenfields development in new peripheral suburbs, and general infill throughout existing suburban areas. Instead it emphasises: containment, intensification, mixed-use development and integration between land use and transport, particularly passenger transport.

As described in the previous section, these emphases will shape land use development into patterns which will be much more conducive for people to use passenger transport, walking and cycling. In turn this will reduce emphasis on use of the private car, bring more modal balance to the transport system, and contribute to the achievement of the high-level transport objectives.

The Regional Growth Strategy provides for the accommodation of a large proportion of the additional population in more intensively developed, higher density growth centres, and along mixed-use corridors with high frequency passenger transport services running on arterial roads or rail lines.

Key principles of the RGS that will shape the integrated development of land use and transport include:

- i. Most growth will be contained within fixed urban limits.
- ii. Growth will be concentrated in centres and transport corridors to create higher density communities with a range of housing, jobs, services recreational and other activities.
- iii. There will be some greenfield development areas, including Flat Bush, Takanini and Hingaia.

- iv. Some rural and coastal towns will be allowed to double in size through natural growth.
- v. By 2050, quarter of the population will live in higher density, multi unit accommodation.
- vi. More business and mixed-use development will be provided in specific employment zones including Wiri, East Tamaki and Highbrook.

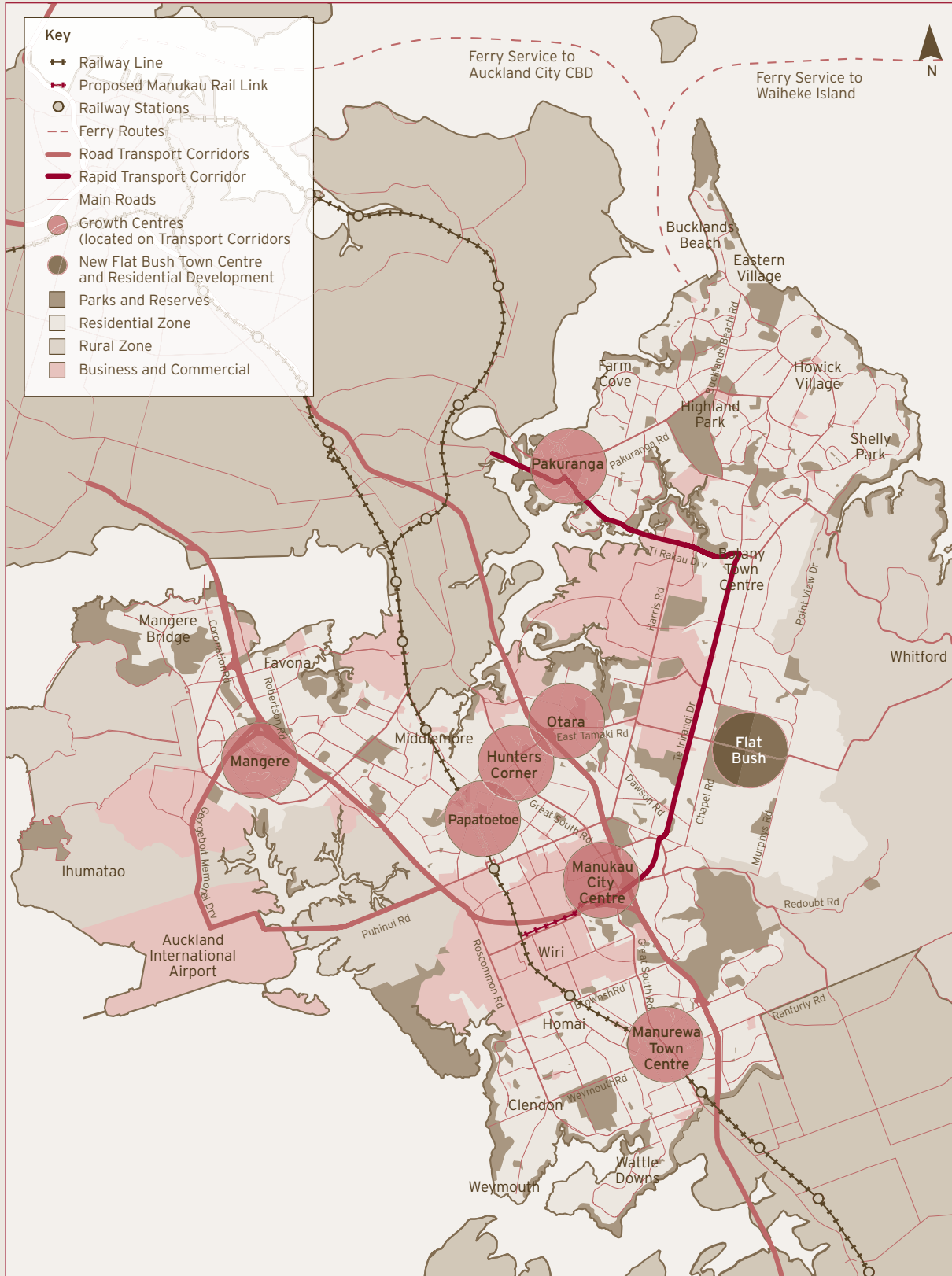
The approach to future land use planning and development, taken in the RGS is fundamental to the achievement of corresponding transport objectives. Central to its success is that an increasing proportion of residents will be happy to trade off living in the busier environments of the growth centres, in exchange for being close to shops, services and work, with less need for long commute distances/times. Maintenance of good amenity through design is critical to this.

Growth Strategy - Implementation in Manukau

Within Manukau 56 per cent of future population growth will be focussed on two main corridors (Figure 3.3):

- i. The southern rapid transit corridor (rail line) and motorway
- ii. The East Tamaki corridor.

Figure 3.3: Manukau Urban Growth Centres



The new greenfields growth centre at Flat Bush will ultimately be home to more than 40,000 people, while intensification of existing urban centres will accommodate another 39,000 of the estimated 178,000 additional Manukau residents expected between 2001 and 2050.

Priorities for intensification at growth centres within existing urban areas are Manurewa, Manukau city centre, Papatoetoe, Hunters

Corner, and Mangere town centre for which concept plans have been developed. Planning for the growth centres is already well advanced (Figure 3.4 Planning for Implementation of Growth Strategy) via a range of plans, agreements and District Plan changes. Implementation has commenced with higher density housing being built in Flat Bush, and transport infrastructure being constructed at others.

Figure 3.4: Planning for Implementation of Growth Strategy

Plan or Agreement	Contents	Status
Auckland Regional Growth Strategy	A development strategy to accommodate an additional 1 million people in the Auckland Region by 2050	Published November 1999
Memorandum of Understanding	Definition and Agreement of responsibilities of the local authorities and ARC re implementation of the Regional Growth Strategy	Memorandum signed
Southern Sector Agreement	Agreement between southern local authorities and ARC re location, capacity and timing of growth/land development over the next 20 years.	Agreement signed March 2001
Growth Centre Concept Plans	The development vision and guidelines for private and public sector investment in each growth centre	Plans published for Manurewa, Mangere Town Centre, Hunters Corner, Manukau City Centre
District Plan Changes	Detailed Changes to the District Plan to provide for: <ul style="list-style-type: none"> - zoning - intensive development - design guidelines for Flat Bush and other growth centres in accordance with the requirements of the Local Government (Auckland) Amendment Act and give effect to the Regional Growth Strategy.	In progress
Precinct Plans	Detailed design plans of precincts within growth centres	Future work

Intensification at growth centres is being supported with integrated enhancements to the transport system. Examples include:

- i. New railway station, bus interchange and park-n-ride at Manurewa (completed 2006).
- ii. New railway station and park-n-ride at Papatoetoe (completed 2005).
- iii. Enabling works for the extension of rail to Manukau city centre (constructed together with SH20 Manukau motorway extension).
- iv. The long-term future may involve an additional rapid transit corridor linking the centres of Flat Bush, Botany and Pakuranga with Manukau city centre and Auckland City.

Manukau is taking a determined, yet realistic approach to the implementation of the Regional Growth Strategy and its potential to successfully deliver a more modally balanced transport system based on higher densities and mixed-use development. The associated transport elements are described in subsequent sections of this strategy.

It is acknowledged that the transportation benefits of the Regional Growth Strategy may be more readily and easily achieved in the Auckland CBD and at some of the more centrally located growth centres than at those in Manukau. With the exception of Manukau city centre, most of the Manukau nodes are currently very low intensity suburban style town centres. These will require significant market interest and investment, in addition to the provision of a permissive planning environment and public investment which encourages use of passenger transport, walking and cycling, in order to be transformed.

Implementation of the Regional Growth Strategy throughout Manukau is likely to deliver benefits in the long, rather than short-term. Intensification of the various nodes and corridors will depend upon land ownership patterns, and on the economic cycles for land/building development and re-development. Favourable intensification conditions will likely occur at different times, and possibly result in diverse outcomes in the various areas that have been identified in the growth strategy.

Achievement of higher residential densities in Manukau's growth centres will likely deliver some reduction in shorter trip making by private vehicle, especially for local shopping, entertainment and school trips. However in this overall suburban style context, significant increases in passenger transport volumes are likely to be most readily achieved in conjunction with higher employment densities where they can be realised.

Outside of these nodes and mixed-use corridors, most of the city will continue to comprise low-density development. The overall transport system will be designed to cater for this, in addition to the islands of greater intensity.

Flat Bush - A Specific Case

The development that has commenced at Flat Bush involves the deliberate weaving together of land use and transportation elements in order to achieve a range of objectives including:

- i. Reduction in travel demand and increased choice of modes.
- ii. Reduced reliance on private motor vehicle as a means of travel.

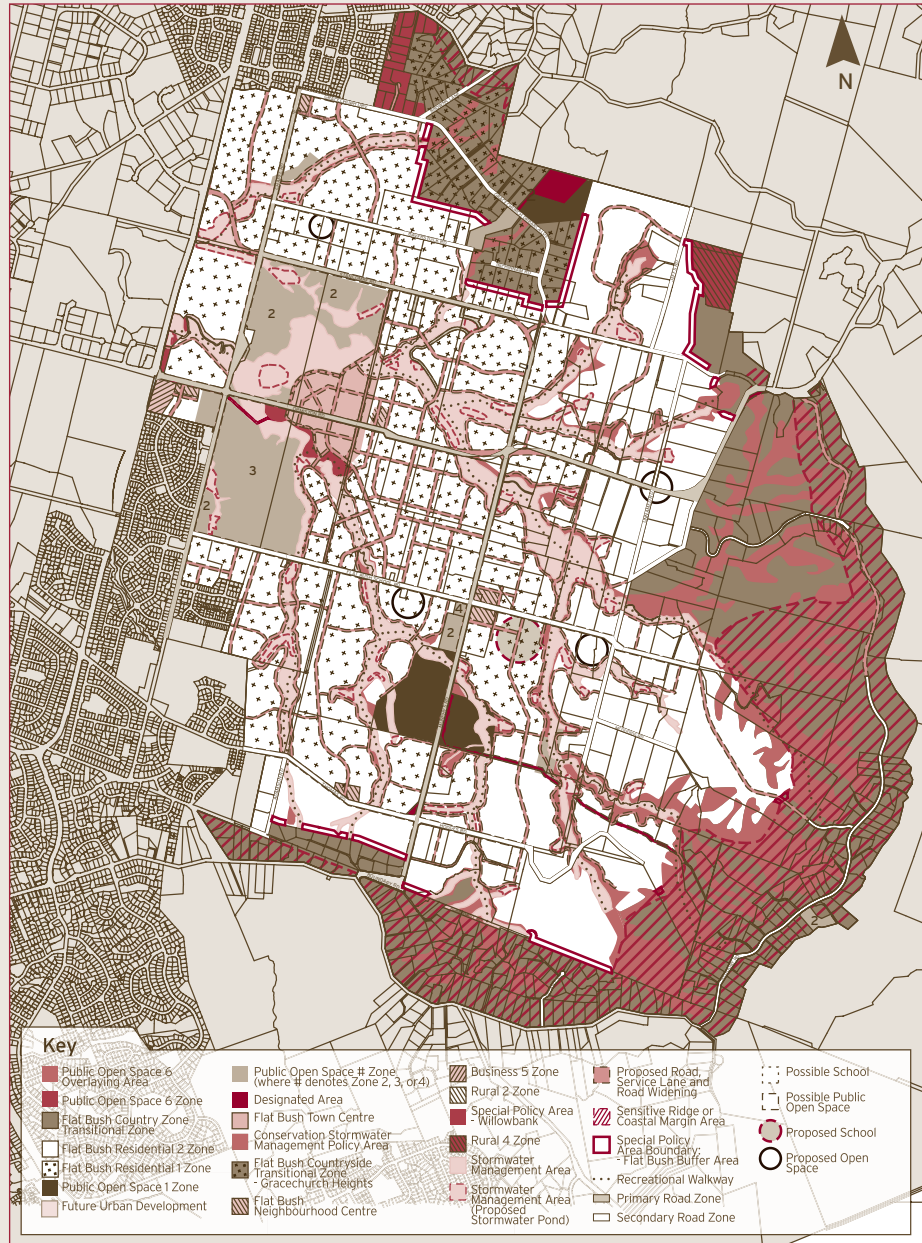
Flat Bush includes some precincts of much higher residential densities than usually found in suburban greenfield developments. These are intended to support the use of passenger transport, walking and cycling to a correspondingly greater extent than is typically achieved. Additionally there will be five mixed-use, neighbourhood centres located on main roads to enhance accessibility and the potential for passenger transport use, centred around pedestrian-friendly 'mainstreet' type environments. The first of these was completed in 2005. The Flat Bush development is illustrated in Figure 3.5.

The Flat Bush street layout will be a better connected, rectilinear pattern providing greater permeability for convenience, access and walkability. Cycle lanes and bus stops are being provided on main roads from the outset. Walking and cycling networks are developed along 'green fingers' and one-sided roads within the planted natural gully/stream system throughout Flat Bush.

The council's commitment to this atypical style of suburb is evidenced by the development of the Flat Bush town centre by Tomorrow's Manukau Properties Limited, a council controlled organisation that owns the land, and the \$40 million of public money that will be invested in development of the adjoining Barry Curtis Park. Both the town centre and park are key elements and major trip generators in the overall concept.



Figure 3.5: Flat Bush Structure Plan



Land Use and Environment - Goals and Objectives

Goal	Objectives Manukau's transport system is becoming progressively more environmentally sustainable and facilitates more active/healthier lifestyles through integration between land use activities, transport options and urban design.
Objectives	<ul style="list-style-type: none"> i. Long term environmental sustainability and public health are enhanced by shifting short and local trips from private vehicles to more fuel efficient and environmentally friendly walking, cycling and passenger transport modes. ii. The development at Flat Bush is a successful model of the integration of land use with local transportation that achieves a more liveable and sustainable community. iii. Adverse environmental and health effects of transport in Manukau are effectively managed. iv. Provision of upgraded transport infrastructure in conjunction with development of higher density growth centres and mixed-use corridors, results in reduced reliance on private vehicle travel (especially for short trips), reduced travel demand, and increased choice of modes.

Land Use and Environment - Policies and Actions

Policy	Action
Environmental Effects of Transport	
P.3.1 Effectively manage the adverse environmental and health effects generated by the operation or construction of transport infrastructure.	A.3.1 Construct transport infrastructure by means which comply with District Plan processes and resource consent conditions thereby minimising adverse effects such as: <ul style="list-style-type: none"> - degradation of air and water quality - community severance - unhealthy environmental noise levels - damage to heritage features - reduction in amenity levels and visual enjoyment - dust, noise and vibration.
	A.3.2 Investigate cost effective alternative means of managing road stormwater which bears particularly high levels of vehicle pollutants: <ul style="list-style-type: none"> - e.g. filtered catchpits
	A.3.3 Support national/regional initiatives to mitigate effects where effective solutions require action on a wider scale than Manukau alone: <ul style="list-style-type: none"> - fuel specifications - generation of CO2 emissions - use of renewable fuels - fuel and energy conservation and efficiency.
P.3.2 Adopt planning and budgeting processes which take into account environmental sustainability and health consequences of transport options	A.3.4 Build the costs of mitigating environmental effects into transport operational and capital expenditure budgets.
	A.3.5 Take into account when evaluating transport project expenditure: <ul style="list-style-type: none"> - costs of generated adverse effects - costs of inefficiencies and energy wastage (e.g. congestion, gradients, rolling resistance) - benefits of reducing adverse effects and increasing efficiency.
City Form - Land Use Activities - Transportation	
P.3.3 Implement the Regional Growth Strategy by accommodating additional population in higher density growth centres, and along mixed-use corridors with high frequency transport services running on arterial roads or rail lines.	A.3.6 Complete statutory and non-statutory plans and processes to facilitate growth centres at Manukau city centre, Papatoetoe, Hunters Corner, Mangere town centre and Pakuranga.
	A.3.7 Provide supporting transport infrastructure at growth centres including: <ul style="list-style-type: none"> - rail connection to Manukau city centre - transport interchange at Manukau city centre - rail station and park n ride at Papatoetoe - rail station/bus interchange/park n ride at Manurewa.
	A.3.8 Work with ARTA to achieve provision of: <ul style="list-style-type: none"> - high quality and frequency passenger transport services along the mixed-use corridors (southern and East Tamaki) and on the southern rail line - re-orientated and upgraded services in conjunction with development of passenger transport infrastructure at growth centres.
P.3.4 Achieve timely provision of passenger transport services within Flat Bush and connecting Flat Bush to Manukau city centre, Botany and East Tamaki employment area.	A.3.9 Ensure early construction of roading links within Flat Bush which are keys to the provision of bus services including: <ul style="list-style-type: none"> - re-construction of Ormiston Road and completion of the gateway bridge to Flat Bush town centre - the 'mainstreet' between Ormiston and Stancombe Roads.
	A.3.10 Prepare a business case for the timely provision of quality bus services to Flat Bush well ahead of the next update of the Regional Passenger Transport Plan or tendering of contracts, for use in negotiating with the ARC and ARTA.
P.3.5 Undertake development of the Flat Bush town centre and Barry Curtis Park in a manner which: <ul style="list-style-type: none"> - integrates the land use and transport components - supports the original vision to reduce reliance on private vehicle travel and increase mode choice. 	