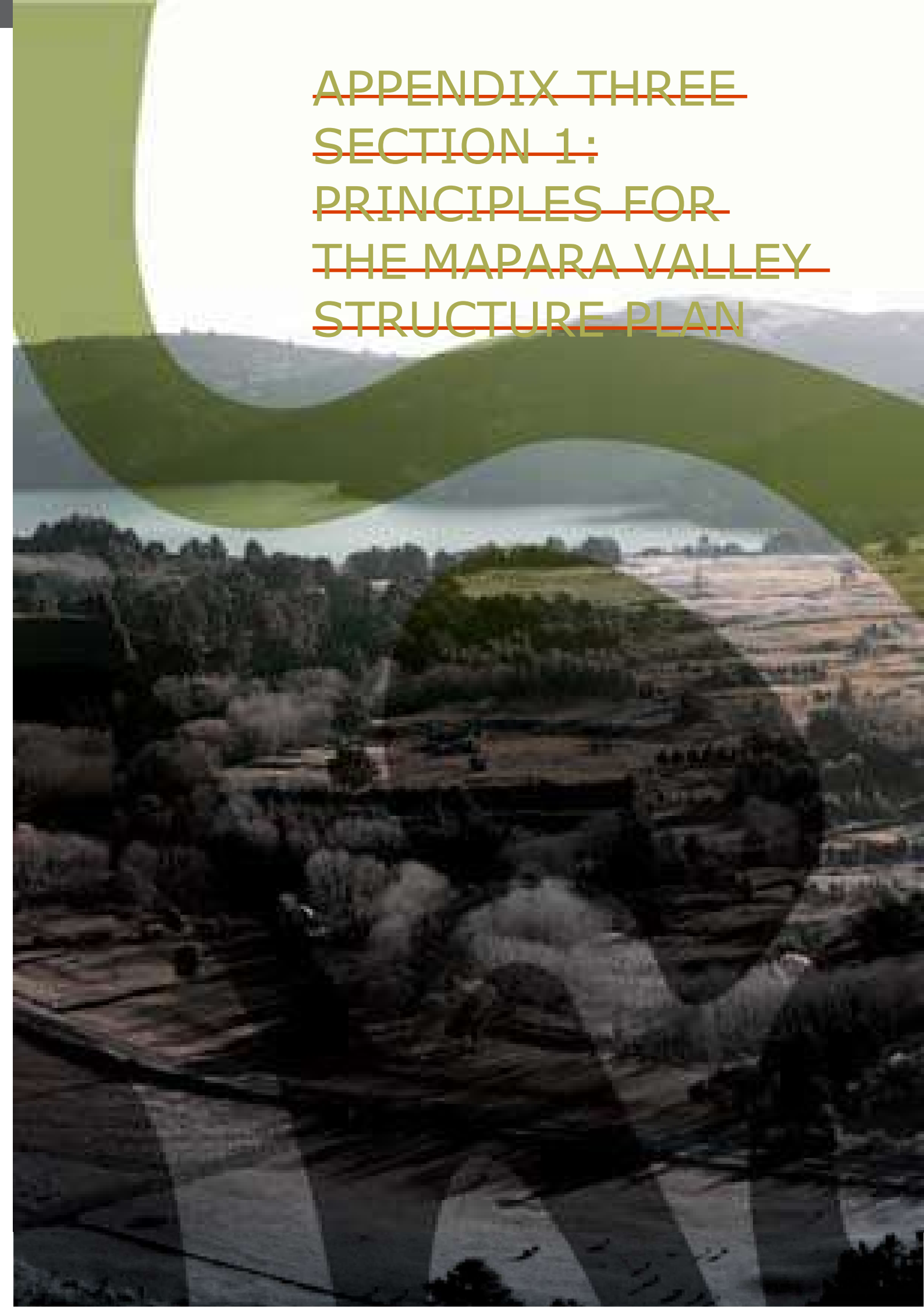


~~APPENDIX THREE~~

~~MAPARA VALLEY STRUCTURE PLAN~~



An aerial photograph of a valley with a green wavy graphic overlay. The text is positioned in the upper right quadrant of the image.

~~APPENDIX THREE~~
~~SECTION 1:~~
~~PRINCIPLES FOR~~
~~THE MAPARA VALLEY~~
~~STRUCTURE PLAN~~

1.1 FUTURE PROOFING DEVELOPMENT

THE CORE CONCEPT OF SUSTAINABILITY IS MEETING THE SOCIAL, CULTURAL, ECONOMIC AND ENVIRONMENTAL NEEDS OF TODAY WITHOUT COMPROMISING THOSE OF FUTURE GENERATIONS.

Our current actions are increasingly having more impact on how future generations will be able to live and exist on our planet. The change in the way we think about sustainability has intensified in recent years with growing pressure on infrastructure, land, resources and the effects of global warming.

This has not only caused us all to think about our daily actions but also about how we establish and manage our settlements. This new development provides an opportunity to really consider our way of life and the infrastructure which we depend on to sustain this lifestyle.

Significant transformation is taking place in New Zealand and other countries. Increasing numbers of citizens, businesses and government are searching out new ways of thinking and acting about the future - ways that are genuinely sustainable. Motivations for involvement include a desire to improve the quality of community life, giving reality to our purported protection of the environment, concern about poverty, longing for a sense of satisfaction, and taking pride in the legacy left for our children.

These motivations need to be galvanised into actions by exemplary projects - projects that demonstrate a high degree of ecological and social integrity. Sustainable communities must demonstrate that they are not merely about sustaining the quality of lives, but also about restoring and enhancing the natural capital.

In 1998, the Parliamentary Commissioner for the Environment commented, '...with few notable exceptions the concept of sustainable development is largely being ignored in New Zealand...'

TD2050 p.31

The world continues to urbanise rapidly. Approximately 50% of the world's 6.5 billion people live in urban areas. By 2050, 60% of the 8.3 billion people will live in urban areas.

TD2050 p.30



Major ecological imperatives face us. It is evident that the way we live today is unsustainable.

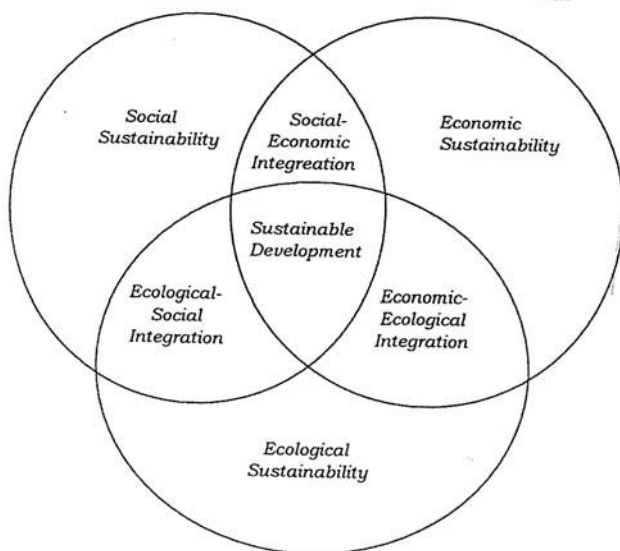
Major issues to be addressed by all communities include

- global warming through unsustainable energy production
- protection and sustainable farming of good productive soils
- restoration of natural watercourses and ecological corridors
- increasing biotic support
- increasing living densities by applying good urban design solutions
- reducing our development footprints
- reversing the break down of communities and creating equity

1.2 ENVIRONMENTALLY SUSTAINABLE DESIGN

Within this context new approaches are being sought. One such approach is that of Environmentally Sustainable Design. An Environmentally Sustainable Design (ESD) philosophy is tempered by three key issues:

1. Important scientific evidence of the effect of human activity on natural resources.
2. The importance of local and regional identity in developing distinctiveness in place-making, and reinforcing community empowerment.
3. Agenda 21, the Resource Management Act 1991 and the Local Government Act 2000 setting a political and developmental framework for a move towards sustainable development.



This informs a general approach to the creation of a sustainable form of development, where

- resources are used efficiently, waste is minimised and materials are recycled
- pollution is limited to levels which do not cause damage to natural ecosystems
- the diversity of nature is valued and protected
- local needs are met locally, where possible
- everyone has access to food, water, shelter and fuel at a reasonable cost
- there are work opportunities in a diverse economy
- health is protected by the creation of safe, clean and pleasant environments
- access to facilities, services, goods and other people is not achieved at the expense of the environment or limited to those with cars
- people live in safety
- opportunities to participate in culture, leisure and recreation are readily available to all
- buildings, open spaces and artefacts combine meaning with beauty and vitality; settlements are human in scale, form and diversity and distinctive features are valued and protected.

1.3 GUIDANCE FROM TD2050: THE VISION

THE VISION FOR TD2050 IS THE OVERARCHING GUIDE FOR DEVELOPMENT WITHIN THE TAUPO DISTRICT

Vision

"The lakes, mountains and people." The Taupo District has an outstanding natural environment, world renowned for its iconic lakes, mountains, forests and rivers. It is the heart of the North Island and is valued for its superb living and recreational opportunities.

By 2050, Taupo will have matured into a district with

- a vibrant community spirit
- thriving economy
- diverse range of community, social, health and education facilities and opportunities
- an integrated approach to leading, managing and funding growth.

All of these characteristics will be founded on Taupo District's unique outstanding natural environment, central location, efficient transport connections, and the sustainable development and management of its resources.



1.3.1 GUIDANCE FROM TD2050: STRUCTURE PLANNING

When developing draft guiding objectives and principles for the structure plan it is important to remember what is sought by a structure plan process. These are important guides to what the final product must deliver. They should be seen as minimum standards that can be exceeded where possible:

OVERALL OUTCOMES DESIRED

The overall outcomes desired of the structure plan should be in alignment with TD2050, and, as applicable, national policy directions, regional policy statements and plans, regional land transport strategies, community outcome statements in Long Term Council Community Plans, Proposed District Plan, council development guidelines and iwi management plans.

MATTERS TO BE CONSIDERED IN STRUCTURE PLAN AREA ASSESSMENT

At right are the guiding matters to be considered in a structure plan process within the Taupo District are:

Landscape and visual amenity

- Identification and management of areas with high scenic value
- Identification and management of significant natural areas

Hazards and land suitability

- Slope, geotechnical limitations, susceptibility to flooding, erosion,
- Location of earthquake faults, geothermal hazards

Natural resources

- Catchment characteristics (upstream and downstream)
- Vegetation coverage
- Biodiversity

Heritage sites

- Sites, places, and values of importance to Tangata Whenua
- Sites, places, and values of importance to the general community

Existing and desired land use

- The shape, form, and design of the area taking account of separate land ownerships
- The relationships in the area between the area's functional characteristics, infrastructures, landscapes, and structures
- Choice in urban form (e.g. choice of densities, development types, transport options and land use activities)
- Low impact design and/or quality urban design

Infrastructure

- Matching infrastructure to population/land use and vice versa
- A network approach to sewerage, water supply, stormwater detention and treatment, and disposal, energy supply,
- roading and transport, open space, community facilities
- The existing capacity and availability of infrastructure
- The investment/funding needed to service the area being structure planned to the level of development anticipated
- Providing for a choice of transport routes and modes appropriate to the level and type of development

Funding, timing / staging, and affordability

- Timing/staging of development
- Funding of infrastructure (CAPEX programme works, development contributions)

- Impact on Council's future operating budgets once development assets are accepted
- In situations where budget implications are considerable, the role of targeted rating in reducing financial impacts on both Council and other ratepayers.



~~1.3.2 GUIDANCE FROM TD2050: STRATEGIC DIRECTIONS AND POLICIES~~

~~THE TWELVE STRATEGIC DIRECTIONS CONTAINED WITHIN TD2050 PROVIDE A HIGH LEVEL OF GUIDANCE FOR DEVELOPMENT THAT OCCURS IN THE TAUPO DISTRICT.~~

~~The sections below are relevant directions from TD2050 and will be used to influence the draft guiding objectives and principles.~~

~~District Character~~

- ~~• Develop a well-planned district of connected urban areas that reinforce the strengths, individual character, and identity of each area~~
- ~~• Strengthen Taupo Town's functions and its role as the primary business, retail, recreational, and entertainment hub for the District~~
- ~~• Protect the character of rural and undeveloped areas, and their capacity to function as a predominantly productive (i.e. farming), recreational and conservation (i.e. forest and national parks) based environment~~

~~Outstanding Landscapes & Natural Areas~~

- ~~• Recognise the outstanding landscapes and natural areas within the District and protect them from inappropriate development~~
- ~~• Enhance the water quality of the District's lakes and rivers through careful management of land use activities~~
- ~~• Protect and encourage the enhancement of the District's significant natural areas including areas of national, regional and local biodiversity significance~~

~~Settlement Patterns & Urban Form~~

- ~~• Set clear limits to the outward development of all urban areas~~
- ~~• Identify, enhance and protect gateways to urban areas~~
- ~~• Provide greater definition between the rural and urban environments with increased protection of rural land for productive purposes and maintaining, linking, and securing networks of open space~~
- ~~• Restrict the fragmentation of rural land beyond identified lifestyle areas, to maintain rural amenity and character, and prevent avoidable pressure on rural infrastructure and productive farming~~

~~Well-Designed Places~~

- ~~• Plan and design new and changing urban areas to reflect the key urban design elements~~
- ~~• Improve community safety and encourage neighbourhood design that makes people feel safe~~
- ~~• Development should be designed and located so that it is well integrated and complements the character~~

~~of the rural area.~~

~~Strong Communities~~

- ~~• Encourage all major new development and redevelopment to incorporate an element of quality affordable housing, including appropriate housing for the entry buyer and low income housing markets~~
- ~~• Identify and plan for social and community infrastructure needs in advance of development~~
- ~~• Increase access to arts, recreation and other cultural facilities with a focus on developing a strong cultural environment that reflects the ethnic diversity of the District~~

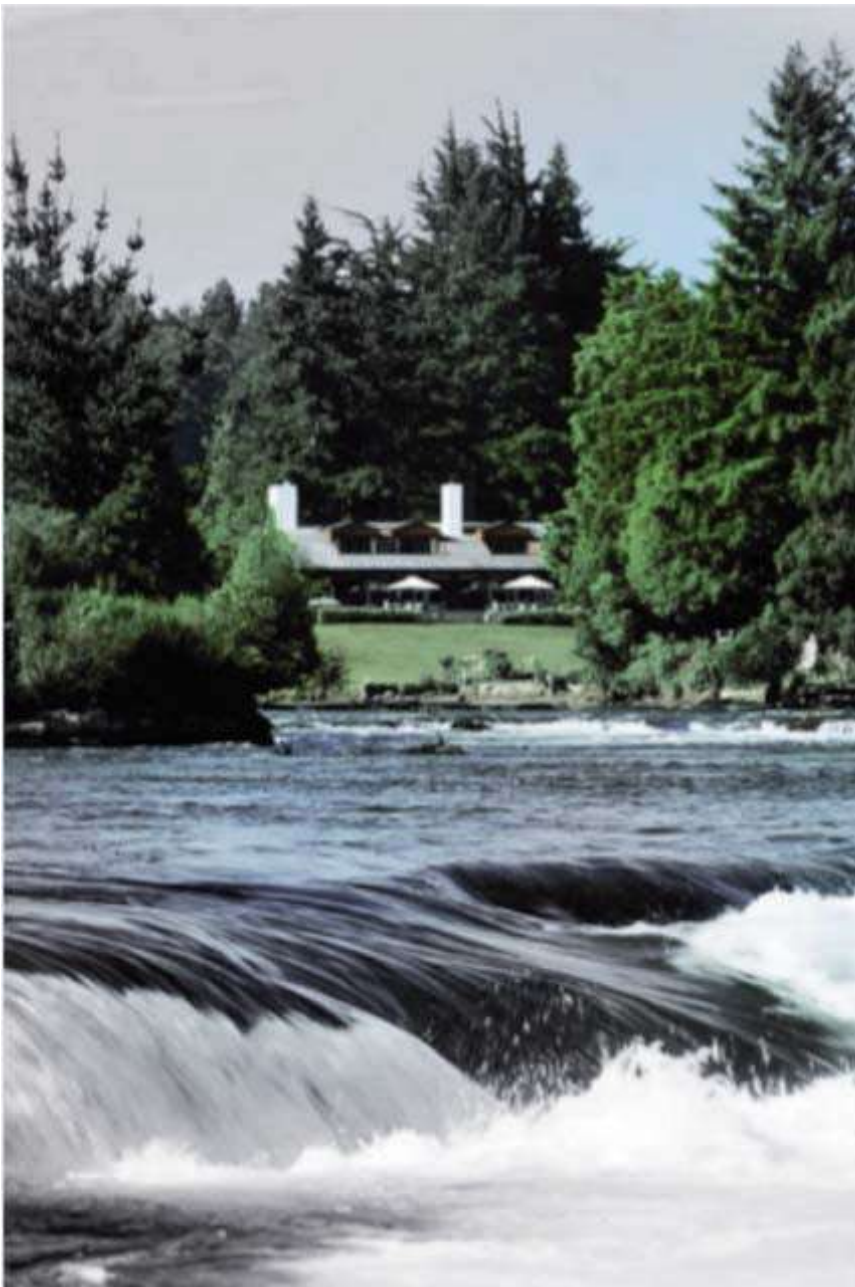
~~Tangata Whenua~~

- ~~• To recognise the historical and contemporary contributions of Tangata Whenua to the development of the District~~
- ~~• The ongoing management of growth will reflect the strong partnership between Tangata Whenua and the Taupo District Council~~
- ~~• To recognise the significant presence of Tuwharetoa in terms of mana whenua, land holdings, and population numbers~~
- ~~• Recognition of the increasing role of Maori leasehold land and associated development opportunities in the District~~

~~Sustainable Economy~~

- ~~• Ensure that economic activities reflect the need to preserve the natural environment that sustains the District's economy~~
- ~~• Recognise and provide for the fact that the District forms an important part of the regional and national economy~~
- ~~• Encourage an innovative and diverse economy and the development of niche markets that complement the character and communities of the Taupo District~~
- ~~• Support sustainable new rural industries and innovative non-urban uses for rural land such as agribusiness, appropriate ecotourism and recreation opportunities~~
- ~~• Protect natural and rural economic resources from further fragmentation and inappropriate use~~

~~1.3.2 GUIDANCE FROM WITHIN TD2050: STRATEGIC DIRECTIONS AND POLICIES~~



~~Water Resources~~

- ~~• Protect and maintain the quality of receiving waters, particularly Lake Taupo, through land use planning, development standards and land management practices~~
- ~~• Consider a range of alternatives for managing on-site waste water discharge including the development of community owned systems~~
- ~~• Incorporate low impact design principles and an integrated catchment management approach in the development and management of public and private stormwater systems~~

~~Open Space Networks~~

- ~~• Networks of open space shall be used to help manage land use patterns and landscape values within the District and assist in shaping urban form~~
- ~~• Open space shall be available for recreational and leisure opportunities for the wider community including visitors to the District~~
- ~~• Encourage use of open space to separate growth areas and using a range of tools to achieve this, including both public and private ownership arrangements that are anchored through mechanisms such as legal agreements, and district plans~~
- ~~• Open space provided by rural and undeveloped areas shall be used to manage land use patterns and landscape values within the District and assist in maintaining the rural character of the District~~

~~Integrating Land Use, Infrastructure, and Funding~~

- ~~• Coordinate and integrate planned infrastructure which supports the preferred settlement pattern and provides greater certainty for development~~
- ~~• Identify, preserve and protect key sites, corridors and buffer areas for current and future district infrastructure and services~~
- ~~• Ensure that low impact urban design techniques and practices are considered when determining infrastructure requirements~~

~~Transport Modes & Connections~~

- ~~• Maintain and enhance the District's strategic transport networks to link industries to markets, and move goods and people efficiently~~
- ~~• Provide for a comprehensive and integrated range of present and future public and private transport options within the District~~
- ~~• Facilitate the development and implementation of a corridor approach to transportation and integration with the pattern of land use~~

~~1.4 GUIDANCE FROM WITHIN TD2050: PRINCIPLES AND APPROACH TO DESIGN~~



~~Within TD2050 there is more specific guidance as to the form and type of development that should take place within the Taupo District.~~

~~Page 26 of TD2050 sets out the 'Key principles behind Liveable Communities and other sustainability approaches to managing growth':~~

~~The Principles include~~

- ~~• mixed land uses~~
 - ~~• compact building design~~
 - ~~• housing opportunity and choice~~
 - ~~• variety of transport choice~~
 - ~~• walkable neighbourhoods~~
 - ~~• distinctive attractive communities with a strong sense of place~~
 - ~~• strengthening existing communities~~
 - ~~• preserving open space, farmland and natural beauty~~
 - ~~• predictable, fair and cost-efficient decision-making~~
 - ~~• citizen and stakeholder participation in~~
- ~~community decisions.~~

~~Page 141 of TD2050 also sets out 'A comprehensive approach to design' which states that~~

~~'The urban areas in the Taupo District have predominantly been designed to be car-orientated. Adapting this pattern to meet more diverse lifestyle and economic trends will need to utilise the basic design principles:~~

- ~~• Consolidation and dispersal~~
- ~~• Integration and connectivity~~
- ~~• Diversity and adaptability~~
- ~~• Legibility and identity~~
- ~~• Environmental responsiveness'~~

~~Both of these sets of principles are compatible with Environmentally Sustainable Design and a robust approach to urban design. They have been included in the generation of draft guiding objectives and principles for the structure plan.~~

~~1.5 OUTLINE FOR
DEVELOPMENT OF DRAFT
GUIDING OBJECTIVES/
PRINCIPLES FOR THE
MAPARA VALLEY AREA~~

**Vision and Vision Statements for
the Mapara Valley Area**



**Objectives for the Mapara
Valley Area Structure Plan
Process**

**Natural
Urban
Cultural/Social
Economic**



Principles Of Urban Design

**Context
Connectivity
Permeability
Vitality
Robustness
Concentration
Regeneration
Identity/Character**



1.6 DRAFT VISION

The area context study concluded that development in the Mapara Valley Area needs to be something different for Taupo, not more of the same. Initial economic analysis has indicated that the market for conventional suburban development in Taupo District is well catered for and replicating this in the Mapara Valley Area is not viable.

Development in the Mapara Valley Area needs to be not only different but special.

At a broad level a vision for how the area could be developed is laid out below.

KEY ELEMENTS OF THE VISION

~~Compact rural villages/settlements/centres
Compact walkable and well designed settlements set within a productive hinterland.~~

~~A valley system~~

~~Different areas of the Mapara Valley Area will serve different functions for example some areas will remain in productive (but potentially different than existing) use while others will be revegetated for ecological purposes.~~

~~Balance of the land~~

~~Where suitable for productive uses this will be developed to provide a productive hinterland for the valley and reinforce the cultural and natural landscapes that are present.~~

~~Value added rural~~

~~More intensive and sustainable agricultural practices would be promoted to enhance the rural landscape of the area.~~

~~Value added rural products (for example farming sheep to make organic cheese) can be produced in ways that could support other rural uses such as tourist accommodation or vineyard restaurants.~~

~~A real place~~

~~One that reflects the sense of place in the area and provides a mixture of uses and opportunities.~~

~~A destination~~

~~The Mapara Valley Area is positioned close to Taupo and could provide a rural tourism experience that is compatible with the current values of the area.~~

VISION STATEMENTS FOR THE MAPARA VALLEY AREA

~~In response to these broad ideas for the Mapara Valley Area a series of vision statements have been created that frame the intent of development in the area. Some of these go beyond what a structure plan deals with but do frame the approach for the overall Mapara Valley Area.~~

~~A valley with walkable settlements
Compact, high quality, vibrant centres~~

~~A self-sustaining valley~~

~~Jobs, shops and local needs provided, community facilities and infrastructure, a rural hinterland~~

~~A valley with a sense of place~~

~~Development responds to the valley and resources within it, local vernacular and style, cultural associations included, public space~~

~~A valley that can change over time~~

~~Public transport provision, flexibility for phasing, adaptive buildings and reuse~~

~~A valley that respects the environment~~

~~Low impact urban design, green technology and buildings, green streets~~

~~A valley that includes everyone~~

~~Community services, affordable housing, universal design, diversity encouraged~~

~~A high tech valley~~

~~Electronic infrastructure, fibre optics, small business support, work from home opportunities~~

~~An attractive valley~~

~~Green streets, parks and open space, quality public realm, quality design and architecture~~

~~A valley that is a real community~~

~~Something for everyone, diversity of uses~~

~~These statements are elaborated in more detail in the series of objectives outlined in the next section. These are framed around four systems that reflect the elements of Sustainable Development and Ecologically Sustainable Design.~~

~~These systems are~~

- ~~• Natural/Environmental Systems~~
- ~~• Urban Systems~~
- ~~• Social/Cultural Systems~~
- ~~• Economic Systems~~

1.7 NATURAL SYSTEMS

AIM

To reinforce the natural environmental systems of the Mapara Valley Area both physically and ecologically.

OBJECTIVES

- Effectively manage stormwater and its effects through a Low Impact Design (LID) approach (including domestic roof runoff collection and reuse systems).
- Reduce reliance on and improve efficiencies in community water network infrastructure where appropriate.
- Value and enhance the diversity of nature. Maintain and protect significant indigenous landscape habitats.
- Restore indigenous habitats and enhance biodiversity and bird habitat.
- Maintain and enhance landscape character and ensure development is responsive to this.
- Acknowledge the complexity and constraints of nature.
- Accept environmental responsibility for development.
- Nurture the connection between nature and the human spirit.
- Design with sustainable objectives as a prerequisite.
- Design with flexibility to allow for advances in environmental technology.
- Undertake restorative design that reinstates the ecological values to ephemeral streams and wetlands.
- Prevent development in areas of significant native vegetation/forest.
- Maintain buffers between development and native habitats.



1.8 URBAN SYSTEMS

AIM

To develop urban systems that are responsive to natural and built context; that are vibrant, celebratory, regenerative, safe, diverse; and that exhibit attractiveness, liveability and unique identity.

OBJECTIVES

- Locate settlements in response to the physical and natural environment.
- Create a high degree of connectivity both within and out of the structure plan area.
- Enhance public transport systems where possible and provide for transport choice.
- Promote alternative forms of transport such as walking and cycling.
- Provide access between built habitat and natural habitat.
- Create an identity that allows people to form attachment to places and take ownership of their unique community.
- Create well designed rural settlements of varying scales and densities that respond to the landscape context.
- Promote a built environment that has a diversity of housing types.
- Create settlement patterns that are resource efficient.
- Respect the local landscape and built environment and allow this to inform design.
- Design settlements with longevity in mind.
- Combine buildings, open spaces and artefacts with meaning, beauty and vitality.
- Ensure that settlement is of a human scale and form, creating a sense of place.
- Create a lifestyle based on slow urbanism and slow food ethics⁽¹⁾.
- Create a settlement pattern that supports an urban environment which is enduring, simple and gives intrinsic joy to residents and visitors alike.
- Promote a built environment that is safe and accessible for all users.
- Ensure settlement patterns are flexible to provide for future change in uses.

(1) SLOW URBANISM is a movement that focuses on creating high quality urban environments that are built for people and nature. An extension of the 'slow food' movement, its focus is building on the unique identity of places to make people friendly urban spaces that are ecologically sound and supportive of community.

1.9 SOCIAL SYSTEMS



AIM

To create an urban form and public realm that facilitates a strong and vibrant community.

OBJECTIVES

- Create outdoor recreation opportunities through an outstanding open space network.
- Create communities within settlements and neighbourhoods with distinct identity.
- Encourage a broad spectrum of community and recreational facilities that compliment existing facilities.
- Create walkways and cycle ways to connect residential areas with new open space network.
- Respect and involve local people.
- Provide sites for community interaction in the design.
- Provide sites for the civic life of the community and opportunities to participate in social life.
- Encourage community ownership of public amenities.
- Encourage a mix of housing opportunities.
- Meet local needs locally where possible.
- Protect health by creating safe, clean and enriching environments.
- Ensure that people live in safety.

1.10 CULTURAL SYSTEMS



AIM

To recognise, acknowledge and celebrate historic, present and future cultural touchstones through urban and environmental design.

OBJECTIVES

- Preserve and enhance cultural heritage.
- Acknowledge tangata whenua values.
- Respect the local sense of identity and place.
- Respect the natural environment and ecological values.
- Incorporate the history and stories of tangata whenua into the design and layout of the structure plan.

1.11 ECONOMIC SYSTEMS



AIM

To create an urban and natural framework that encourages a robust, innovative and growing economy.

OBJECTIVES

- Encourage a range of economic opportunities.
- Develop the Mapara Valley Area as a destination that responds to its environment and context within the Taupo District.
- Provide a concentration of development around a centre (or series of centres) that provides localised services and employment opportunities and supports the Taupo Central Business District.
- Enable productive and sustainable use of land suitable for agriculture.
- Provide a financial return commensurate with investment.
- Create short and long term employment and investment opportunities for the local community.
- Provide the permanent quality of design that encourages capital gain.
- Minimise the cost of maintenance through quality design.
- Create robust structures and development patterns that can adapt to new uses over time.

1.12 IMPORTANT URBAN DESIGN PRINCIPLES FOR THE MAPARA VALLEY AREA

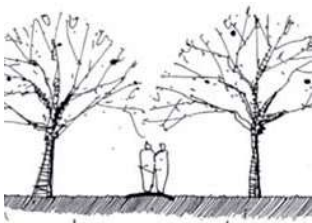
CONTEXT

The overall context of the valley and how this fits into the surrounding area.

Important in the application of a sieve mapping processes to establish the developable areas and parameters for development in the Mapara Valley Area. It will also help to articulate the quality of development wanted for the area.

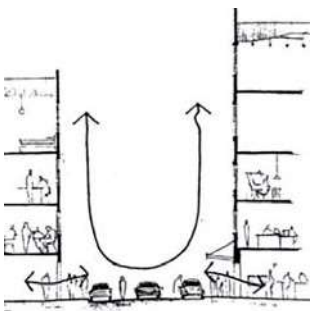
CONNECTIVITY

How an area connects or stitches into the wider environment—the large movement networks or collectors/arterials.



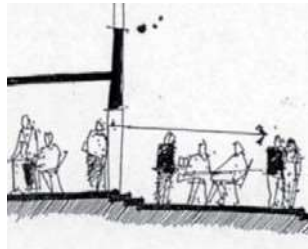
PERMEABILITY

The ability to move freely and unhindered throughout an area. Provides access through integrated street networks—arterials, local access ways and lanes that provide appropriate block structure.



VITALITY

Provided through a people friendly mixed-use environment with sufficient concentration of residents and visitors to generate a mix of retail, entertainment and recreational uses.



ROBUSTNESS

The block size and structure facilitates a wide range of uses over time and the built form is designed for adaptive reuse.



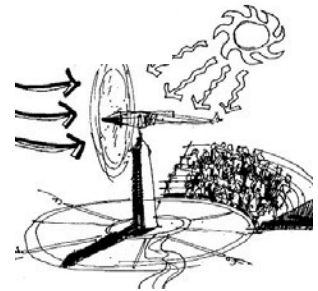
CONCENTRATION

An appropriate density and intensity of use, set within an integrated permeable grid to ensure vitality.



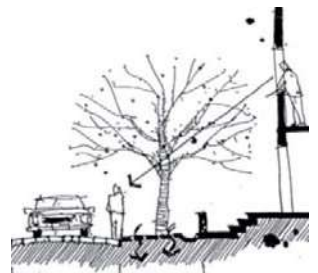
REGENERATION

Creating environments and buildings that are resource efficient and environmentally responsive and have the ability to adapt to changing needs and uses over time.

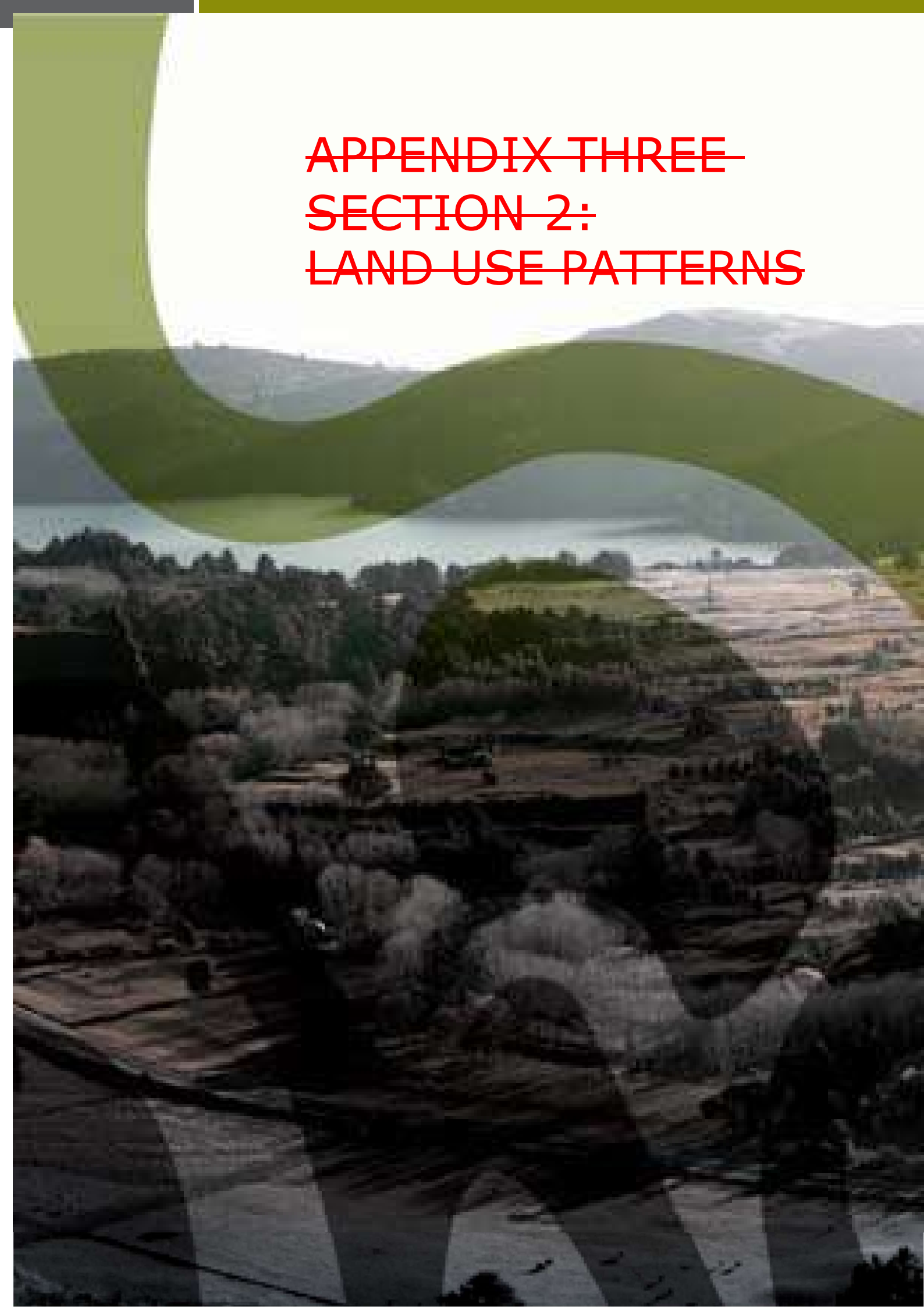


IDENTITY

A place needs to be distinctive in character and that allows people to experience, and 'take ownership' of their unique community.



~~APPENDIX THREE~~
~~SECTION 2:~~
~~LAND USE PATTERNS~~



2.1 OVERALL APPROACH

Two major approaches underpin the land use patterns that have emerged from the analysis phase. These

are:

1. A catchment wide approach utilising Low Impact Design (LID).
2. A valley system approach that applies a land use continuum to the Mapara Valley Area.

CATCHMENT WIDE APPROACH

The key tenet in this approach is to look at the whole catchment, not only in the traditional hydrological and stormwater sense but in the way it functions as an entity. The sieve mapping and analysis phases have led to a detailed understanding of the Mapara Valley Area and the next phase of the process is to fit development to the land. The sieve mapping, urban design and landscape analysis have collectively determined where development can go and onto this best practice land use planning will be applied.

The overall aim is to protect the values and resources that are important and/or sensitive within the Mapara Valley Area, whilst allowing some development in areas where this can be absorbed. At the core of this approach is LID philosophy and this has been used at two levels within the structure plan. Firstly at the broad level to determine where development should occur, and secondly to determine the nature and type of development within these areas.

Low Impact Design has been defined as a design approach for site development that protects and incorporates natural site features into erosion and sediment control and stormwater management plans. It is widely associated with Technical Publication 124 by the Auckland Regional Council, 'Low Impact Design Manual for the Auckland Region', which is a valuable resource for the application of this approach.

More importantly LID reflects a rethink in terms of how development should take place from the catchment level downwards. The emphasis is on prevention instead of mitigation and this philosophy has been applied at all levels of the structure planning process, including to areas beyond stormwater. Often LID focuses primarily on stormwater outcomes but following a LID approach has a number of synergies with other environmental outcomes such as revegetation and landscape protection, focusing development to achieve quality urban form.

This promotes a number of detailed outcomes sought within the structure plan area. At a broad level these include:

- focus development in areas that can absorb it and limit it in areas that are inappropriate for development
- protect steep slopes, undertake revegetation and protection of remnant areas
- protect watercourses, limit development and undertake riparian planting and enhancement
- enhance the existing resources such as native vegetation and landscape values.
- Utilise alternative techniques such as domestic roof water collection systems to reduce reliance on and improve efficiencies in community water network infrastructure.

At a more specific level, focusing on stormwater and erosion within development areas, outcomes include:

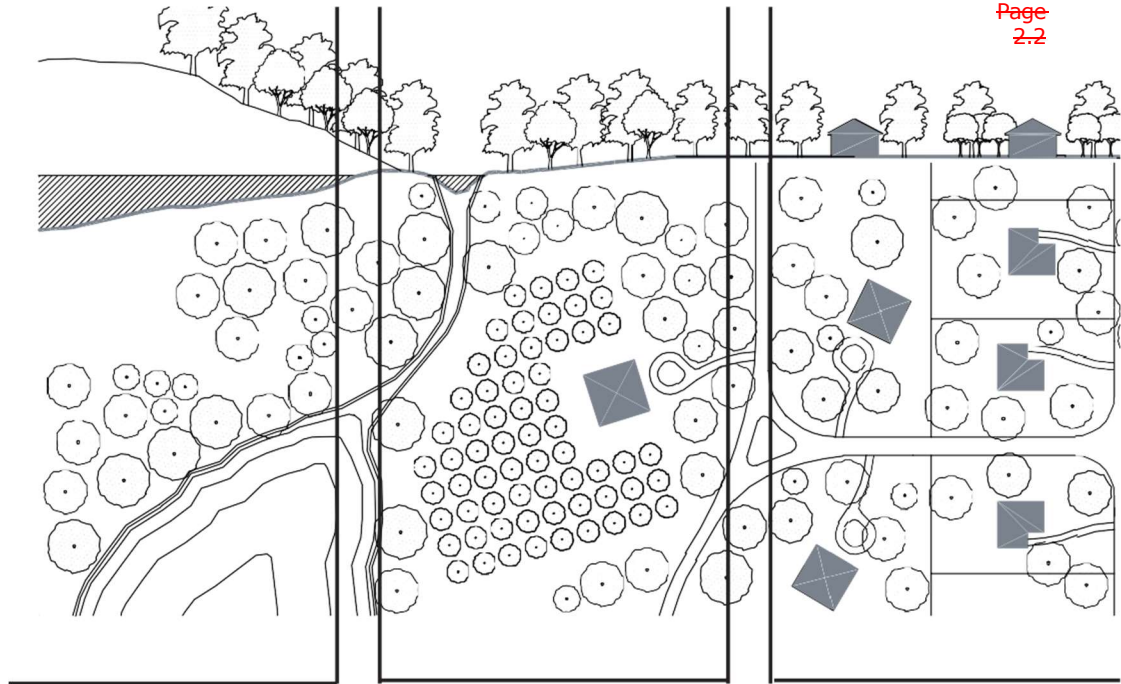
- stage construction and stabilise exposed areas rapidly
- install perimeter controls and employ detention devices
- manage stormwater as close to the point of origin as possible, minimise collection and conveyance
- rely on natural processes within the soil mantle and the plant community to treat stormwater
- minimise the width of road carriageways and other impervious surfaces
- promote small setbacks and short or combined driveway access to minimise impervious surfaces
- promote a compact built footprint to minimise impervious surfaces
- utilise alternative techniques such as swales, rain gardens and permeable paving to treat stormwater at source
- minimise site disturbance when earthworks are undertaken.

VALLEY SYSTEM APPROACH

The key tenet in this approach is to see the valley as a complete system, at present and in the future. Different parts of the valley have a role to play and there is a continuum and variety of approaches to land use in the valley.

On the following page is a diagram called a transect that illustrates this land use continuum. This is applied to begin explanation of the broad land use classifications that will be applied in the valley.

- with the land management to land sensitivity and work



~~T1-Rural~~

~~THE Rural ZONE consists of lands approximating or reverting to a wilderness condition, including lands unsuitable for~~

~~settlement due to~~

~~topography, hydrology or vegetation.~~

~~T2-Mapara Valley Structure Plan Rural Residential~~

~~THE MAPARA VALLEY STRUCTURE PLAN RURAL RESIDENTIAL ZONE consists of lands in open or cultivated~~

~~state or sparsely~~

~~settled. These may include woodlands, agricultural lands, grasslands and irrigable deserts.~~

~~T3-Suburban~~

~~THE SUBURBAN ZONE consists of low density suburban residential areas, differing by allowing home occupations. Planting is naturalistic with~~

~~setbacks relatively deep.~~

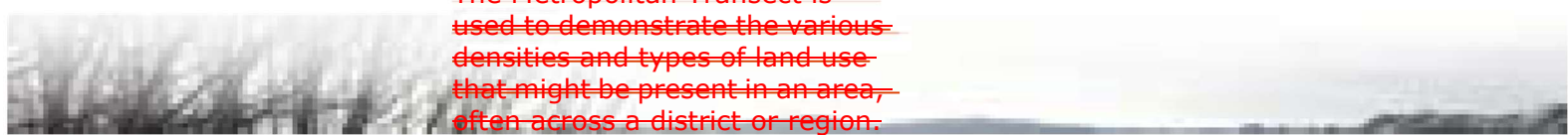
~~Blocks may be large and the roads irregular to accommodate natural conditions.~~

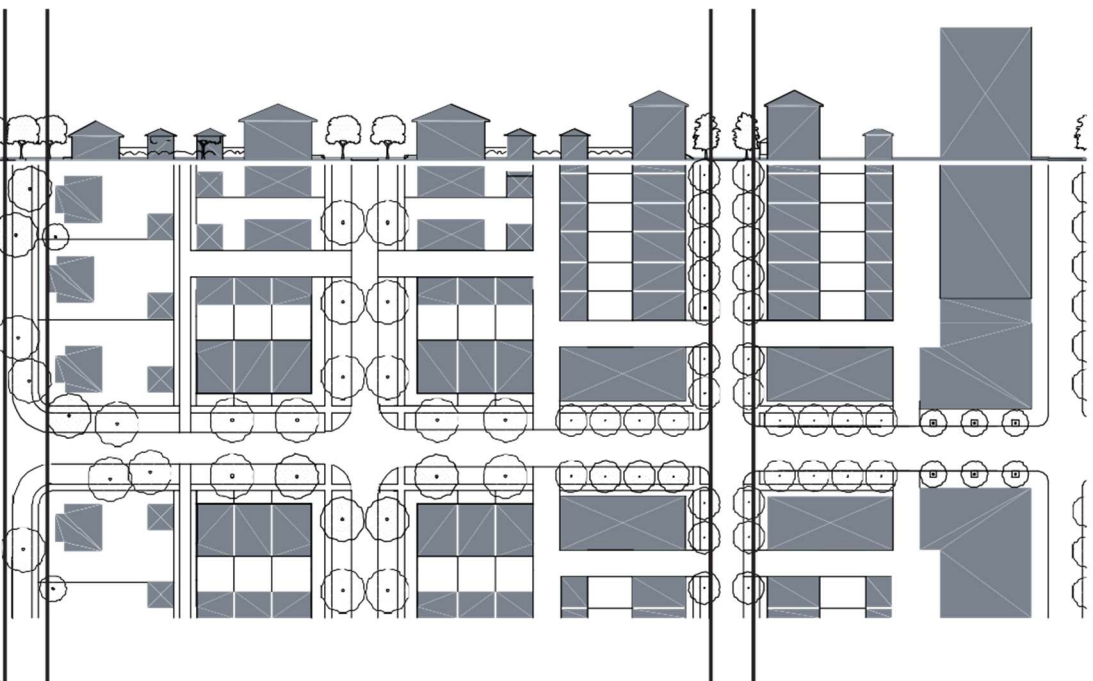
This ranges from T1-Rural with no

~~WHAT IS A TRANSECT?~~

~~A transect is a tool that allows us to break down specific areas into subcategories for evaluation or analysis. As shown above it involves both an aerial plan view and a cross section. The diagram above has been used in the creation of a web based urban design code known as Smart Codes and provides a useful breakdown of an urban area connected to its rural and natural hinterland.~~

~~The Metropolitan Transect is used to demonstrate the various densities and types of land use that might be present in an area, often across a district or region.~~





T4/T 5 Urban & Urban Centre

THE GENERAL URBAN ZONE consists of a mixed-use but primarily residential urban fabric. They have a wide range of building types: single, sideyard, and rowhouses. Setbacks and landscaping are variable. Streets typically define medium-sized blocks.

T6 Urban Core

THE URBAN CORE ZONE consists of higher density mixed-use building types that accommodate retail, offices, rowhouses and apartments. It has a tight network of streets, with wide sidewalks, steady street tree planting and buildings set close to frontages.

APPLICATION TO THE MAPARA-VALLEY AREA

On the next page the metropolitan transect has been applied to the Mapara Valley Area to demonstrate the role of each of the indicative land uses on maps 1 and 1a. Together they form a continuum within the study area that provides a range of development options for different contexts.



Revegetation

Escarpment Buffer

Current Rural Zoning

Valley Clusters

Forest Clusters

THE MAPARA VALLEY STRUCTURE PLAN RURAL RESIDENTIAL ZONE

Rural Residential areas are the vast majority of the study area and provide the landscape values that provide a sense of place for development in the Mapara Valley Area. These are modified environments but still retain important landscape values that provide meaning to the valley and any development in and around it. Land use here seeks to continue rural activities around urban clusters where appropriate as well as provide significant ecological and public access benefits through the study area.

Development
Some development proposed for these areas through Forest and Valley Cluster subdivision. This is provided where it is compatible with protection of rural, landscape and ecological values and doesn't lead to a dispersed suburbanisation of the rural environment.

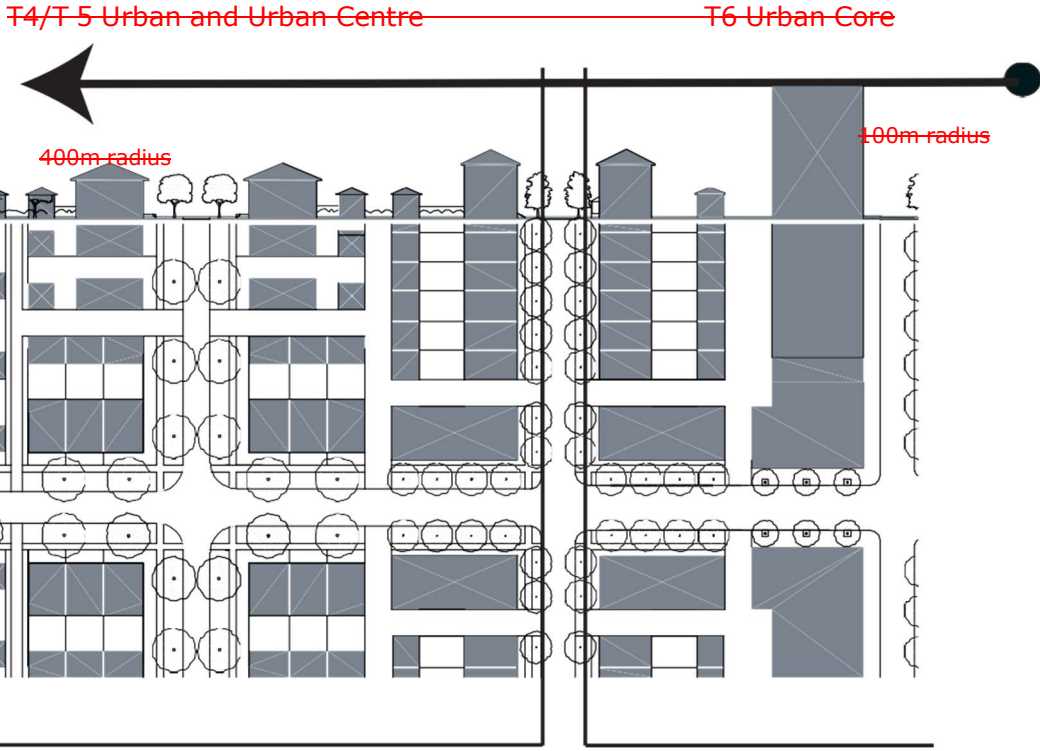
Village Residential Neighbourhood

SUBURBAN ZONE
The Village Residential neighbourhood provides the suburban hinterland to the proposed urban areas. Quality urban design can ensure that this lower density development can play a positive role in shaping the urban areas without being too land extensive. These are linked by strong axial routes that serve as a visual and physical connection to the Village Core and Centre neighbourhoods, linking them through high quality pedestrian and cycle routes as well as streets.

Development
Lower density development as detached housing is the norm in these areas. Around major routes and open space provision is made for medium density options to provide variety in housing choice. Some local retail is provided for in local centres that may emerge.

THE RURAL ZONE
This has been applied to areas with high existing and potential natural values for example stream and terrestrial revegetation, the escarpments and Whakaipo Bay. There is a heavy protection focus in these sensitive areas as well as provision of public and recreational access.

Development
Little or no urban development found in these areas.



— — *Village Core Neighbourhood* **— —** *Centre Neighbourhood*

URBAN AND URBAN CENTRE ZONES
 The Village Core neighbourhood provides the central urban area within a short walk (400m radius) of the town centre. It is here that more compact urban development will occur along with lower density forms to provide a wide variety in housing choice. The highest density development will be focused around the main routes, high quality open spaces and the Centre neighbourhood. This area also includes the town domain as a central open space linked into the Centre neighbourhood via the village green.

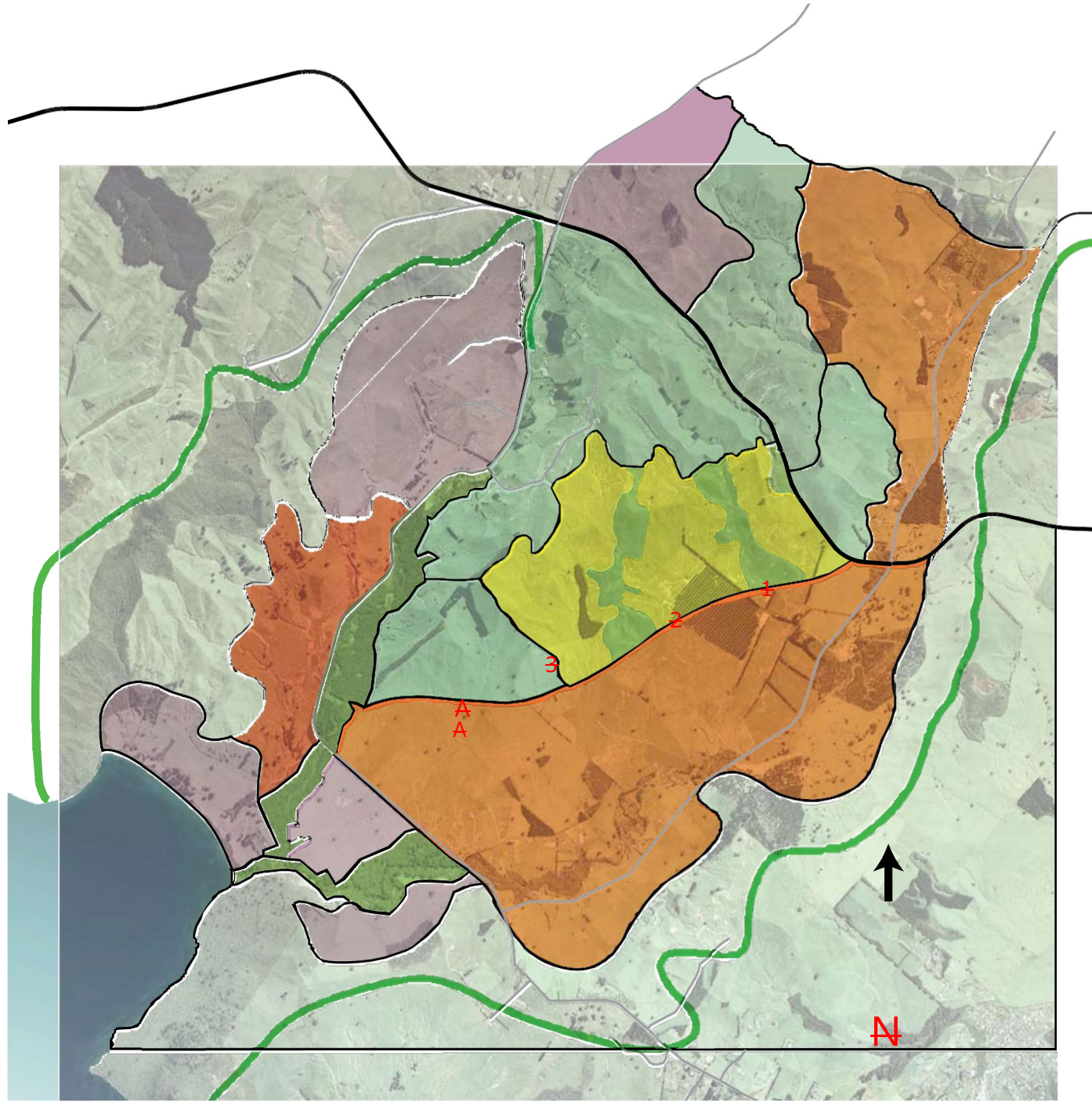
Development
 Medium density development is the norm in these areas with some provision of lower density development where this is required for geotechnical reasons and/or at the fringe of the neighbourhood. Around major routes and open space provision is made for high density options to provide variety in housing choice and a compact walkable settlement that is supportive of alternate transport modes.

URBAN CORE ZONE
 The Centre neighbourhood provides the very heart of the central urban area. It is here that most compact urban development will occur along with commercial and community purpose land use to provide the centre of each community. The Centre also contains the village green that is linked to the town domain and further into rural areas within the valley floor. This is the focus of mixed use development within each urban area.

Development:
 Medium and high density development with a mixed use focus. Commercial, retail and community facilities including open space that serve the Mapara Valley Area and surrounding areas.



Map 1 - Indicative Land Use

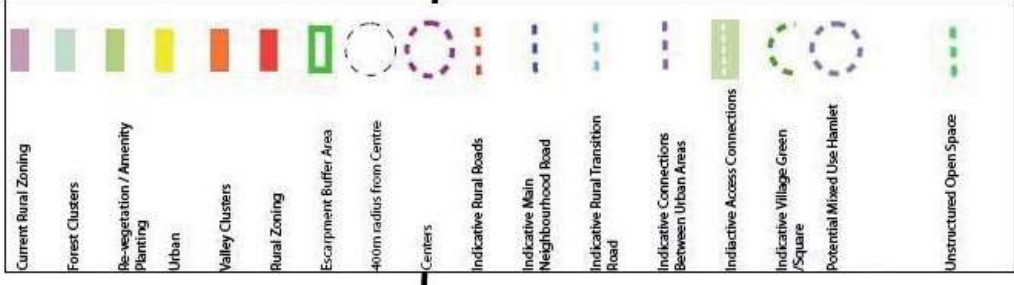
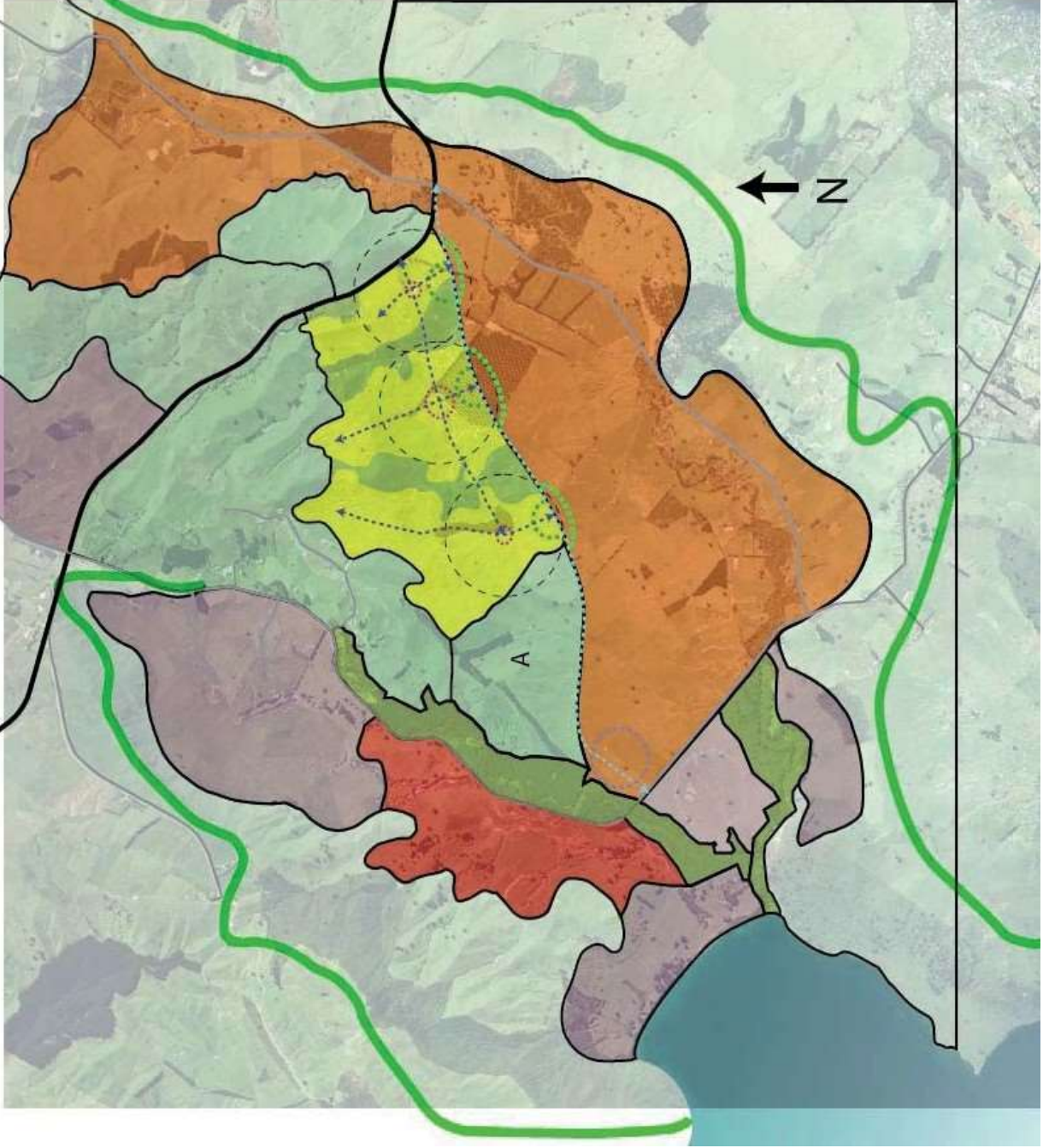


LEGEND:

Current Zoning	
Forest Clusters	
Re-vegetation/ Retirement	
Urban	
Valley Clusters	
Modified Rural Zoning	
Escarpment Buffer Area	

X

Map 1 a - Indicative Land use and Centres



2.2 INDICATIVE LAND USE

The following text relates to the information contained on map 1—Indicative Land Uses and map 1a—Indicative Land Use and Centres. More information on the structure of the urban areas and street typologies is contained in the Urban Design Guidelines.

Where sub areas are mentioned these refer to the Legibility and Sub-Area Analysis.

Urban Areas (Yellow—Sub Area 7)

SELECTION OF URBAN AREAS

The areas identified as urban on the Indicative Land Uses diagram are 4 of the 5 areas identified in the landscape analysis as suitable to absorb development of an urban nature.

These are areas contained within sub area 7 and the initial landscape character unit of Hills B that can accommodate urban type development without compromising the character of the Mapara Valley Area.

The other area (Area 1 in the landscape analysis) has been ruled out as it is isolated from the other urban areas, in particular the central urban area (area 3 in the landscape analysis) and the main centre contained within this area.

The proposed WeKA serves as a major edge and a barrier within the Mapara Valley Area and at a broad level divides the study area into two main areas, north and south of the WeKA respectively. Area 1 instead has been included in the Forest Cluster area.

REFINEMENT OF URBAN AREAS

The remaining areas have been used as the base of the urban areas and have been refined to make their boundaries logical and to fit within the edges identified in the Legibility and Sub Area Analysis. These

area of 199ha and relate to the surrounding topography, providing discrete areas and defensible limits to development in the valley.

These areas have been renamed area 1, 2, 3 as shown on the page previous.

They have been divided up into a number of neighbourhoods. These relate to both their location within the urban hierarchy and also the environmental constraints that will most likely be encountered in these areas.

URBAN CENTRES AND NEIGHBOURHOODS (SUB AREA 7)

Centre Neighbourhood

Target Density: 25 dwellings/gross hectare plus commercial and mixed use development

Within these urban areas indicative centres have been shown with purple circles. These Centre neighbourhoods are approximately 100m in radius (with the most northern and southern being smaller at 50m) and represent the central urban hubs of each of these areas. It is in these areas that the majority of the commercial and community activities would occur, along with higher intensity urban development.

The most central of the centres located in area 2 will be the main commercial centre for the Mapara Valley Area. This area has generous amounts of flat and developable land and is located in the middle of the urban areas.

Village Core Neighbourhood

Target Density: 15 dwellings/gross hectare for areas 1 and 3. 20 dwellings/gross hectare for area 2

neighbourhoods to a radius of 400m (representing an easy five minute walk) is the Village Core neighbourhood, indicated by the dashed black line where it overlaps urban areas. This is the intended location of more compact forms of urban development such as mixed use business and compact forms of housing like terrace, apartment and semi-detached development.

The more peripheral Village Core neighbourhoods in areas 1 and 3 have a slightly lower target density than area 2. This reflects their position towards the outskirts of the urban areas in the valley and the desire for the most compact areas to be located near the main area of commercial and mixed use activity in the centre of Area 2.

This area will need to contain a great diversity of housing so that it will not become a subdivision that lacks variation or has an even density profile. Further explanation is contained in the Urban Design Guidelines. If when Development Area Plans are submitted for these areas greater density can be achieved in accordance with the aims of the Urban Design Guidelines, this will be supported where it will create high quality compact urban form.

Village Residential Neighbourhood

Target Density: 10 dwellings/gross hectare

Beyond this 400m radius is the Village Residential neighbourhood where more traditional suburban and larger lot residential would be found along with pockets of mixed use and medium density housing.

The areas delineated as urban are generally of flattish terrain suitable for development. However, in any areas of steeper or more rolling terrain found in the Village Residential Neighbourhood, large lot residential development would be utilised. The average yield will be made up by

Surrounding each of the Centre

yield will be made up by

2.2 INDICATIVE LAND USE

introducing areas of higher density where there are fewer environmental constraints and where this will lead to high quality built form outcomes.

As for the Residential Core neighbourhood, variety in design and density is critical to its success, so it will need to contain a wide variety of building types and densities. Further detail can be found in the Urban Design Guidelines.

Village Domain/ Village Green/Village Square

Each Centre neighbourhood relates to an area of open space (the town domain and village green / square) that is located between each centre and the valley floor. These have been indicated by dashed green half circles and provide a major structuring element to both the Centre and Village Core neighbourhoods.

They also serve as transition spaces into the valley floor, encouraging access to these rural areas. Further detail of these spaces and how they relate to other open space in the Mapara Valley Area is included in the Open Space Hierarchy contained within the Urban Design Guidelines and the Bulk Infrastructure section.

Revegetation and Amenity Planting (Medium Green—Sub areas 7, 9 and 13)

Dividing each of the discrete urban areas are a series of ecological corridors, providing revegetation, amenity planting and recreational access from the valley floor into the area of hills. In addition to this they provide solid urban boundaries to these areas that leave intact the dominant topography and landmarks in the valley. Near to urban boundaries these can serve as structured open space reserves, graduating to less

environments.

The areas of revegetation related to the two streams in sub areas 9 and 13 should be reinforced and expanded where possible. Measures to protect these and enhance their functioning further should be part of any development that occurs near these areas in the Forest Clusters or Valley Clusters.

Likewise the protection and revegetation of the major gullies in the hills and northern section of the valley along with the Mapara Stream corridor should be a pre-requisite of development occurring in the relevant sub areas.

Current Rural Zoning (Light Brown—Sub Areas 1, 5, 11 and 12)

These areas for different reasons are suitable to retain the current provisions of the Taupo District Plan as amended by the Plan Changes introduced by TD2050.

Sub Area 1

Sub Area 1 is suited to retain the current provisions due to its location on the fringe of the study area and its strong connection with the rural landscape outside the study area. As a result of this what happens in this Sub area will not be likely to directly adversely affect the values in the others but needs to be part of TDCs overall approach to rural development. It is not well placed to absorb urban type development nor would incentive based measures to secure revegetation or other environmental aims be of great benefit. Due to lower sensitivity in this area the rural provisions as updated are sufficient to secure this as a rural and semi-rural area on the fringe of the study area.

Sub Area 5

Sub Area 5 is a discrete area that is mostly subdivided or in

process of subdivision to lifestyle block lot sizes of approximately four hectares. This area is also somewhat removed from the main study area of the Mapara Valley Area and like Sub area 1 would not be suitable for urban type development or more incentive-based zoning such as Forest Clusters. The dominant land use is already lifestyle blocks/rural residential and continuation of this provides a discrete area where this section of the market can be catered for as long as the integrity of the escarpment is retained.

Sub Area 11

Sub Area 11 is located in the DOC managed land directly adjacent to Whakaipo Bay and currently comprises of the recreation reserve administered by DOC. This area has been identified as the strongest node/attractor within the Mapara Valley Area and will require efforts to manage the pressure from growth within the Mapara Valley Area and the wider Taupo area.

It is recommended that any changes to manage this pressure should take place before the area of Whakaipo Bay itself. A possible location for any new facilities has been identified in the lowest sections of sub area 10 (shown on map 1a). It is understood that DOC is undertaking work to look at the management of this reserve and ongoing discussions between TDC and DOC should continue on this matter.

Sub Area 12

Sub Area 12 is a small discrete area removed from the other areas of proposed rural and urban development. It is set against the escarpment, headland and riparian reserve but is somewhat isolated from Whakaipo Bay and the valley floor (sub area 10). It may be suitable for some land use change related to the management of Whakaipo Bay reserve but a continuation of the current rural provisions will not jeopardise the values present or the integrity of the structure plan.

structured but accessible natural — that is mostly subdivided or in

Modified Rural Zoning (Red-Orange- Sub-area-9)



There is potential in the lower portion of this sub-area for dispersed and ad-hoc development to adversely affect the values present in Whakaipo Bay. However, given the limited size of this area and the steep topography, this is a limited risk that could be offset by a slight change to the latest provisions put forward for the Rural Environment. The 10ha Controlled Activity threshold in these provisions would not likely create an adverse effect on this area, but potential smaller parcels allowed under Discretionary Activity rules may lead to incremental degradation of the values here.

Monitoring by TDC should continue to ensure that this does not happen and the landscape analysis undertaken for the structure plan, along with wider District analysis should be used to guide consent decisions.

At the next review of the District Plan there may be need to review the performance standards of Discretionary Activities in this area.

Escarpment Buffer (Bright Green)



The escarpment buffer is located in the area between the bottom and top edges of the escarpment. It is within this area that the integrity of the escarpment is most vulnerable. This area is not suitable for the location of development due to the potential adverse effects on all of the Mapara Valley Area as contained by these escarpments. It is a key area to ensure the landscape values in the Mapara Valley Structure Plan are not incrementally degraded.

Monitoring by TDC should continue to ensure that this does not happen and the landscape analysis undertaken for the structure plan, along with wider District analysis, should be used to guide consent decisions for development wanting to locate in this area.

Consideration should be given to altering the Rural Environment zoning in these areas to introduce a much stronger protection of the escarpment. The focus should be on the location and siting of buildings in these areas as well as subdivision.

One option would be to make development and/or subdivision down to 10ha a Limited Discretionary activity, with the focus of discretion the escarpment and its protection.

Another option would be to use Transferable Development Rights (TDRs) where landowners seeking development in these areas consistent with the current Rural Environment rules could offset any loss of development rights with similar levels of development in areas not within this buffer area.

Proposed Mixed Use Hamlet (Purple Dashed Circle- Sub Area 10)



This area was originally identified as suitable for a 'Hamlet' type development at the end of the Rural Transition Road. A hamlet would simply be a larger cluster based around the Valley Cluster provisions, utilising the same land/design requirements, for example a Hamlet of 50 houses would require 200ha. However, there could be some potential mixed uses such as small shops to cater for increased visitors to Whakaipo Bay.

The aim of this hamlet was to locate activities servicing any Regional park facility at Whakaipo Bay such as a dairy/shops back out of the park. This hamlet could also contain an extension of any new facilities in the DOC reserve—for example an interpretation / visitor centre focussing on Whakaipo Bay.

During the consultation period this proposal received numerous comments from the public, the majority opposed to any form of commercial development occurring in the area no matter how limited. As a result the decision has been made to remove the commercial component and the concept of a hamlet in this area.

The Valley Cluster provisions would still apply in this area, meaning that a cluster could occur here. In this case the cluster should utilise the Rural Transition Road that links down to Whakaipo Bay and be the informal entrance to the bay area if this is located near Mapara Road.

In the future if a regional park type facility was deemed appropriate, consideration should be given to removing any associated activities away from the shoreline and potentially out of the park. The next review of the District Plan could address these issues and any requirement to change this approach.

Forest Clusters (Light Green- Sub-areas 2,4,6 and 8)



The Forest Clusters are located in the hill formations of the Mapara Valley Area where revegetation could have significant environmental benefits. This land use leverages revegetation and public access by allowing greater development than under the current Rural Environment provisions.

clustered development but also introduce a strong component of public access and connectivity. They will be located on roads and walking trails that connect through to other clusters and access routes; where possible, they will not be located on long cul-de-sacs. They will also be located in areas that are visually unobtrusive and that can be revegetated to mitigate any visual impact.

The Forest Cluster A area has been identified as a special area on the prominent dome within the valley. Development here has been limited to a lower density due to the potential for adverse effects on the landscape values within the valley.

In all areas the common balance areas will be retained for revegetation as part of an overall land management plan that guarantees retention of public access. At the heart of every cluster will be a common space around which the lots will be oriented to provide a hub for the cluster. This is where the road and public walking access will bisect the cluster, providing destinations and connected routes for recreational walkers and other users.

Further detail regarding this land use is provided in the 'Forest and Valley Cluster neighbourhoods' section.

Valley Clusters (Light Orange— Sub-areas 3 and 10)

There is provision for limited development on the valley floor (Sub-areas 10 and 3) to leverage the retention of openness and rural land uses in these areas. They will take the form of large farm park developments, with a central cluster surrounding a shared area of open space.

Clustering will limit the adverse

effects of any such development to areas where this can be mitigated whilst securing public access and retention of rural landscape qualities. The balance land will be retained in productive uses where appropriate and administered under a land management plan that seeks to limit the environmental impact of continued productive use whilst maintaining the rural qualities currently expressed in these areas.

In similar fashion to the Forest Clusters the Valley Clusters will be located on road and walkway connections that ensure public access to and through them. Connectivity to other clusters and areas of development will be an important consideration in the suitability of this form of development, along with avoiding cumulative adverse landscape impacts on these areas. Recreational access will be secured through and around the balance of the land as well.

Further detail regarding this land use is provided in the Forest and Valley Cluster neighbourhoods' section.





2.3 FOREST CLUSTER AND VALLEY CLUSTER NEIGHBOURHOODS

FOREST CLUSTERS

- Located on walking tracks and on or close to rural roads.
- Public space at the centre of each cluster, linked to public access trails and roads. Orientation of the cluster is around this space and the associated public access.
- Defined building area maximum in which a variety of lot sizes and densities can be achieved.
- Revegetation to occur around the cluster subject to a management plan.
- Sited in areas where clusters can be accommodated with minimal landscape impact.



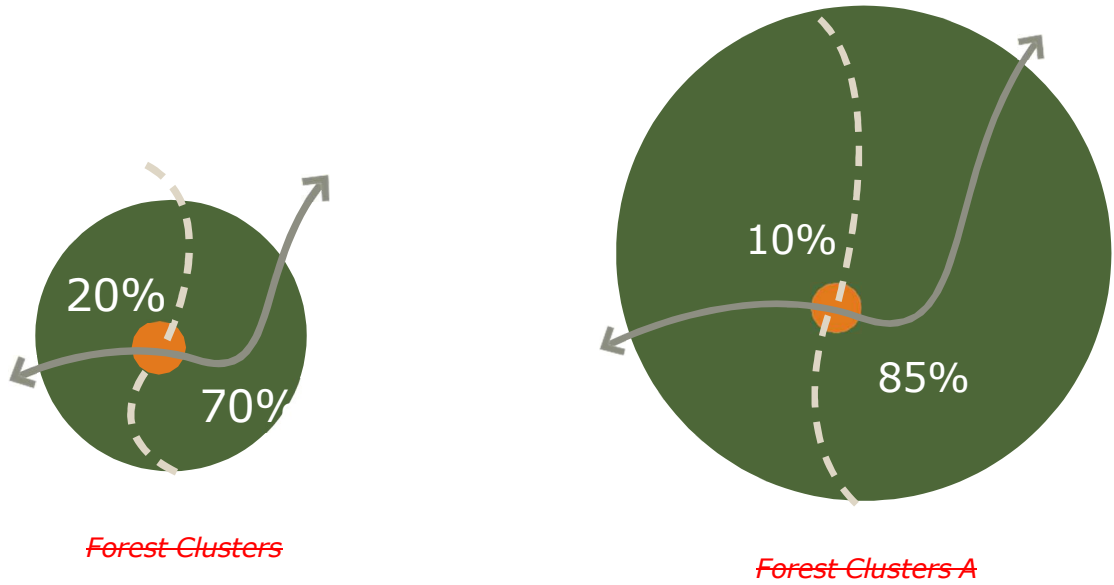


2.4 ~~FOREST CLUSTER AND VALLEY~~ ~~CLUSTER NEIGHBOURHOODS~~

VALLEY CLUSTERS

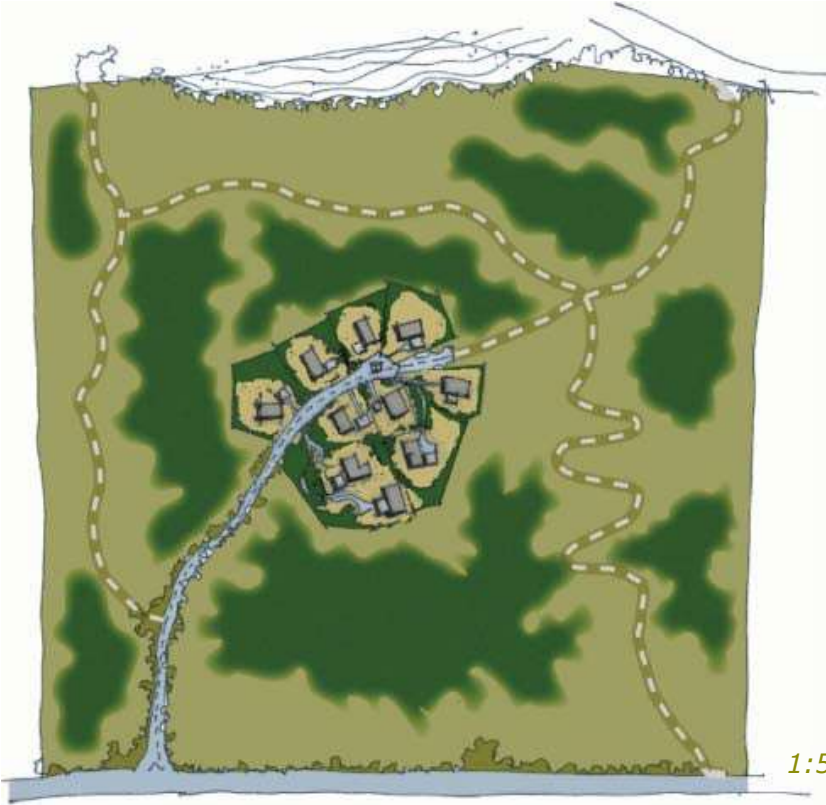
- ~~Large farm parks within which small clusters of development will be placed. Located in areas that will ensure minimal cumulative impacts on the landscape character of the valley floor.~~
- ~~Balance land will retain rural land uses with public access over these areas guaranteed through easements or covenants.~~
- ~~Public space at the centre of each cluster, linked to public access trails and roads. Orientation of the cluster is around this space and the associated public access.~~
- ~~These clusters will have rural road and walkway connections that will link with other connections in the valley area.~~
- ~~Continued productive use will be undertaken via a land management planning regime, aiming for continual environmental performance.~~

2.5 FOREST CLUSTER NEIGHBOURHOOD



	Minimum size	Housing Development Area—% of Site	Maximum Intensity of Development (ha of total area/dwelling)	% of Public Open Space To Be Vested Or Covenanted (2)	Minimum Balance of % of Total (3)	Maximum Individual Lot Size m ²
Forest Cluster	20ha	20% (1)	1 per 2ha	10%	70%	4000
Forest Cluster A	40ha	10%	1 per 4ha	5%	85%	4000

1. A more generous percentage is given over to development to allow for a high degree of slope
2. Must be contiguous and provide a connection to publicly accessible areas outside of the site.
3. Area must be contiguous.



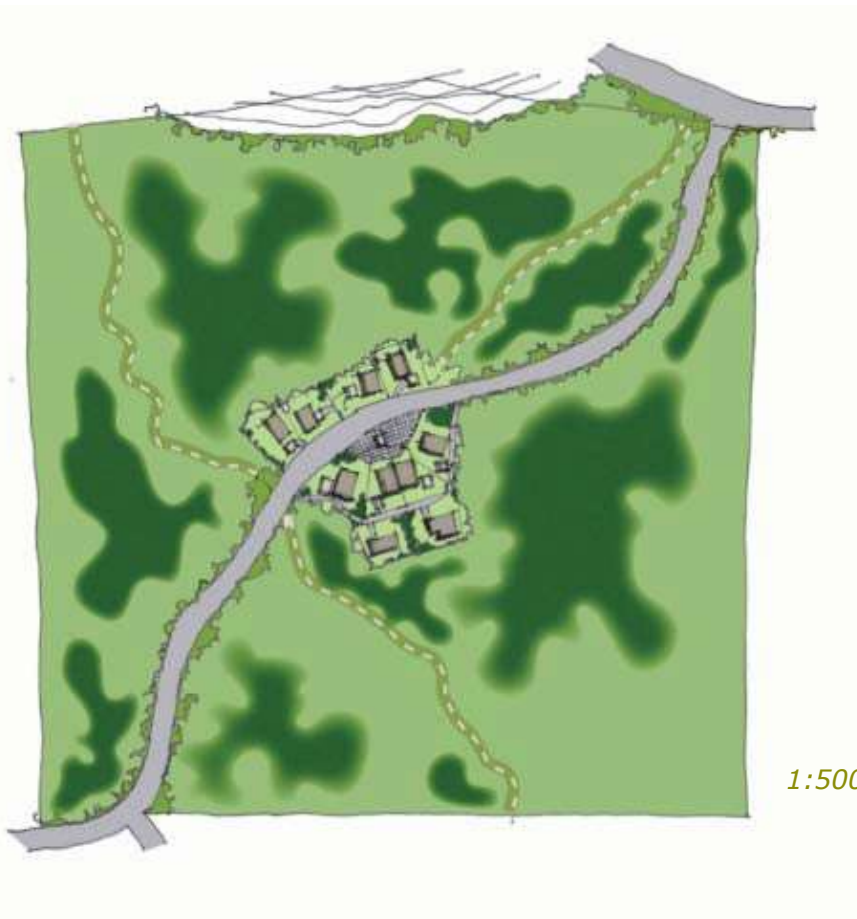
10 dwelling units on 21.5ha

4ha building area

Public access via through
road and walking tracks

Common space at the
centre of cluster

1:5000



10 dwelling units on 21.5ha

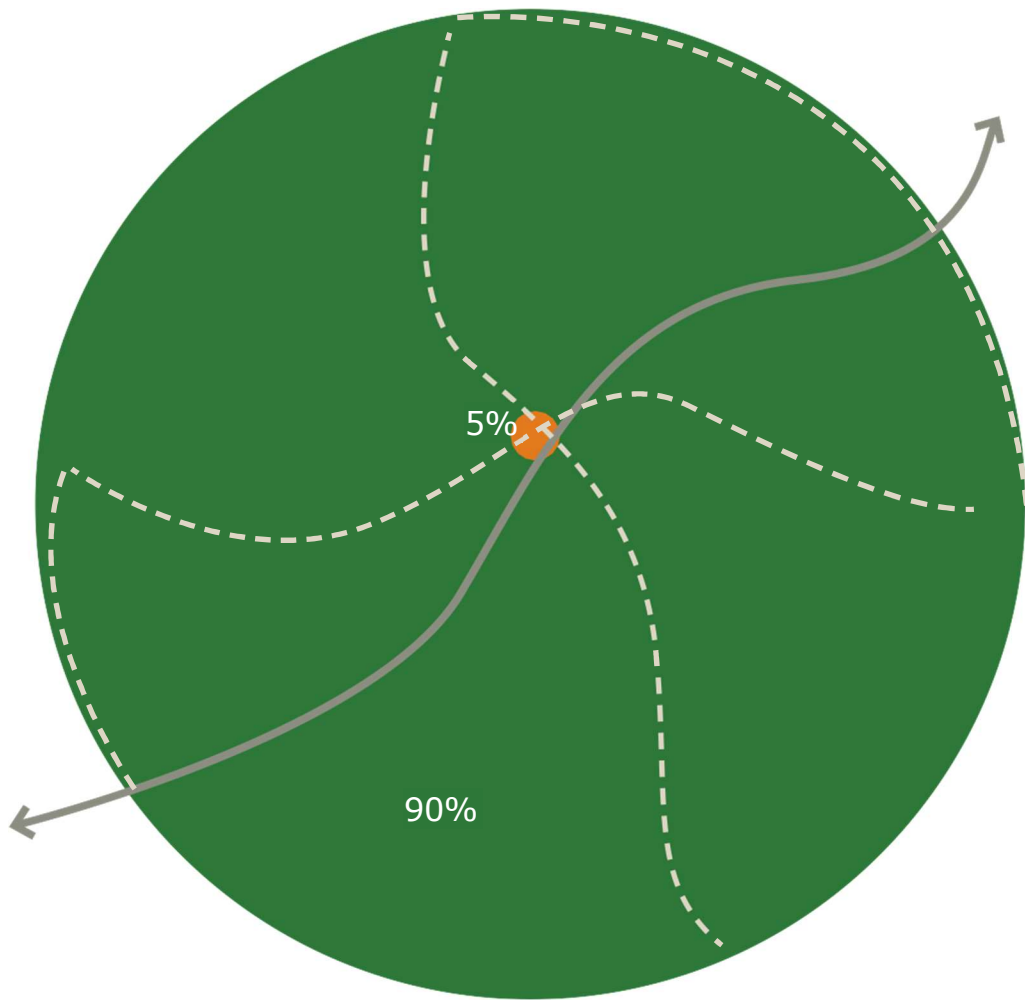
4ha building area

Public access via small cul-
de-sac and walking tracks

Small common space at
the centre of cluster

1:5000

2.6 VALLEY CLUSTER NEIGHBOURHOOD



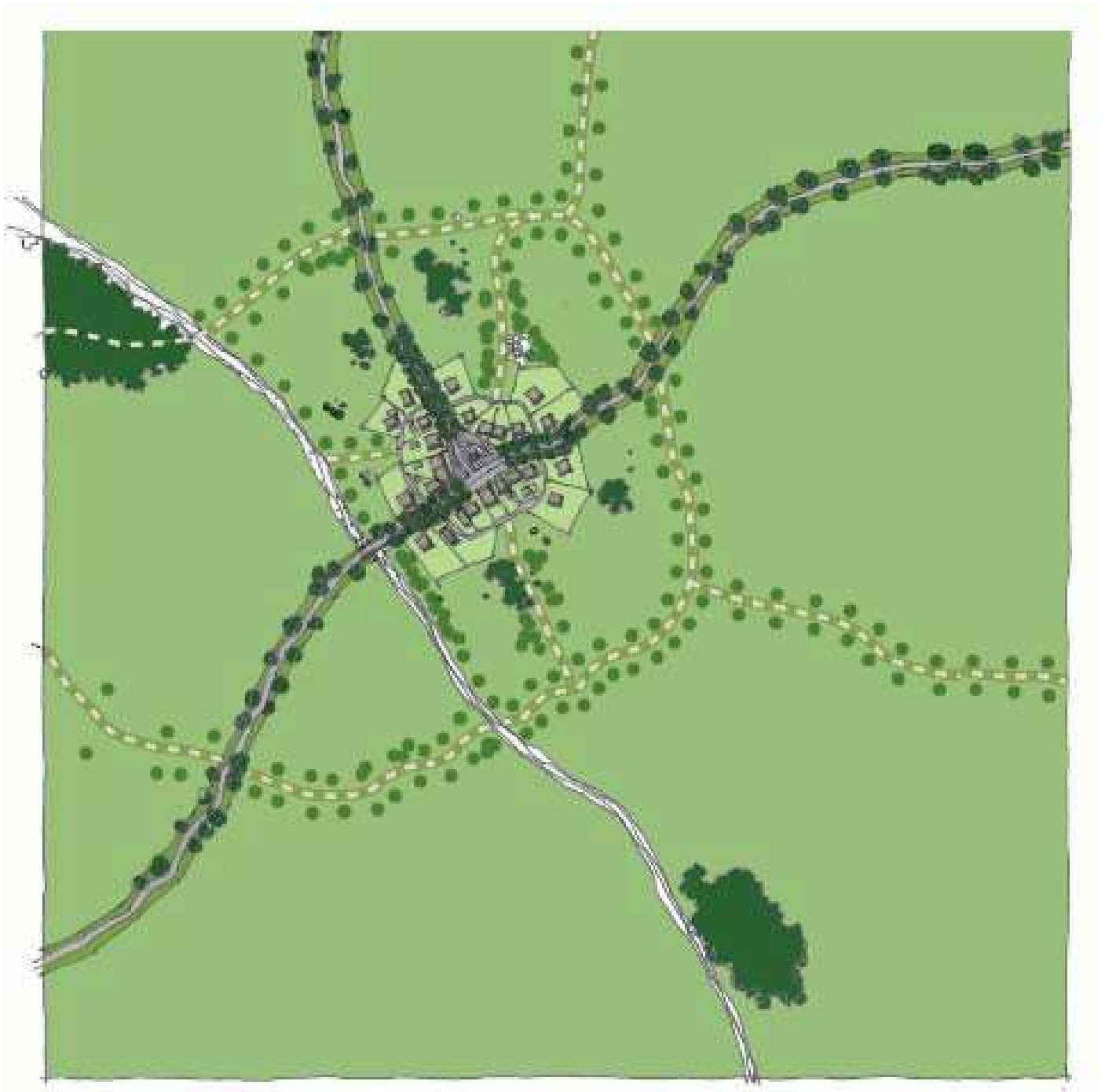
Valley Clusters

- Development Area
- Balance Lot
- Contiguous Public Open Space
- Public Road

	Minimum Site-Size	Housing-Development-Area—%of-Site	Maximum-Intensity-of-Development-(ha-of-total-area/dwelling)	%of-Public-Open-Space-To-Be-Vested-Or-Covenanted-(2)	Minimum-Balance-of-%of-Total-(3)	Maximum-Individual-Lot-Size-m ²
Valley Cluster	80ha	5%	1-per-4ha	5%	90%	2000

1. Must be contiguous and provide a connection to publicly accessible areas outside of the site.
2. Area must be contiguous

2.6 VALLEY CLUSTER NEIGHBOURHOOD: INDICATIVE SKETCH



1:6000

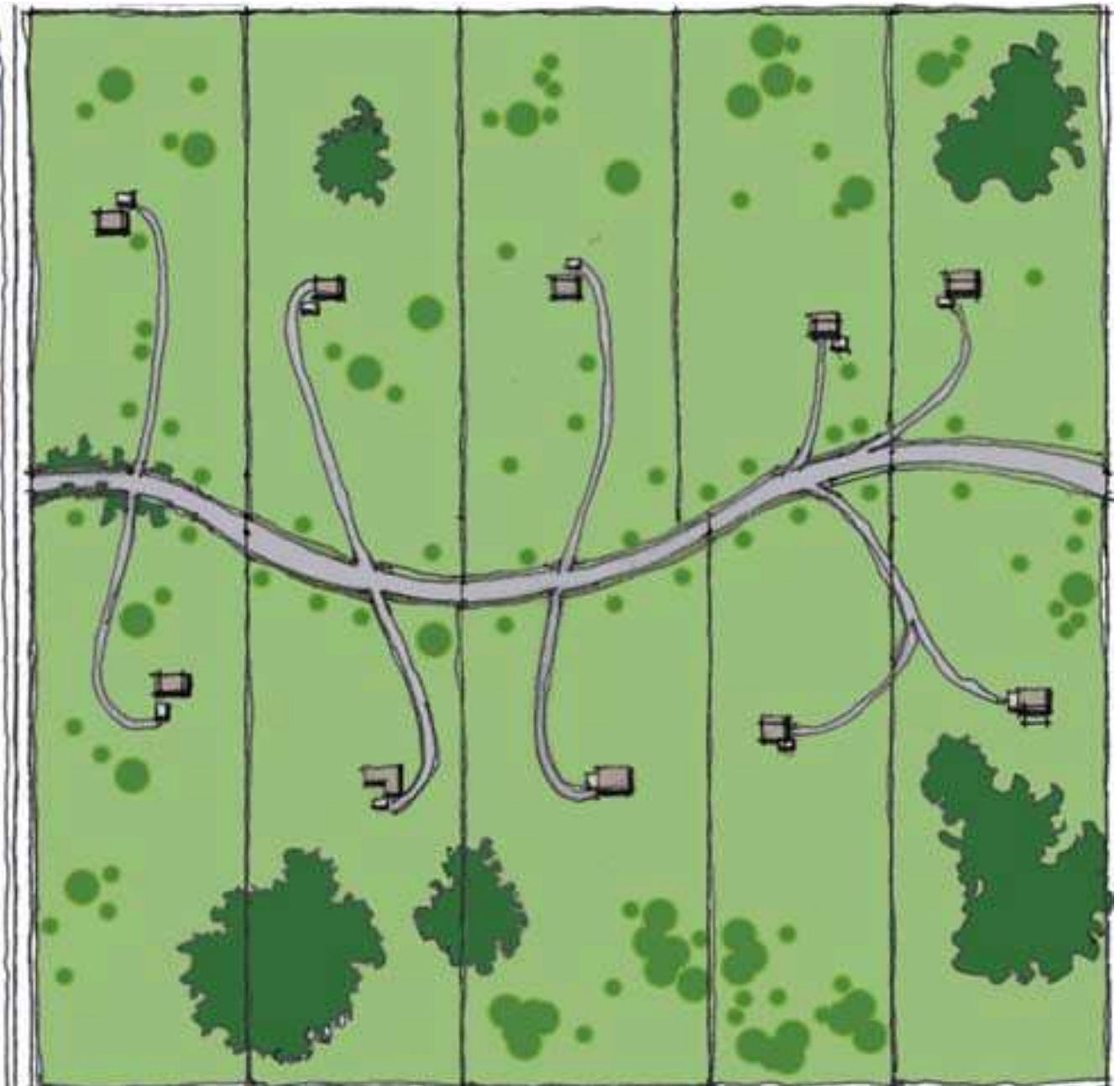
25 dwelling units on 102ha

5ha building area

Public access via through roads
and walking tracks

Small common space at the
centre of cluster. Potential for
continued farming of common
land.

~~2.6.1 VALLEY CLUSTER NEIGHBOURHOOD: SKETCH OF
CONVENTIONAL 10HA SUBDIVISION~~



10 dwellings on 100ha

Mainly separate access - large
areas of roading/driveways

Limited potential for productive
use of balance land

Limited potential for public
access

Limited incentive for
revegetation





2.7 RESIDENTIAL YIELDS FROM URBAN AND RURAL AREAS

YIELDS FROM URBAN AREAS

	Area	Centre	Neighbourhood- Residential Core	Village- Residential	Yield- (50%)	Yield- (60%)
50% Efficiency	1	16.35	299.28	94.05	409.68	
60% Efficiency	1	19.63	359.13	112.86		491.62
50% Efficiency	2	65.46	659.55	222.36	947.37	
60% Efficiency	2	78.55	791.46	266.83		1136.84
50% Efficiency	3	16.35	452.56	477.38	946.30	
60% Efficiency	3	19.63	543.08	572.86		1135.56
Total					2303.35	2764.02

POTENTIAL MAXIMUM YIELDS FROM RURAL AREAS

Land-Use Area	Area (ha)	Yield
Forest Cluster	480.25	240.12
Forest Cluster A	93.17	23.37
Valley Cluster	920.53	230.13

NOTES

1. This table applies the target densities for the various neighbourhoods as outlined in the indicative land use section above. These figures may vary as further detailed work is undertaken as part of the Development Area Plans. Such variations are allowable as long as they support the approach and intent of the structure plan. The two major tenets of the structure plan are a) providing greater density where this will facilitate quality urban design outcomes for example where there are areas of greater accessibility and local facilities and b) fitting development around environmental constraints such as geotechnical stability.
2. Two efficiency rates have been applied to represent a range of achievable development yields.
3. The rural yields are potential maximum yields based purely on land area available. Issues such as land tenure and market preference may alter these figures.

60% efficiency represents the common standard within structure planning, allowing 40% of land for roads and open space.

50% efficiency represents a more conservative figure due to the presence of some faults within the urban areas, which may reduce the area available for development. It also makes allowance for the TDC standard open space requirement of 12 ha/1000 people to be provided within the urban areas.

2.8 PROVISIONS IN THE STRUCTURE PLAN BEYOND 2026

The focus of the analysis to date has been on evaluating where, within the Mapara Valley Area, urban type development of the nature anticipated by TD2050 could be located, sufficient to cater for up to 2000 dwellings by 2026. In addition, the treatment of rurally zoned land outside of these areas has been evaluated to ensure a sustainable outcome for the whole catchment.

The areas for urban development have been identified through sieve mapping and landscape analysis and this has been carried through to the land use analysis. This has applied desirable densities to these areas, in order to facilitate a sustainable pattern of development within the urban areas of the structure plan.

Attached are some broad yield figures that estimate the potential yield from the land use densities outlined in the land use analysis. Two scenarios have been included that reflect two different efficiency rates. The highest scenario yields 2764 dwelling units while the lowest yields 2303 dwelling units.

The Forest Cluster and valley Cluster provisions as they currently stand allow for additional development within the rural areas in the catchment. The take up rate for these is hard to estimate but even at a conservative 70% take up rate, these provisions yield an additional 345 dwelling units within the rural areas. A number of subdivisions could take place on land indicated in the structure plan to be left in the current rural zoning down (covering approximately 400ha) but this has not been factored in to the calculations.

Until detailed design work is done at the Development Area Plan stage it is difficult to estimate precisely the yields which will emerge. What is evident from these figures as they stand is that even assuming the lowest yield scenario, not all the urban areas currently identified as being capable of absorbing urban type development need necessarily be urbanised to provide for 2000 dwelling units in the study area by 2026.

PROPOSED COURSE OF ACTION

If the 2000 lots is considered a strict cap for development until 2026 and the new rural provisions are seen as essential to protect and enhance the catchment, then the urban areas need to provide the balance of the lots required. If 50% take up of Forest and Valley Clusters was achieved by 2026 (246 lots) then this would equate to approximately 1755 lots.

Areas 1 and 2 (containing approximately 105ha) are capable of providing roughly 1357-1628 dwellings between them, depending on the densities achieved. All contain centres and more compact residential areas and so can function somewhat independently as small neighbourhoods.













The range of 1357-1628 provides a reasonable range for likely development as the upper limit is definitely achievable if more compact forms of development are achieved. These areas that will definitely be needed to satisfy the growth demands anticipated in TD2050 to 2026.

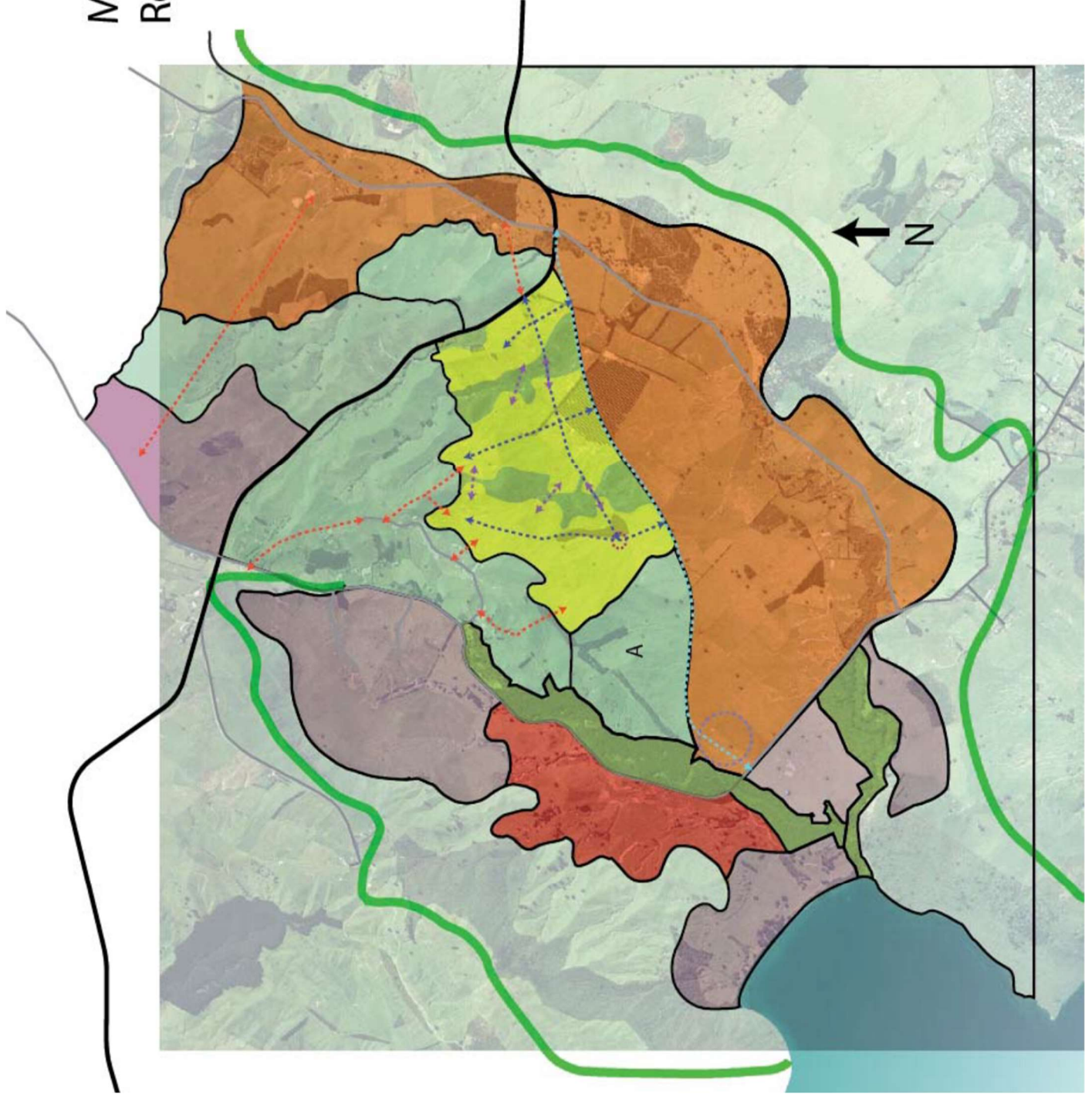
How much more capacity beyond this will be required by 2026 will depend on the exact yield achieved within these first two areas. The phasing approach being taken by TDC requires a progressive development of the urban areas. As the last of the 2 areas are developed to 80% of capacity then the remaining Area 3 could be urbanised.

In total all 3 areas would more than likely provide more than 2000 lots of capacity within the total structure plan area. As development will be a long term project it is more than likely that a number of District Plan reviews will take place during development of the urban areas; these provide ample opportunities to progressively review the timing of urbanisation for area 3. This, combined with the progressive phasing, will provide a flexible approach to meeting the growth demands outlined in TD2050.

Map 2 Desirable Roading Connections

LEGEND:

	Current Rural Zoning
	Forest Clusters
	Re-vegetation/Retirement
	Urban
	Valley Clusters
	Rural Zoning
	Escarpment Buffer Area
	Indicative Rural Roads
	Indicative Main Neighbourhood Road
	Indicative Rural Transition Road
	Indicative Connections Between Urban Areas
	Indicative Access Connections



2.9 INDICATIVE CONNECTIONS

Urban Road and Street Connections (Sub-area 7)



The following text relates to the information contained on map 2a—Desirable Key Roding Connections and map 2b—Desirable Recreational Connections. More information on the various road typologies is provided in the Urban Design Guidelines.

All three centres have major axial streets that bisect them and provide access through the Village Core neighbourhoods into the Village Residential neighbourhoods. These are major connectors that link the Village Core and Village Residential to the Forest Clusters that are located to the north and east of the urban areas. These streets are called Main Neighbourhood Streets and are detailed in the Urban Design Guidelines.

At the base of each of the urban areas is the major road within the study area that connects all three centres and defines the urban from the rural areas of the valley floor. This road is called the Rural Transition Road and is included in the Urban Design Guidelines.

This provides the major north-south connection within the valley and connects directly with WeKA and with Mapara Road. In addition it signals the edge to urban type development within the valley, providing, along with an area of unstructured open space opposite it (lime green), a defensible limit to these areas. Further detail about the role of this open space is provided in the Urban Design Guidelines.

Within the urban areas themselves, a number of other streets provide local roading options. These included Neighbourhood Streets, Woonerfs and Lanes that would be located throughout these areas. These provide local circulation and connections and are highlighted in the Urban Design Guidelines.

OTHER PROPOSED ROAD CONNECTIONS (RED DASHES—WHOLE VALLEY)



A series of indicative key rural roads and connections between urban areas have been identified relating to the proposed land uses in the other Sub-areas. These are connections that focus particularly on east-west connectivity across the study area. Where they are near desirable recreational connections these will have facilities such as off-road cycle paths, bridle ways and walkways to supplement and connect with these.

These are the desirable key roading connections within the valley and are purely indicative as to their exact location. What they aim to do is create a more permeable rural environment that connects new areas of development with the valley but may need to change as the valley develops.

These indicative roads would be built if development occurs within the rural areas for example via Forest and Valley Cluster provisions. These are not the only roads that would occur in these areas as they would be supplemented by more minor rural roads directly servicing this development. Where they occur in rural areas the focus is on ensuring that they are rural in nature and this may include limiting design speeds and/or materials for example by utilising gravel as opposed to sealed roads.

Map 2a Desirable Recreation Connections



LEGEND:

Current Zoning	—
Forest	■
Re-vegetation/Retirement	■
Urban	■
Watercourse	—
Rural Zoning	■
Escarpment Buffer Area	—
Indicative Fences	—
Indicative Main Neighbourhood Road	—
Indicative Rural Transition Road	—
Indicative Connections Between Urban Areas	—
Indicative Access Connections	—

2.10 INDICATIVE RECREATIONAL CONNECTIONS

*Proposed Recreational Accessways
(White arrows—Whole Valley)*



Throughout the rest of the study area indicative recreational accessways have been set out, stemming from the general desire to increase connections across the study area, both east-west and north-south. The rural areas within the Mapara Valley Area should be seen as a great asset that can provide a recreational experience to both visitors and inhabitants.

These are purely indicative and would be provided if land was developed under the Valley or Forest Cluster provisions outlined below. A major focus of both of these proposed land uses is leveraging public access through these areas. These could take a number of different forms and could range from simple mowed or signposted easements across actively used productive land through to highly developed walkway systems.

Some of these accessways have been shown along existing roads and this indicates a desire to reinforce the public access provided by these roads where possible.

On the valley floor (sub-areas 3 and 10) this translates into the desire for a permeable field pattern that promotes public access across and up and down the valley from the catchment boundary in the north through to Whakaipo Bay in the south. In the hills area where Forest Clusters and Revegetation are located (sub-areas 2,4,6,8) this translates into the creation of tracks and access through a revegetated landscape.



2.11 REVEGETATION REQUIREMENTS

A number of areas in the Structure Plan have been identified as requiring revegetation associated with the development of these areas. These are:

1. — Forest Clusters
2. — Revegetation Areas
3. — Revegetation Corridors

Each area has differing reasons for revegetation which is reflected in the following requirements for the revegetation of these areas. The following provides a general guide to the desired outcome of planting. Specific planting plans will need to be undertaken in accordance with these revegetation requirements through the consent process.

FOREST CLUSTERS

The intent for the forest clusters is for vegetation to occur around the housing cluster to provide a vegetated setting. Vegetation flammability is an issue for forest vegetation around dwellings. Planting plans should take into account relevant National Rural Fire Authority Fire Management Guidelines to minimise fire risk. In general, trees should have a minimum setback of 10m from dwellings.

The key vegetation outcome is for permanent evergreen trees (i.e. not planting for the purpose of harvesting), native or exotic, mixed species, forming a closed canopy, and growing to minimum of 8m in height. Exotic species may include: blackwood (*Acacia melanoxylon*), maple species (*Acer* spp.), silver birch (*Betula pendula*), poplar species (*Populus* spp.), Italian alder (*Alnus cordata*).

REVEGETATION AREAS

The revegetation areas will be predominantly public areas. Specific planting details will need to respond to the particular requirements of the reserve (i.e. for recreation, storm water, etc). For areas around walking tracks, revegetation should be offset either side of paths a minimum of 2m.

The revegetation areas should be used as an opportunity to restore ecological corridors, whilst providing amenity planting, and recreational access from the valley floor into the areas of hills. The key vegetation outcome is for a mixture of native and exotic planting using a mix of species ranging in heights, predominantly using species that grow to a minimum 5m.

revegetation areas can serve as structured open space reserves with more park-like qualities and formal tree planting, graduating to less structured but accessible natural environments.

Revegetation Corridors

Revegetation Corridors have a function to protect the gullies and the water quality in those with flowing and ephemeral water courses. The establishment of wildlife corridors is also an important anticipated outcome associated with these areas. Some Revegetation Corridors will require removal of weed and pest plant species prior to planting.

The key vegetation outcome is to plant with native and where possible indigenous vegetation, appropriately selected for the conditions. This may include species such as flax (*Phormium tenax*, *P. cookianum*), manuka (*Leptospermum scoparium*), cabbage tree (*Cordyline australis*), makomako or wineberry (*Aristoelia serrata*), ngaio (*Myoporum laetum*), akeake (*Dodonea viscosa*) hoheria (*Hoheria populnea*), lemonwood (*Pittosporum eugenoides*), kohuhu (*Pittosporum tenuifolium*), five finger (*Pseudopanax arboreus*), toitoi (*Cortaderia fulvida*), carex and rush species. Wildland report 1880 provides guidance for riparian planting.

Plants should form a closed canopy that shades the ground. Where intermittent vistas to water are desired, plant with low riparian species. Ephemeral water ways will require more drought tolerant species to establish. Planting should not occur in a manner or location which impedes any water flow within the corridor.

Planting should be informal, interspersed with
near to urban boundaries the

~~APPENDIX THREE~~
~~SECTION 3:~~
~~BULK~~
~~INFRASTRUCTURE~~



3.1 BULK INFRASTRUCTURE

Cardno TCB was engaged by Taupo District Council to assist with the servicing aspects of the proposed future residential areas in the Mapara Valley Structure Plan west of Taupo Township.

This includes reviewing at a broad level options to provide infrastructure for

- water
- wastewater
- stormwater

In addition, advice from Cardno TCB has been utilised to ensure that an approach compatible with best practice catchment management planning was undertaken. This has particular implications for stormwater and will be covered in the relevant section.

The 'Mapara Valley Structure Plan: Water, Wastewater and Stormwater Servicing' report is available from Taupo District Council, with relevant sections reproduced here to provide context for further development in the structure plan.

8.1.1 WATER

The Mapara development area will be linked to the Taupo town supply by a new trunk main laid in the berm of the first stage of the proposed WeKA Highway between existing State Highway 1 and Tukairangi Road.

SOURCE OF WATER

- Taupo District Council holds a number of consents for Lake Taupo water takes for the various schemes around Lake Taupo.
- Cumulatively these daily entitlements comfortably exceed the current combined peak take by the schemes.
- With this surplus of entitlement and the recent emergence of water allocation issues, new surface water take applications are harder to obtain in the Waikato basin.
- It is the opinion of the TDC asset managers that by amalgamating Council's overall consent entitlements, adequate water is available to service the full growth requirements of the structure plan.
- It was also preferred by the asset managers that the number of district water intake points and treatment plants be minimized.

WATER DEMAND IN THE MAPARA VALLEY AREA

- The reticulated water supply is intended to supply the residential development areas only

and not be available for rural purposes.

- Consideration of the Taupo District Council Code of Practice for Development of Land in respect to water demand.
- The target water demand in the Mapara Valley Structure Plan Area will be aligned with the Taupo District (Draft) Water Supply Strategy.
- The target water demand can be achieved through a range of water conservation measures but is made more achievable by the low commercial and industrial demand, as well as a percentage of holiday homes.
- However, water storage must maintain sufficient pressure and storage for fire fighting purposes.

Water conservation measures will be incorporated into development in this valley. Which could include:

- water metering to encourage efficiency
- modern low water use fixtures/appliances would be expected to be used (such as dual flush toilets, low flow shower nozzles, water efficient dishwashers/washing machines etc)
- Capture and storage of rainwater and re-use of grey water for garden watering purposes as happens in other parts of New Zealand (such as is now policy for Kapiti Coast District Council for all new dwellings on a public water supply) and even for non-potable domestic use within each dwelling (for example toilet flushing, clothes washing etc) where dual plumbing systems are installed.

RETICULATION TO THE MAPARA VALLEY AREA

- The water would be sourced from Council's current Northern High Zone, a water supply currently pressurized by the Woodward and Acacia Bay Road booster pumping stations.
- No high zone storage reservoir currently exists for this zone, although there is a TDC growth concept prepared in 2001 identifying a likely site alongside the lower WeKA route (refer servicing concept plan in complete report).
- This reservoir does not currently appear on the Council's 10 year capital works programme in the Long Term Council Community Plan, nor is a site designated for it in the operative District Plan.
- The timing of it would be best suited to be determined once the WeKA highway works were confirmed.
- This large sized reservoir, while not essential to getting a supply to the Mapara Valley Area, would be the logical place to locate the

3.1 BULK INFRASTRUCTURE

pumping station to feed the proposed new Mapara Valley reservoir near the crest of the WeKA highway.

- It is expected that the reticulation would need to be installed by the first developer of the valley; most of this will need to be installed at full size at day one, although the pumps and reservoirs can allow for modular expansion.
- The water pipes would probably be laid in a common trench with the sewer main, at the time of construction of the berm of the WeKA.

RETICULATION IN THE MAPARA VALLEY AREA

- The main reservoir will directly service the bulk of the valley floor.
- Areas below 450m will need pressure-reducing valves to protect fixtures and reduce water usage.
- The higher development areas above approximately 525m will need their own storage reservoir(s) and booster pumping station(s).
- The water supply network in the valley can be designed to suit the chosen layout of the dwellings, with the capacities of the zone reservoirs matched to the number of dwellings serviced.
- Consideration should be given to a new balancing reservoir on the west side of the valley. This would improve security of supply, reduce the necessary trunk main sizes and boost pressures during periods of high demand.
- This can be installed at a later stage of development, but suitable sites should be identified at the time of consent and protected from development.

8.1.2 WASTEWATER

- The consensus of stakeholders was supportive of the proposal to bring all wastewater back to link into the Taupo town system at the bottom of Control Gates Hill.
- This wastewater will be treated at a progressively upgraded Taupo Pollution Control Plant (PCP) for eventual effluent disposal outside the Lake Taupo catchment at the new TDC View Road land disposal area.
- Allowances will need to be made in Council's asset management planning for the growth in flows in the main collecting sewer between Control Gates Bridge and the PCP, and the headworks. Modeling work on the sewer has already been commissioned by the asset managers.

RETICULATION TO TAUPO

- A design flow figure of about 225 litres/person/day has been adopted for calculation purposes. With three persons average per dwelling this would have a daily discharge of 1350 m³/day.
- It is possible to gravity drain the whole flow from the crest of the WeKA in a 150mm-pressure pipe.
- Using a line that is gravity-driven offers the benefit of ensuring that once the wastewater has reached the crest of the WeKA above Tukairangi Road it then continually flows to Taupo town reducing the travel time and reducing the potential for the sewage to go septic.
- The pipe would be laid down to Control Gates Bridge, probably adjacent to existing State Highway 1. The total distance from the proposed WeKA/SH1 roundabout to Tukairangi Road is 4780 metres.

RETICULATION IN THE URBAN AREAS OF THE VALLEY

- The wastewater will be collected at various points as the valley development unfolds and will probably be pumped up to a central higher-pressure head pump alongside the WeKA near Tukairangi Road.
- This pump would then lift over the crest of the WeKA to allow gravity discharge the rest of the way to Taupo.
- If there are a number of different developers benefitting from shared assets, it will be necessary to develop a strategy to ensure access for all to these public assets, and for the ability to cost-share in them. Many of the assets will need to be installed by the first developer.

3.1 BULK INFRASTRUCTURE

3.1.3 STORMWATER

The structure plan has been structured around a Low Impact Design (LID) and catchment wide approach to the management of stormwater. This has followed through to the land use patterning and is also reflected in the approach taken to managing stormwater resources.

Included at the end of the Bulk Infrastructure section is a table of the conditions that are required to be met in order for a catchment management plan to be granted by Environment Waikato. This table outlines where and how these different conditions will be met.

The following is sourced from the 'Mapara Valley Structure Plan: Water, Wastewater and Stormwater Servicing Report'.

AREAS OF URBAN DEVELOPMENT

- Ground soakage of stormwater has been the preferred approach for most subdivision developments in the last decade in Taupo District. It has always been standard procedure for the disposal of stormwater from buildings in pumice areas. This practice will be continued in the Mapara development areas. The underlying pumice ground conditions in the Mapara Valley area are considered to be suitable for ground disposal.
- The areas identified for development at the highest density are generally flat ground on the valley floor; as the slope increases the density of development lessens, with the steep valley sidings at a low housing density or retired and used as planted landscape areas.

RECOMMENDED OPTIONS

Utilising street typologies included in Urban Design Guidelines

- These typologies are based around ground soakage, using a variety of treatment devices such as swales, rain gardens.

Conventional drilled soak hole with porous con-

crete liner.

- This is a well proven approach, offering a small land footprint, stability and good soakage potential as it penetrates through different strata layers of the pumice. There is a need to protect soak holes carefully from silt run-off during the house building phase before the catchment development reaches maturity. Their soakage rate can be expected to decline over the years, perhaps requiring some additional holes to be drilled in the future.

Underground scoria filled pits or trenches

- Useful particularly where pre-treatment of the stormwater occurs to remove sediment loads or where groundwater levels are high (such as near lakeshores or streams).

Surface soakage ponds

- Sometimes these are lined (such as in the Lisland Subdivision at Kinloch) to retain water at a low level as a neighborhood amenity and wildlife habitat pond.
- A permanent pond or temporary ponding area at the bottom of each of the urban area catchments is a final protective measure to prevent increased flows off site down towards the Mapara Stream and over lower properties. This is particularly for extreme rainfall events in excess of the normal design storms of 1 in 10 years.
- These ponds could be part of the primary soakage system and created as an area amenity feature, with attention given to their planting and the maintenance of adequate water during dry periods to prevent loss of aquatic habitat. These ponds could be located on the south side of the main lower perimeter road between the built and open environments.

Other

- The use of a treatment train approach utilising swales, sunken gardens and existing ephemeral watercourses (which flow only occasionally after heavy rainfall) should be used in combination with the above options.
- Attention will need to be made to the collection of autumn leaf fall to prevent leaves entering underground soakage areas. 'Enviropods' or other gross pollutant filters can be used for this purpose.
- Secondary flowpaths will always need to be provided to prevent damage to private property during extreme rainfall events. Natural flowpaths, public open spaces and roadways can be used for this purpose.



3.1 BULK INFRASTRUCTURE

EFFECT ON RECEIVING ENVIRONMENTS DUE TO DEVELOPMENT IN URBAN AREAS

- With the water supply coming from Taupo town rather than from groundwater bores, the supply of potable water will not have any effect on the groundwater of the valley. As rainfall will be reinjected into the ground by soakage, the charging of the groundwater will not be materially different to the pastoral farming situation that exists today.
- The total nitrogen (TN) losses from the typical Taupo pastoral farming activity underway in the Māpara Valley Area are about 14kg/TN/ha/year. The indicative NZ average figure for urban run-off sources is 7.4kg/TN/ha/year (sourced from EW). Thus with the wastewater being removed from the valley, the residential land is predicted to discharge considerably less total Nitrogen than the current pastoral land use.
- The very slow subsurface drainage speed offers near total filtering of suspended material. Soluble elements will travel with the flow. Permitted modern organic agricultural and gardening chemicals break down quickly and don't have the residual lifespan of some historical elements used. Use of these chemicals is not expected to be heavy in residential development, and they would not be expected to reach the lake in any concentration that would cause measurable adverse effects.
- Heavy metal contamination levels will not be high with a dispersed stormwater disposal regime. In the Taupo situation the lower usage of unpainted galvanized steel roofs, the distance from the corrosive coastal environments and the fact that all roofs go into dispersed ground soakage preclude this issue from becoming a problem.
- Particulates from roofs and road run-off will be trapped in the vicinity of the soak holes. Most roads will not have high traffic volumes, further limiting the effects of vehicle discharges.

PROPOSED RESIDENTIAL CLUSTERS

- It is anticipated that, in time, all of the proposed residential cluster developments within the valley floor will connect to the future Council owned sewerage and water reticulation systems in the valley.
- However, it is possible that the development of a number of these clusters may proceed prior to the full infrastructure servicing being implemented by Council and/or future developers. To enable this to occur, the supply of water and discharge of sewage must be achieved on-site.

ON-SITE WATER SUPPLY

- Water supply to cluster developments could be a combination of roof water collection and groundwater bores.
- It is entirely appropriate for roof water collection to be used at least for garden irrigation and even for non-potable domestic use within each dwelling (for example toilet flushing, clothes washing etc) if dual plumbing systems were to be considered.
- Roof water collection for a 250-300m² dwelling would be able to provide 50-70% of the total requirement from roof water on an average rainfall year.
- To supply the remainder of the irrigation and potable water supply would require the implementation of a groundwater bore. Consent for implementation of the bore and abstraction of groundwater will need to be obtained on a case by case basis from Environment Waikato.
- Alternatively, neighboring landowners could combine resources and supply a number of clusters from a communal groundwater bore, operated through a private water supply scheme.
- When viewed purely from a management of natural resources perspective, this communal approach would be encouraged.
- The groundwater bore would be connected to a surface collection tank with pumping system to pressurise a small communal reticulation scheme.
- The reticulation, if designed and constructed in accordance with the Council code, could be used as part of the public reticulation at a later date if the bore was to be decommissioned and the system connected to the extended Taupo reticulation.

ON-SITE SEWAGE TREATMENT AND DISPOSAL

- The on-site treatment and disposal of wastewater from cluster developments could be achieved via either individual advanced treatment systems or communal treatment and disposal schemes, both requiring consent for discharge from Environment Waikato.
- Given that the dwellings within each cluster would be in reasonable proximity to each other, the reticulation costs for a communal system would be reduced, thereby making this the preferred option both from the perspective of overall cost and potential effect on the environment.

3.1 BULK INFRASTRUCTURE

- Assuming advanced treatment and land based sub-surface drip irrigation disposal, the typical costs of systems are

15 dwelling systems coping with up to	
15m ³ /day	\$100,000
30 dwelling systems coping with up to	
30m ³ /day	\$150,000
50 dwelling systems coping with up to	
50m ³ /day	\$200,000

- Typically land disposal for such on-site systems utilises sub-surface drip irrigation schemes via pressure dosed application, and usually a conservative land application rate of 5mm/day is assumed.
- The total land disposal area required is around 135m² per dwelling. However, economies of scale can be achieved when the communal disposal systems service a greater number of allotments.
- If a cluster development was to be established using on-site wastewater treatment and disposal, it would be possible for the system to be decommissioned and removed from the site in the future when connection to the public reticulation became available.
- Depending on the proximity to the public main and the ground topography, the connection may be able to be achieved via a gravity piped reticulation, or in the worst case a small pumping station with rising main could direct raw effluent from the cluster reticulation to the public main.

structure plan) which are more appropriately completed when the detail of development areas is known. These detailed plans should demonstrate the following:

- The SWMP should detail all overland flow paths, detention areas and spillways that are necessary to convey runoff from source to discharge, along with any natural waterways and floodplains. Any flood hazards identified above shall not (and will not) affect any building platforms or buildings. The SWMP shall include an outline of relevant planning and development controls that will be associated with the identified flood hazards. All outfalls or locations where runoff is concentrated shall include appropriate erosion and scour protection.
- It is however the conclusion of this analysis that the effects of stormwater run-off can be managed in the valley, with minimal effects on the wider environment.
- On the following page is a table of the conditions that are required to be met in order for a catchment management plan to be granted by Environment Waikato.

3.1.5 CATCHMENT MANAGEMENT PLANS

- This structure planning process has followed a catchment based approach, and the high level requirements of a catchment management plan have been covered within the structure plan (namely conditions a-f and i-j of the condition 32 set out in the TDC Comprehensive Consent Resource Consent 105048, 105049 and 105050).
- Various Environment Waikato consents will be required by the developers once the development layout is firmed up and formal consents are sought. These will be included as part of the Development Area Plans (DAPs), which will set out in detail the proposals for urbanisation and development.
- At the present time not enough detail is known about the eventual layout and form the development will take to do this work, which is a substantial process and needs considerable detail.
- These detailed plans should focus on sections g, h, k and i (some which have been covered at a high level within various sections of the

3.2 CATCHMENT MANAGEMENT PLAN REQUIREMENTS

(CONDITION 32 OF TDC'S COMPREHENSIVE STORMWATER CONSENTS 105048, 105049 AND 105050)

Catchment Management Plan Conditions	Where in the Structure Plan You Can Find These
a. Catchment maps showing the catchment boundary, catchment topography, receiving environment and existing land uses within the catchment.	Sieve maps Ecological report
b. Social, economic, ecological, amenity and cultural objectives being sought for the catchment.	Objectives and principles
c. Identification of the key stakeholders within the catchment and details of the consultation initiatives undertaken with key stakeholders.	Consultation section
d. Classification of the receiving waters within the catchment in accordance with the Waikato Regional Plan.	Ecological report
e. An assessment of the current status of the catchment and receiving environment, and the provision of a detailed baseline information on the geological, hydrological, ecological and existing infrastructure characteristics of the catchment, including an existing resource use authorisations within the catchment.	Sieve maps Ecological report Section on current infrastructure and authorisations contained within servicing report by TCB
f. Identification of potential urban growth, development and land use intensification within the catchment.	Land use patterns
g. An assessment of the potential effects of stormwater diversion and discharge activities on the catchment and receiving environment.	Some of this has been completed at a high level within the structure plan (Bulk Infrastructure section and servicing report by TCB), but the details will need to be worked out during the Development Area Plans.
h. The cumulative effects of stormwater diversion and discharge activities within the catchment, the range of general management options available and the Best Practical option to prevent and minimise the adverse effects of stormwater diversion and discharge activities, and to mitigate or offset any significant unavoidable adverse effects.	Some of this has been completed at a high level within the structure plan (Bulk Infrastructure section and servicing report by TCB), but the details will need to be worked out during the Development Area Plans.
i. The effectiveness of District plan provisions to implement the management approach adopted by the CMP and, where necessary, the changes or variations to relevant District Plan provisions likely to assist in achieving the objectives in the CMP.	Proposed Plan Change 23
j. Education initiatives to support the catchment management objectives.	Appendix containing TDC stormwater and environmental education programmes
k. The methods by which all stormwater diversion and discharge activities will be managed.	Some of this has been completed at a high level within the structure plan (Bulk Infrastructure section and servicing report by TCB), but the details will need to be worked out during the Development Area Plans.
l. A description of all infrastructure works scheduled by TDC which may significantly affect stormwater management within the catchment.	This is more appropriately completed at the time of development area planning so that the most up-to-date schedule can be established.

~~3.3 BULK INFRASTRUCTURE CONTINUED—PUBLIC RECREATIONAL OPEN SPACE~~

~~The Urban Design Guidelines detail the broad level approach to providing open space in the structure plan area. This includes public recreational open space and the types appropriate to each structure plan neighbourhood.~~

~~The following types of public recreational open space will be provided within the structure plan area:~~

- ~~• Amenity spaces (size determined by intent)~~
- ~~• Neighbourhood reserves (minimum 4000m² in size)~~
- ~~• Village squares/greens~~
- ~~• Village domains (from 3 to 5ha in size)~~
- ~~• Recreational linkages (of indeterminate length but minimum 10m width in urban areas and 5m width outside these)~~
- ~~• A district park/sportsground (between 12 and 20 ha)~~

~~The Taupo District Council Development Contributions Policy sets the development contributions for public recreational open space at 12ha/1000 people. This is further broken down into 8ha for amenity/neighbourhood open space and 4ha for District wide park and sportsground facilities. With 2000 households planned for, this would indicate a total requirement of 62.4ha of recreation reserve land (41.6 neighbourhood plus 20.8 district).~~

~~The amenity spaces and neighbourhood reserves will be located primarily within the urban neighbourhoods to provide relief from built form, relaxation and flexible play spaces. The village squares/greens and domains, also in the urban neighbourhoods, will provide for focal community gathering and event spaces. Recreational linkages will provide access between built development, open space and significant natural features within and between urban areas and elsewhere.~~

~~It is anticipated that a sportsground and district park facility of up to 20 hectares will be located within the Mapara Valley Area. This sportsground would comprise playing fields and associated facilities and be located on the valley floor side of the Rural Transition Road adjacent to neighbourhood two with linkages through to urban areas one and three. It may be continuous with or separate from a large district reserve area that could safeguard other natural features and increase recreational opportunities. For example, this could incorporate a landmark lookout (see below) or connections through to the Mapara Stream environment.~~

~~Three landmarks (prominent hill formations) have been identified as part of the Legibility Analysis (map 1, Section 5, page 73 of the structure plan) within or near to the urban areas. During the formation of Development Area Plans and applications for cluster type subdivision, the provision of connections to and open space on at least one of these landmarks should be considered. These areas provide a unique opportunity to provide lookouts over the valley and Whakaipo Bay.~~



3.4 TRANSPORTATION

There are four broad aims for the structure plan related to transport:

- To provide an integrated system of transport that caters for all modes of transport
- To ensure that the private car is accommodated within the structure plan area but that it does not come to dominate or detract from high quality urban form
- To provide land use that is supportive of alternatives to the private car such as walking, cycling and public transport, and minimises demand for travel
- To provide additional measures / facilities to promote the safety and viability of alternatives to the private car.

A number of features in the structure plan support this approach:

LAND USE

The densities and nature of land use promoted in the structure plan focus on concentrating development in areas with maximum accessibility. This occurs in two key areas:

1. The Village Core neighbourhood within a 400m ped shed of the middle of the Centre neighbourhood
2. Some areas of the Village Residential neighbourhood, near open space and other facilities.

The aim of this is to create a compact high quality urban form and maximise opportunities for access to local facilities like shops and open space via walking and cycling. This approach will minimise demand for car based travel within the urban areas of the structure plan.

Concentrating density in and around centres will also support the provision of public transport in the structure plan area. Significant areas of development will be in close proximity to a centre and/or the Main Neighbourhood Streets that serve as the intended routes for a public transport system.

STREET TYPOLOGIES

The Main Neighbourhood Streets have been designed to be wide enough to adequately service bus based public transport and heavy vehicles. This road links the three urban areas and their respective centres creating a loop for efficient public transport provision. This would access the urban areas via the WeKA and all of the centres are in close proximity to both the WeKA and the remaining centres.

The rain garden median of these streets has

been included to provide potential in the future to remove this and use the space as a dedicated public transport lane for a bus based or fixed system such as light rail.

All streets will be attractive and appealing for non-motorised forms of transport. This will be achieved by:

- The visual and physical dominance of cars and garages will be reduced by promoting lane access to the rear of properties.
- Lane access will reduce potential conflict between pedestrians/cyclists and cars entering and exiting driveways. A 'share with care' footpath for cyclists and pedestrians can be introduced and footpaths are wide enough to incorporate this.
- All streets will be well linked and connected to logical destinations like local facilities and open space. This will spread traffic flows evenly and promote maximum route choice and permeability for all users.
- The street network will be logical and clear to make route finding is easy.
- All streets and dedicated pedestrian and cycle routes will be safe and overlooked by development. Wherever possible this will be on the street network to provide passive surveillance of these areas.
- High quality routes will be provided for pedestrians and cyclists with all weather access and extra facilities where there is high demand.
- Street trees and multi storey buildings will provide enclosure of the street and help create a sense of being 'somewhere'. Traffic calming will be promoted on lower order streets instead of traditional cul-de-sacs that reduce permeability.
- Well designed on street parking will provide activity on the street (making it safer for non-vehicle users) but will not interfere with pedestrian and cycle activities. This will also provide friction for vehicles, naturally slowing traffic speeds.

The street typologies outlined in the Urban Design Guidelines will be further developed during the Development Area Plan process in accordance with the guidance provided.

WALKWAYS AND CYCLEWAYS

In the wider valley new walkways and cycleways will be generated as part of subdivision in accordance with the Valley Cluster and Forest Cluster provisions. These will facilitate non-motorised transport throughout the valley including to areas of heightened interest such as Whakaipo Bay.



3.4 TRANSPORTATION

Access to and from the structure plan area will be provided via the WeKA corridor. This will provide access for private vehicles and public transport like buses and should include a cycle way provision as well. When TDC undertakes a detailed design for the WeKA, the opportunity of a dedicated cycle facility linking the study area to Taupo should be followed up.

MODELLING

Modelling completed as part of the WeKA Notice of Requirement (completed by Opus in 2006) ran low, medium and high growth scenarios. The medium projection was then selected as the basis to estimate the resulting trip generation. The median growth projections for Mapara were 500 lots in the Mapara Valley Area by 2011 and 2000 lots by 2021. The model also considered the trips generated from growth at Kinloch, Kawakawa and from rural growth that would also access the WeKA.

The estimated trips within each section of the WeKA based on the medium growth scenario are set out below:

Section of the WeKA	2011 (trips per day)	2021 (trips per day)
Poihipi— Tukairangi	5000	11,300
Tukairangi—Mapara	3200	5100
Mapara—Whangamata	3200	4900

This model was generated as per the validated Taupo TRACKS Transportation Model, and is validated regularly by testing against vehicle counts and mesh block census data. As an average the number of trips per household in the Taupo District is between 5-6.5 per day. However, when applied per occupied dwellings, this figure is more like 8 trips per day in Taupo.

The average is a result of the high unoccupancy rates (approximately 31% of houses) across the District. It is anticipated however that in the Mapara Valley Area this unoccupancy figure would not be as high and therefore it was assumed that 80% of houses there would be occupied.

The trips specified above are limited to the WeKA and local trips within the Mapara Valley Area would be additional to this. The approach set out within the land use and Urban Design Guidelines will ensure that local trips will be minimised as far as possible.

WEKA INTERSECTION DESIGN OPTIONS

Attached to the Appendix of the Servicing report available from TDC is a plan showing options for typical intersection designs between the WeKA highway and the local access roading network into the structure plan area. To provide guidance on the layout and land areas required, typical intersection designs have been created with reference to both Transit New Zealand and Austroads design guidelines.

Two intersection options have been considered: a roundabout and a 'T' intersection. The roundabout option has been designed using an 80km/h negotiation speed and the land area required is considerable.

The 'T' intersection layout is smaller, much simpler, and provides less potential interruption to the functioning of the WeKA highway. Crossroads could be created using staggered 'T' intersections at appropriate separation distances.

Specific detailed design will be required at each intersection to ensure design guidelines in terms of speed environment and sight distances are achieved. The intention of the plans is to provide guidance on the type of layouts possible.

The structure plan identifies the rural transition road as connecting directly with the WeKA and Tukairangi Road intersection. Whilst there is a reasonable level of detailed investigation into sight distances and geometric design standards yet to be carried out in order to achieve such a layout, but it is clear that if it were to proceed, a roundabout will almost certainly be required at this location.

ROLE OF THE WEKA IN THE MAPARA VALLEY AREA STRUCTURE PLAN

A major assumption through developing TD2050 and the Mapara Valley Structure Plan has been the use of the WeKA for urban development within the valley. The WeKA route proves the favourable option when compared to upgrades of Mapara or Poihipi Roads through cost benefit analysis. Early design work on the WeKA has therefore been completed to ensure that it can cater for the future growth of the Mapara Valley Area.

DETAILED ASSESSMENT OF TRAFFIC GENERATION

When detailed land use is known for each urban area within the Mapara Valley Area, further assessment of traffic generation will be required. Once block and roading patterns, exact yields and commercial activity are known, further assessment should be completed on trip generation and use of the WeKA.

The Movement Network Plan should also complement this by considering potential public transport routes and the roading and recreational network for walking and cycling access.

3.5 PROVISION OF CORE INFRASTRUCTURE TO THE URBAN AREAS

A set of non-negotiable pieces of core infrastructure need to be provided for the urban area of the Mapara Valley Structure Plan. As shown on the map opposite, these include the water and wastewater pipes and associated infrastructure, upgrades to existing infrastructure and the Main Neighbourhood and Rural Transition Roads.

The Centre neighbourhoods and open space are also key to the viability of the urban areas within the Mapara Valley Structure Plan. Although there is some flexibility on how these are shown geographically, the following description should guide how these are provided for the relevant DAPs.

CENTRE NEIGHBOURHOODS

Each of the three urban areas will be focused on a centre that will be located on the Main Neighbourhood Road. It is anticipated that the Centre neighbourhood in the second urban area will be the primary commercial and retail node for the urban areas.

Urban areas 1 and 3 will also have some commercial and retail activity, but there is also potential for these Centre neighbourhoods to be focused around a community facility (a school, for example). An indication of the land requirements for each Centre Neighbourhood, sourced from Property Economics, is set out below:

Urban Area	Commercial	Retail
1	4000sqm	1000sqm
2	6000-27,000sqm*	2000-5100sqm*
3	4000sqm	800sqm

* A range has been given for Centre neighbourhood 2 as the requirements will change over time as the urban area grows in population. The upper end of the range is the expected capacity when all three neighbourhoods are developed.

OPEN SPACE

The village domains and village green/squares will be provided from the 8 ha/1000 people-neighbourhood recreation reserve provision and are an important structuring element to the Centre neighbourhoods.

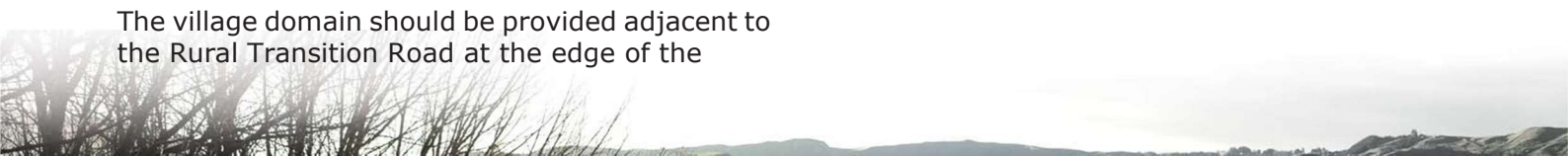
The village domain should be provided adjacent to the Rural Transition Road at the edge of the

valley floor and will be between 3-5ha in size. The village green / square will be provided near or in the Centre neighbourhood and will be strongly linked to the village domain.

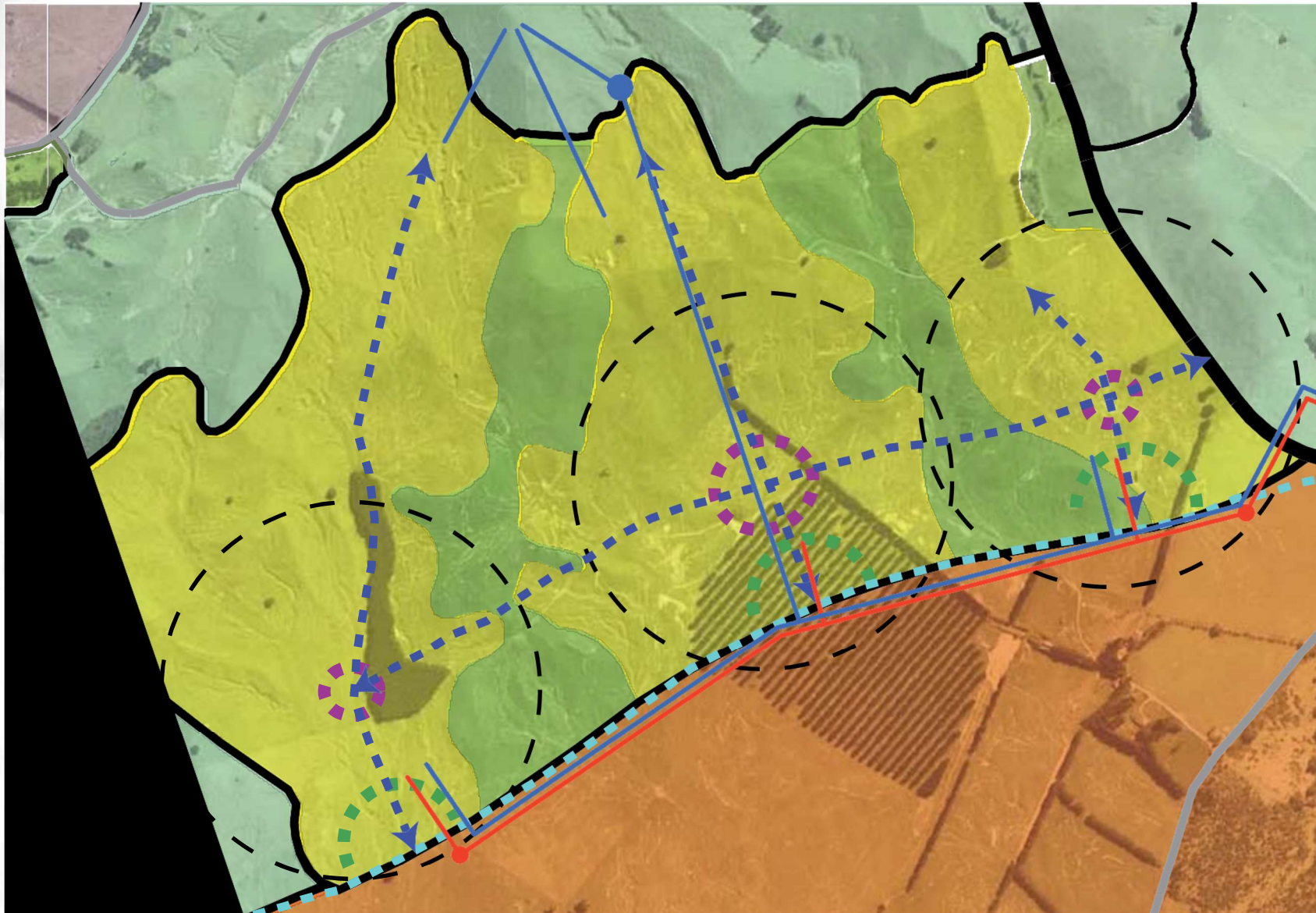
Where the domains are in close proximity to the Centre neighbourhoods as in urban areas and 2, this can be undertaken via open space linkages and street design. Where further apart as in area 3 the connection can be made through designing streets and structures to reinforce this connection for example a well treed and visually strong main route between the two supplemented by open space along it.

It is anticipated that a sportsground and district park facility of up to 20 hectares will be located within the Mapara Valley Area. This sports ground would comprise playing fields and associated facilities and be located on the valley floor side of the Rural Transition Road adjacent to neighbourhood two with linkages through to urban areas 1 and 3.

It may be continuous with or separate from a large district reserve area that could safeguard other natural features and increase recreational opportunities. For example, this could incorporate a landmark lookout or connections through to the Mapara Stream environment.

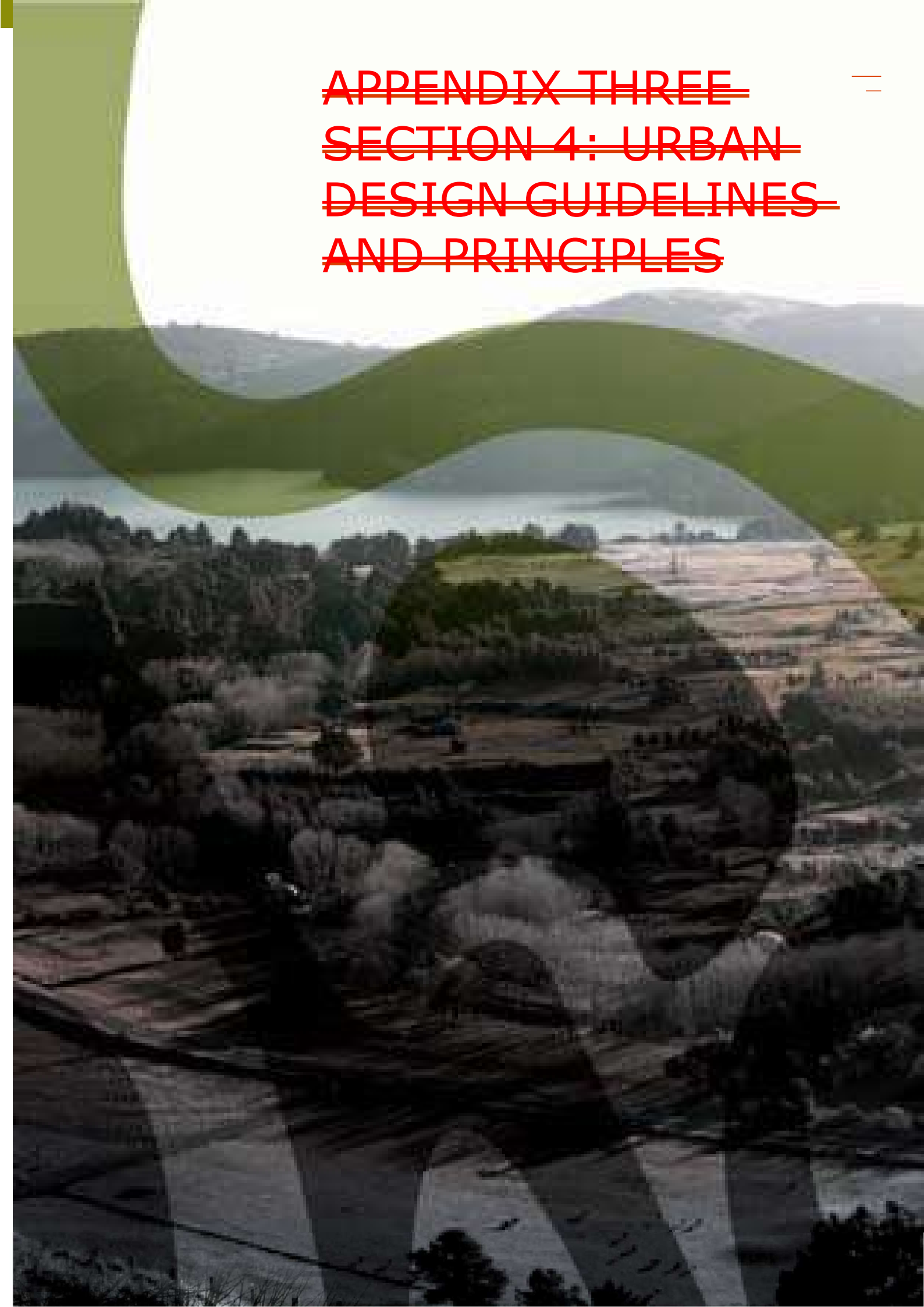


Map of Core Infrastructure



- Forest Clusters
- Re-vegetation/Retirement
- Urban
- Valley Clusters
- 400m radius from Centre
- Centres
- Indicative Main—Neighbourhood Road
- Indicative Rural Transition—Road
- Indicative Town Domain
- Water Main
- Proposed Booster—Water Pump Station
- Indicative High Zone—Reservoir
- Sewerage Main
- Proposed Sewer Pump Station

~~APPENDIX THREE~~
~~SECTION 4: URBAN~~
~~DESIGN GUIDELINES~~
~~AND PRINCIPLES~~



4.1 INTRODUCTION

These guidelines have been prepared in two parts. The first section is the Urban Design Guidelines for the Public Realm, while the second contains the Principles of Urban Design relevant to Private Development. This is a simple distinction to make in theory but there are a number of overlaps that make this relationship elastic, depending on the context.

The Guidelines for the Public Realm (the Guidelines) have been created to perform a number of tasks. They outline at a high level the design direction and approach to be undertaken in the Development Area Plans. These plans will be submitted for each urban area and will outline the detailed approach to urbanisation of these areas.

The Guidelines are not focussed on the minutiae of design detail, which will emerge at later subdivision level, but on ensuring that the basic building blocks of each urban area are correct at the outset. They focus more on the structure of the urban areas to ensure that this is developed in a sustainable fashion.

The Guidelines look at three major elements important to the creation of sustainable patterns of settlement. These are:

- Circulation — for example streets and access ways within the community
- Open Space — for example squares, reserves, recreational areas
- Structures — for example buildings and areas of development

They also try to translate some of the aims of sustainable settlement design into practical design methods. The Principles for Private Development section supplements this, expanding into sustainable design advice for developments that occur within the structure set up by the Guidelines.

4.2 OUTPUTS REQUIRED FOR A DEVELOPMENT AREA PLAN

CONTEXTUAL ANALYSIS

This is the first stage of development for each urban area and will outline the initial development approach proposed. This is an analysis outlining the environmental constraints, features and preliminary concept for development that shape the overall approach to development. Further plans with more detailed information, including those below, will be added to in the contextual analysis.

MOVEMENT NETWORK PLAN

This will outline the street pattern and detailed design of Street Typologies to be used, including streetscape. Central to this is the network of streets and other access ways, including the network and linkages for pedestrians and cyclists.

The Movement Network Plan should also outline the potential transport impacts of the development. It should identify appropriate transport information that is required to assist in achieving integration between land use and multi-modal transport (including walking, cycling and driving etc.) at the local level and to provide information on how a proposed development will provide mobility for all users.

INFRASTRUCTURE AND SERVICING PLAN

This will outline the approach to infrastructure provision and servicing compatible with the broad infrastructure servicing requirements set out in the structure plan, including a Low Impact Design approach and those requirements identified in Section 3.0 Bulk Infrastructure. The Infrastructure and Servicing Plan will outline how these requirements have shaped and been shaped by land use.

OPEN SPACE NETWORK PLAN

This will outline the distribution and type of open space required in the Development Area, including linkages between them and recreational connections. This plan has interrelationships with Infrastructure and Servicing, Movement Network, Ecology Network and the Block Pattern and Land Use Plans.

BLOCK PATTERN AND LAND USE PLAN

This will outline the block pattern shaped by the street network and open space as well as the densities and locations of land uses. These will be shaped by the environmental constraints present and the design guidelines. The plan will set out the location of nodes and centres, the linkages between areas and the development controls to be applied to these.

ECOLOGY AND NATURAL SYSTEMS NETWORK PLAN

This will outline the natural systems within the urban area and detail how these have been included into the overall design. This has strong linkages to the Open Space Network Plan and the location and type of development in the Block Pattern and Land Use Plan.

URBAN DESIGN AND ARCHITECTURAL CODES

This will outline the detailed development responses required within the Development Area. This will cover all relevant development controls of structures and buildings and will be in general accordance with these Urban Design Guidelines.



4.3 BACKGROUND — GLOBAL ENVIRONMENTAL ISSUES



The world continues to urbanise rapidly. Approximately 50% of the world's 6.5 billion people live in urban areas. By 2050, 60% of the 8.3 billion people will live in urban areas.

TD2050 P.30

It has been recognised since the 1992 Earth Summit that our current style of development cannot be sustained indefinitely. Environmental degradation has reached such levels as to affect the very ecosystems we are reliant on. A new approach has been affirmed by the United Nations: being sustainable development. The sustainable development approach was mandated by the 180 nations present at the Earth Summit. Agenda 21, the plan of action that resulted from the Earth Summit, sets out a global framework to achieve sustainable development in rich and poor nations alike.

In parallel, a growing disenchantment with the way we are 'growing' our urban areas has emerged internationally. The social isolation and resource dislocation caused by ever sprawling suburbia has been called into account by the design professionals:

Into the third millennium it is becoming more important to reflect on the future of the planet and the way it is being used. This may explain why the movement for a more sustainable future has intensified again, causing a rethink of human activity including the way human settlements are built.

The way we live, do business and use resources and energy must change. The vision of a more sustainable future is used increasingly to focus attention on environmentally sensitive business and development practices:

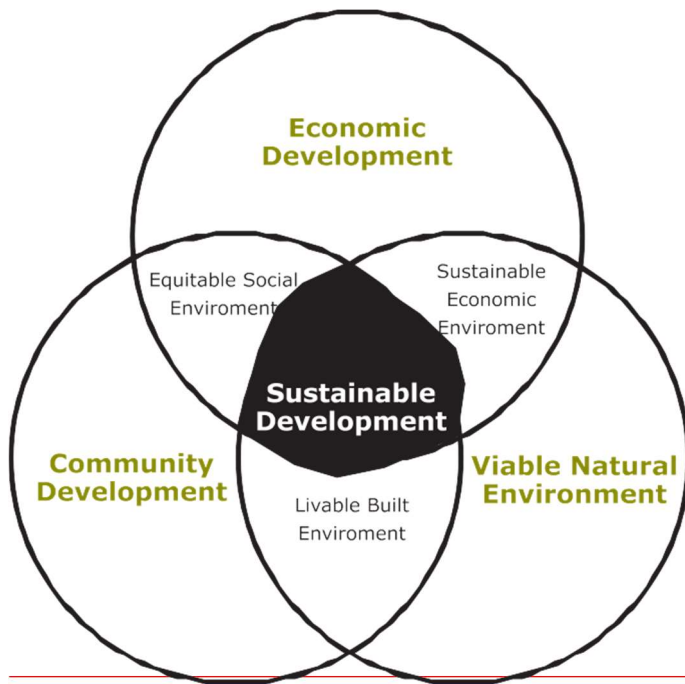
On a planetary scale there is increasing evidence of the magnitude of specific impacts which human activities have had on ecosystems and the capacity of the planet to sustain vital life support systems and natural resources:

These include:

- the destruction of the ozone layer
- climate change
- acid rain
- soil erosion
- destruction of the rainforests and wetlands
- desertification
- loss of agricultural land
- water pollution
- decreasing biodiversity.



4.4 URBAN SETTLEMENT AND GLOBAL ENVIRONMENTAL ISSUES



"The environment is where we all live; and development is what we all do in attempting to improve our lot within that abode. The two are inseparable."

Brundtland

Paramount to the sustainability debate is the very form our urban settlements and expansion take. Urban expansion and resultant energy consumption, land take-up and waste generation is threatening our biosphere. Yet urban form has been largely ignored and our buildings continue to be designed for the past century.

Political and public opinions have moved over the past decade towards a position of conservation of the environment as a primary concern. There is a need to develop a low-impact, low-consumption, low-movement society and urban pattern of living in order to achieve a more sustainable urban form.

The rate of change makes it important for the urban environment to be flexible enough to accommodate alternative uses if it is to remain relevant.

Throughout the post-World War II era, there has been a move to suburbia for privacy, mobility, security and homeownership. What people have increasingly found is that this model creates a number of problems including social isolation, congestion, rising crime, affordable housing and struggling city centres. Add to these the problems of environmental and social stresses of sprawl

and the result is a desire for a new model of development.

The 'Urban Village' concept offers an opportunity to define a new style of development, one that is sustainable and 'green'. Ever-increasing sprawl is creating numerous environmental and social problems.

We need to recreate the village, one that has its own centre, with amenities, community facilities and recreational opportunities. This proposed design can provide a greater quality of life than a suburban development. It can also regenerate a degraded ecosystem, using development to restore rather than destroy ecological capital.

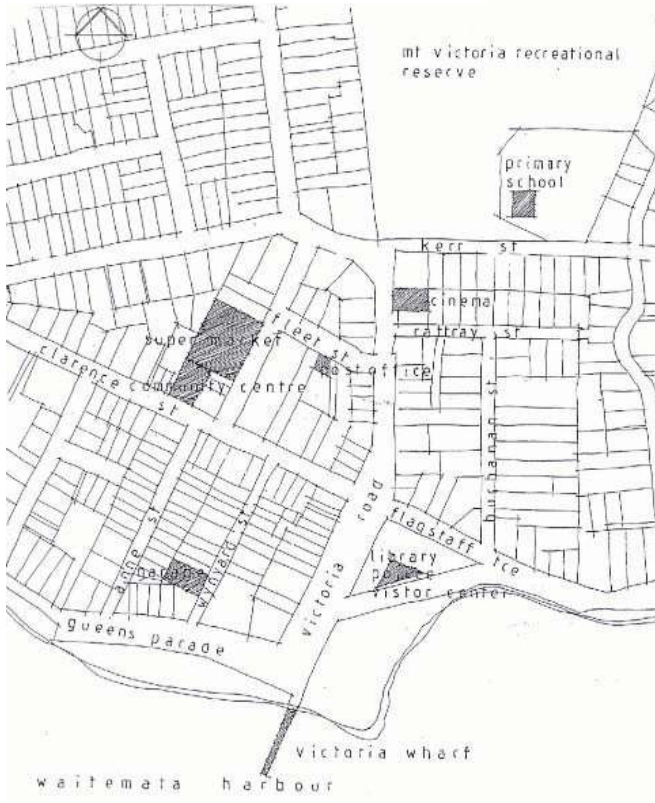
Internationally, green development is seen as the cutting-edge of real estate development. It can produce resource and energy-efficient urban forms, while empowering communities to become involved in the process through citizen participation and civic and community facilities. This helps to generate a greater awareness of environmental, social and economic issues within our communities.

In the new set of values—green, innovative, sustainable—we have to face the fact that people's aspirations and requirements in the next few decades are going to be very different from today. Specifically, people are going to look for a new lifestyle with its own quality of life and a much greater sense of community and neighbourliness.

For this reason, there is a return to a preference for compact village and town development where each settlement has its own identity and character. In America this is being demonstrated in New Urbanist towns such as Seaside, and in Europe in the Urban Village movement, as at Poundbury.

Urban design is a key to creating sustainable developments and the conditions for a flourishing economic life, for the prudent use of natural resources and for social progress. Good design can help create lively places with distinctive character; streets and public spaces that are safe, accessible, pleasant to use and human in scale; and places that inspire because of the imagination and sensitivity of their designers.

Quoted from "By Design", Commission for Architecture and the Built Environment (CABE)



*Top: Devonport,
Auckland. Urban
Structure is typical of
traditional walkable
settlements in NZ*





4.5 URBAN VILLAGE MODEL OF SETTLEMENT AND DEVELOPMENT

In summary the core beliefs set out in the Urban Village model are to:

- enhance the conservation estate of bush, stream, wetlands
- maintain people's access to the countryside and ultimately a connected network to the wider environment
- have an easily comprehended structure and a celebratory public realm
- be rich in rural associations
- be distinct in urban design
- be distinct in architectural design
- contain interesting activity
- be easy and pleasant to move around
- have a diversity of neighbourhood characters
- have a diversity of citizens
- be ecologically sensitive
- be sustainable and regenerative towards the environment
- respect, recognise and celebrate cultural memories.



4.6 POUNDBURY, DORCHESTER, UNITED KINGDOM

Plan of Poundbury

Phase 1 — approximately 240 homes. A significant new extension to Dorchester on 400 acres (160ha) of Duchy Land. It increases the urban area of Dorchester by thirty per cent.

Population

Gradual growth, eventually accommodating 5000 people.

Architect

Master plan prepared by Leon Kreir in 1988.

Date of Commission

Building began in 1993.

Housing Typologies

Twenty per cent of houses for rent or part rent/part ownership.

Density

Phase 1: 10ha; 240 houses = 24 houses per hectare (gross, including roads, parking and courtyards etc).

Landscape

Thirty three percent of the site will be green, landscaped with parks and places for children to play. Tree planting is extensive, with semi-mature natives are planted in all streets and courtyards.

Philosophy

The Prince of Wales, with the Duchy, was determined that Poundbury would be a modern development that respected the traditions of the past whilst also looking forward to the requirements of the 21st century and beyond.

However, the philosophy of Poundbury is not just about architecture as is often thought. It is very much to do with the careful, detailed planning of an attractive, modern and pleasing place in which people can live, work, shop and play. Central to the Poundbury concept is that a new development of this size should include not just houses and flats but also workplaces, shops, schools, leisure and community buildings.

Principles in "A Vision of Britain" by HRH Prince of Wales concern

- PLACE — understanding and blending with the landscape
- HIERARCHY — relationship of buildings to each other and the relative significance of their different elements
- SCALE — relating to human proportions and the scale of buildings in an area
- HARMONY — blending buildings with the local and natural environment
- ENCLOSURE — defined boundaries to develop and defined areas such as squares and courtyards
- MATERIALS — using traditional materials which celebrate a region, nothing standardised
- DECORATION — careful craftsmanship enhancing every aspect of every building.
- ART — is part of the whole environment and can add symbolism and meaning
- SIGNS AND LIGHTS — well designed street signs, advertising in its place and careful use of artificial light
- COMMUNITY — a sense of pride and a feeling that everyone contributes to the planning and organisation of the place

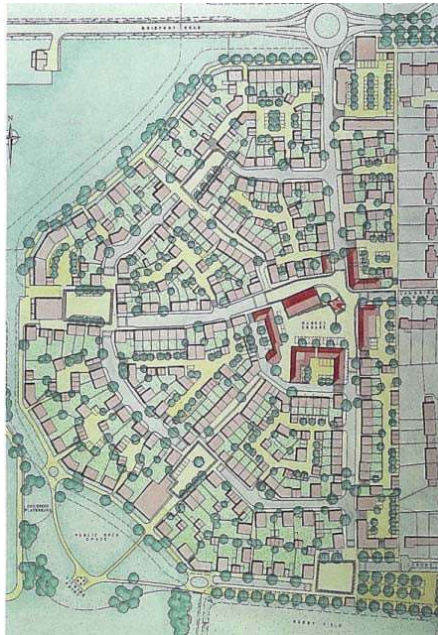
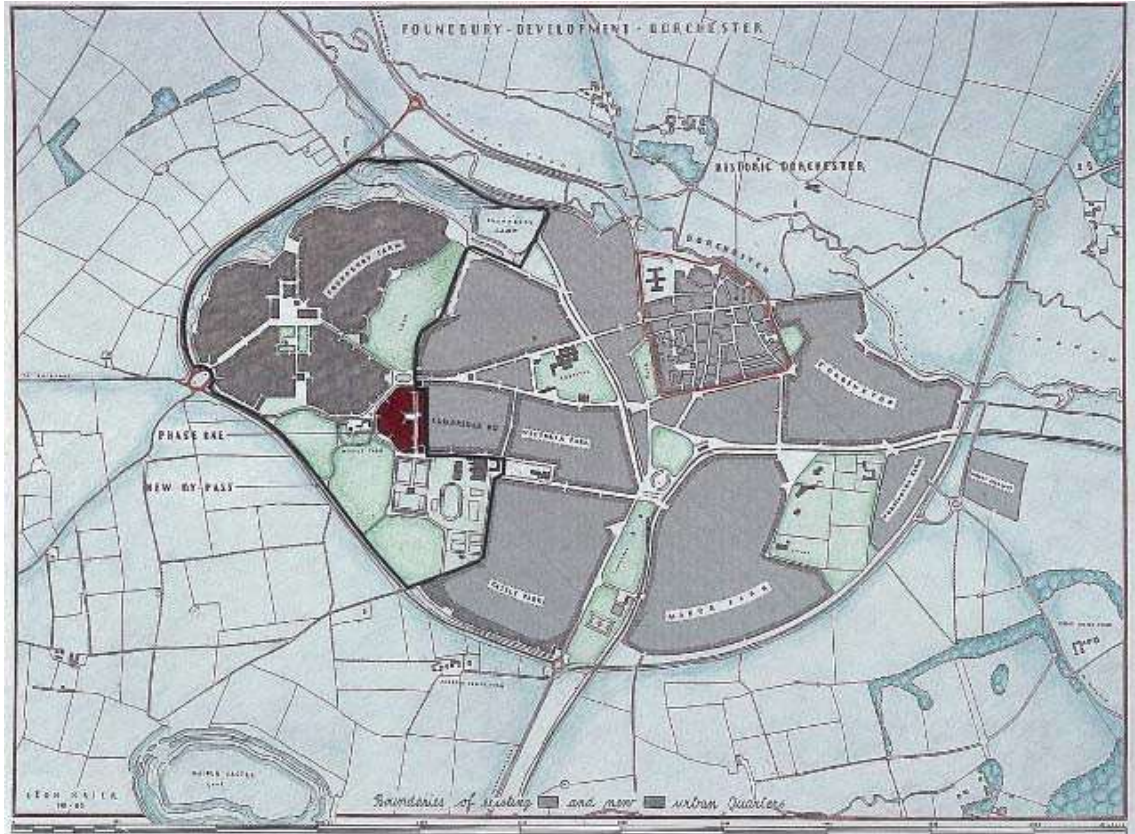
Design

The design reflects the English village tradition with the largest possible variety of urban plots — despatched, semi-detached and terrace houses, mews, squares and courtyards — all creating attractive streetscapes. The master plan divides Poundbury into four distinctive areas — or communities — as part of Dorchester.

A key outline of the design brief is a set of guidelines drawn up as the Poundbury Building Code that prescribes certain traditional materials and the scale of individual buildings.

Roads are generally irregular and winding, controlling the speed of vehicles in a natural way and forming public spaces of a highly individual character.





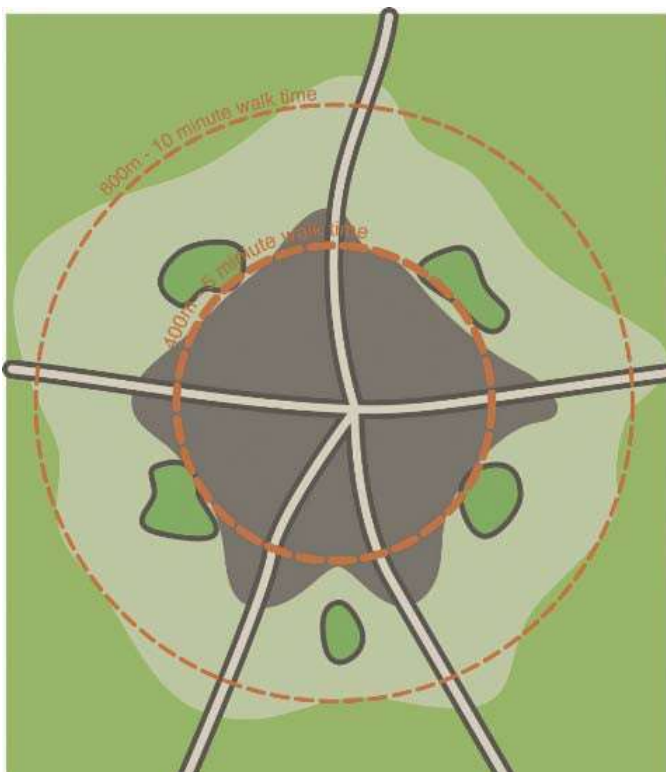
This historic approach to the planning of Poundbury meant that designers had to create townscape, landscape and road layout in ways which might encourage the growth of an integrated community.



4.7 HISTORY OF SETTLEMENT PATTERN IN NEW ZEALAND

There are a number of historical models of urban settlement within New Zealand, including models based on the Urban Village concept. A significant shift in the design and development of our urban settlements occurred in New Zealand when these settlements began to be designed 'around' the car, not designed to 'accommodate' the car. A brief history of models present in New Zealand illustrate some of the benefits of each, which could be combined into a more sustainable model.

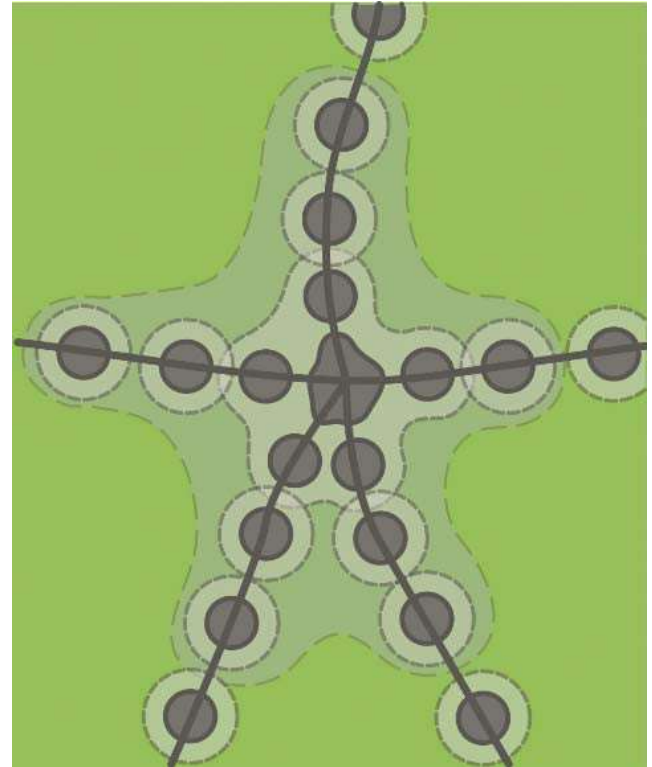
WALKING SUBURB



In the early development of New Zealand, the Wakefield idealism was of a traditional urban form that attempted to establish urban communities that integrated social, economic and familial activities and reduced the spatial distance between home and the workplace.

The Auckland urban villages of Devonport, Ponsonby and Mount Eden and the Wellington suburbs of Khandallah, Brooklyn and Te Aro were designed with traditional town ideals in mind, where amenity sits alongside density and a mixture of people live in a walkable, rich social environment. Today, these are amongst the most popular living environments.

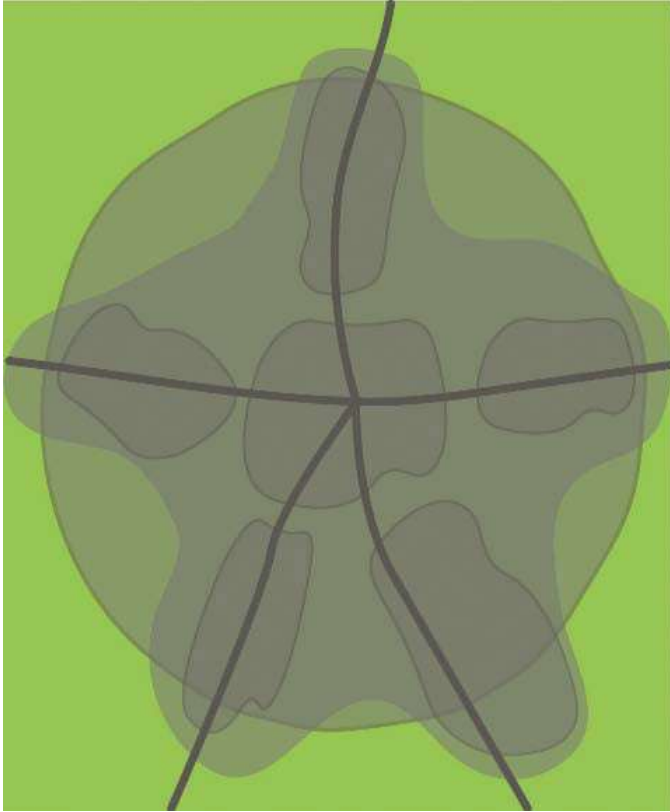
TRANSIT SUBURB



Like America and Australia, New Zealand moved away from traditional urban form and embraced the design ideology of suburbia. New Zealand had ample space to develop suburbs, and the house and the quarter-acre block became the ideal. The ferry and train became the connection with the workplace. Auckland inner suburbs such as Epsom, Grey Lynn and Westmere reflect this urban form.



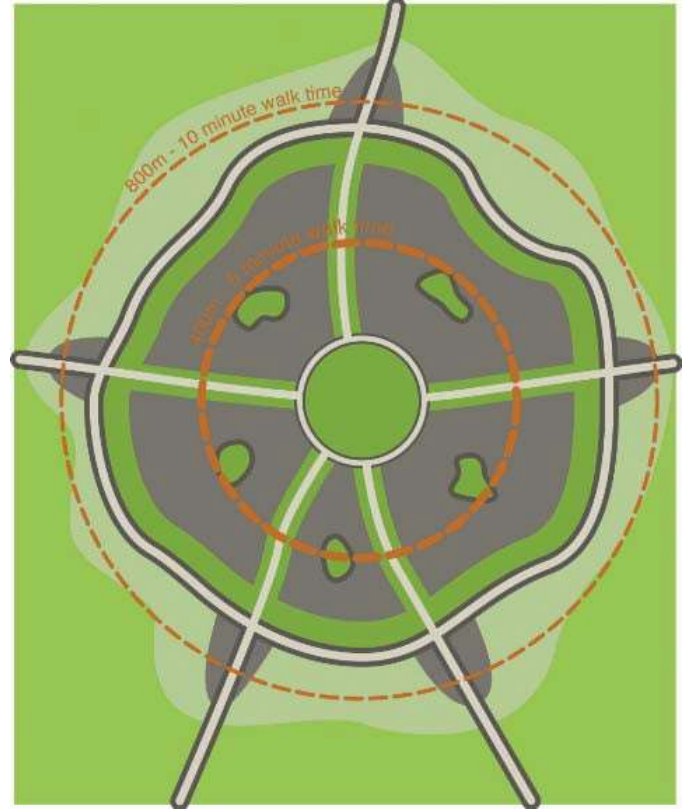
CAR-SUBURB



With the revolution and liberating effect of mass-produced automobiles a new suburbia was created—one of sprawling zones. Such suburban housing has traditionally been planned in large areas of uniformly sized blocks and section sizes. This has often hindered the capacity of the neighbourhood to house communities of mixed households, ages, incomes and lifestyles.

This model provides a number of benefits to its inhabitants, such as privacy, but has a tendency to become the dominant or indeed only model of development, lacking the diversity required within settlements. With the growing environmental and social issues related to this form of development becoming apparent, it is clear that this model in the long run functions unsustainably.

GARDEN-SUBURB



There is however another model that refers back to the Wakefield tradition of settlement in New Zealand. The 'Garden City' movement founded in England in the early 20th century introduced the concept of bringing together the best features of the town and country.

It strove to provide better housing, environmental conditions, social welfare and economy and to provide this in an aesthetically pleasing style in an Arcadian environment.

The garden city philosophy reflects the tradition of self-contained walkable communities, public transport and three fundamental elements:

- expressed public realm—streets, cycleways, parks, reserves
- individually owned house lots, with higher density at centre and mixed use cores
- open space owned and used in common by neighbours.

This model is closest to the Urban Village concept, which is an attempt to marry the best aspects of each of these models into a more sustainable form.



4.8 NATIONAL AND LOCAL CONTEXT

In response to these growing international issues there has been a rapid shift within New Zealand to reintroduce the principles associated with high quality and sustainable urban form. The Urban Design Protocol 2004 cemented the national mandate to seek the active design of urban settlements. This protocol contains seven essential design qualities that together create quality urban design. All of these are found in the Urban Village concept that sits at the base of the Mapara Valley Structure Plan.

Context

– seeing buildings, places and spaces as part of whole towns and cities

Character

– reflecting and enhancing the distinctive character, heritage and identity of our urban environment

Choice

– ensuring diversity and choice for people

Connections

– enhancing how different networks link together for people

Creativity

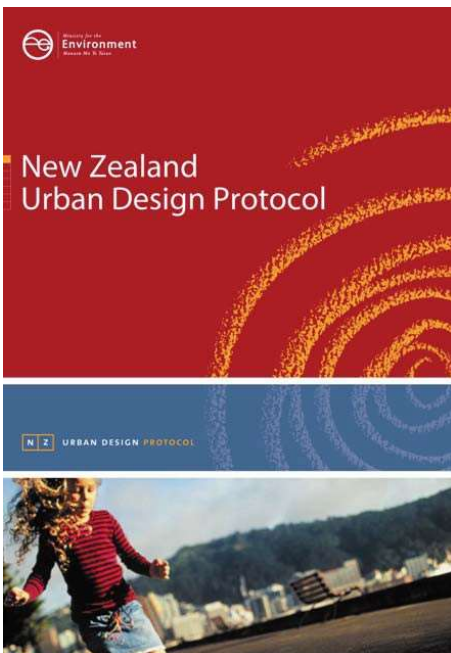
– encouraging innovative and imaginative solutions

Custodianship

– ensuring design is environmentally sustainable, safe and healthy

Collaboration

– communicating and sharing knowledge across sectors



4.9 GUIDANCE FROM TD2050

In response to this growing mandate TD2050 has set out an approach to growth that follows on from these ideas. All of the ideas encapsulated within TD2050 go to the very heart of the Urban Village concept and give clarity to what is required to apply this model locally.

TD2050 sets out the 'Key principles behind Liveable Communities and other sustainability approaches to managing growth' on p.26.

The principles include:

- mixed land uses
- compact building design
- housing opportunity and choice
- variety of transport choice
- walkable neighbourhoods
- distinctive attractive communities with a strong sense of place
- strengthening existing communities
- preserving open space, farmland and natural beauty
- predictable, fair, and cost-efficient decision-making
- citizen and stakeholder participation in development decisions.

In addition to the Liveable Communities model outlined above TD2050 contains a series of design principles that will need to be applied to meet more diverse lifestyle and economic trends in the future. The principles, on p.141, are

- consolidation and dispersal
- integration and connectivity
- diversity and adaptability
- legibility and identity
- environmental responsiveness.

These principles are taken from 'People, Places and Spaces' 2002 a forerunner document to the Urban Design protocol. The seven design elements contained in the Urban Design Protocol are sourced from these principles and are all in line with the Liveable Communities and Urban Village models of settlement and development. Collectively they demonstrate a strong mandate and policy direction from the global through to the local as to the direction that should be taken with Taupo's urban settlement patterns and development.



4.10 CONTRASTING URBAN STRUCTURES

The design principles outlined in the previous sections relate in the main to what is often called Traditional Urbanism, and this includes the Urban Village model. This is essentially the way that towns and villages have structured themselves over the last two thousand years. Traditional urbanism is structured on proximity, rather than mobility, to support routine and daily exchange among citizens.

By contrast Conventional Suburban Development (CSD) has become the dominant form of growth in the western world over the last fifty years, and is heavily dependant on the private car for almost all human movement (an example is the suburban sprawl of Auckland).

CSD planning tends to divide into land use zones, often single use zones which segregate land uses in an effort to protect one area from any possible negative impacts of another.

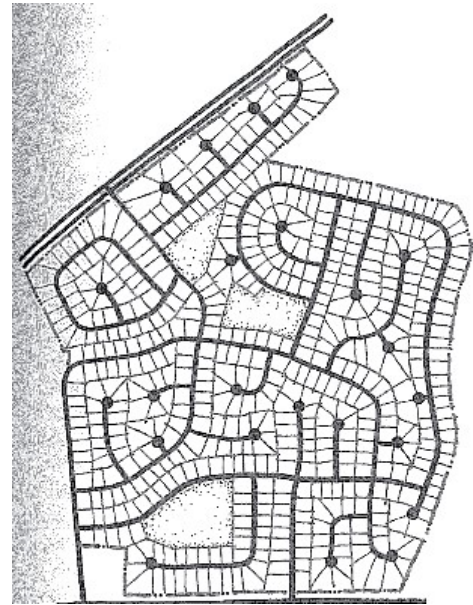
Despite the best of intentions, the last few decades of this kind of land use planning have shown many that this practice can do more harm than good. It does not reflect the diversity of our demographics or society. It forces excessive travel demand and prevents the compatible diversity that now seems more likely to create economic growth.

On a more simple level it does not create walkable streets where people can stroll, enjoy, exercise and "meet the neighbours".

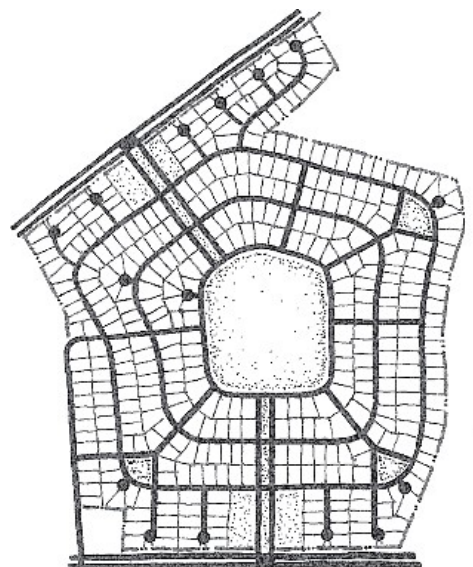
The figure opposite provides a cartooned contrast between Conventional Suburban Development and Traditional Urbanism.

The comparative cartoon shows conventional suburban development above the arterial road running across the middle, and traditional urbanism below. All our daily activities take place in both forms of development, but the street system and land use distribution are fundamentally different in the two structures.

The figure illustrates how CSD has poor street interconnectivity. Residential street systems are often made up of cul-de-sacs and collector streets leading out to a single access onto the arterial, and back onto another isolated street network.

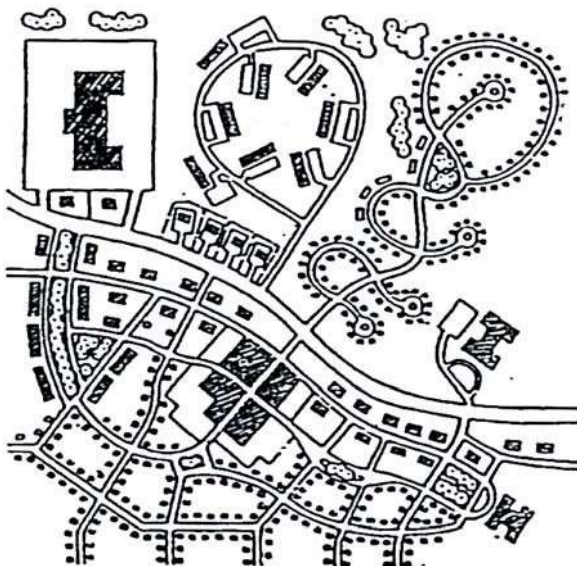


*Unconnected car-based CSD development with segregated uses.
Source: Community By Design*



*Connected model that facilitates walking, cycling and mixing uses.
Source: Community By Design*

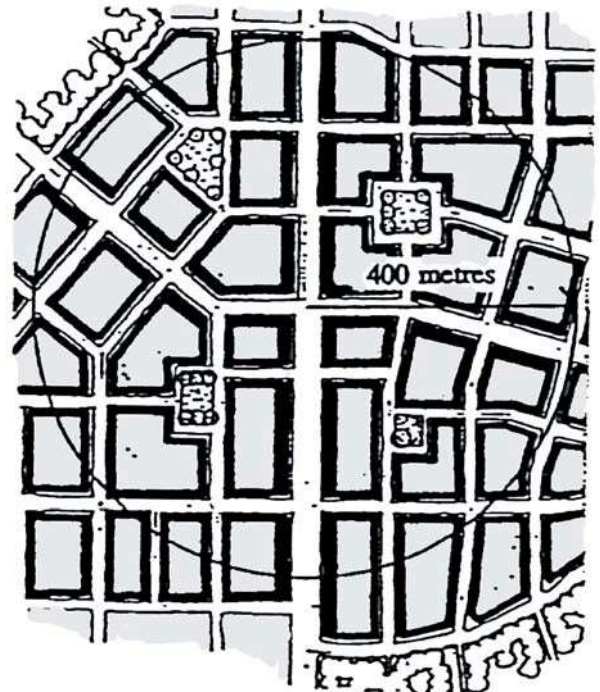
SUBURBAN SPRAWL



CONNECTED MIXED USE

(Duany and Plater-Zyberk)

THE NEIGHBOURHOOD UNIT: A MODULE OF MIXED USE



~~Driving from one land use to another is necessary because of the separation of activities. Access is largely dependant on the arterial routes, often generating traffic congestion despite usually low densities, because there are no alternative routes between the land uses.~~

~~In the traditional neighbourhood in the opposite of the figure, the same uses are compatibly mixed within relatively walkable catchments. The interconnected street system limits the need for local traffic to use the arterial routes. This relieves traffic congestion on the arterial, "because traffic is diffused through capillaries rather than confined to the arteries" (Andres Duany, DPZ). Along with driving, residents have a choice of getting around on foot, bicycle and public transport.~~

~~Neo-Traditional Urbanism (NTU), commonly called New Urbanism, is an adaptation of this Traditional Urbanism model. When NTU is used as the basis for urban settlement or development it is able to create new communities rather than just more Conventional Suburban Development.~~

~~NTU integrates communities that support their own local shops and social facilities, that provide appropriate opportunities for businesses to establish and that have interconnected street networks supportive of working. Their densities and structures are very supportive of public transport and are well integrated with their surrounding urban and natural contexts.~~

~~Most development in New Zealand over the past decades has been CSD, responsible for increased car dependence, longer commutes, poor environmental responses and few opportunities for social development.~~

~~As discussed previously traditional New Zealand settlements often exhibit the qualities of accessibility, walkability, diversity, mixed use and variety expressed in the New Urbanism literature. These are concisely expressed in the Urban Village model outlined.~~

~~The following table outlines some of the differences between New Urbanism and Conventional Suburban Development.~~



Design Issues	New Urbanism
Street Layout	Interconnected network with wide choice of access points, linking to adjacent development.
Cyclists and Pedestrians	Highly suited. Car speeds reduced by good street design, with footpaths and street trees both sides.
Siting of Shops and Facilities	Central and accessible (a prime requirement), aim is for a corner store within walking distance of most residences. Location on significant traffic streets often imperative to achieve viability.
Range of Housing Styles/Density	Maximum range, including higher density.
Target Market	All age groups catered for — full social mix.
Building Setback	Reduced setbacks often with usable front verandahs
Parkland	Well distributed for users, developed with park furniture and playground equipment, and actively fronted by development for passive surveillance.
Public Buildings	Sited in landmark locations, incorporating good architecture
Entry Features and Streetscape Works	Focus on streetscape in town centre, not just on entry.
Marketing	Developer sells completed home (and community), or sells lots with detailed house design controls.
Developer Margins	Developer is rewarded for turnkey house sale convenience, good design and wider choice. Margins usually increase over time as community matures and becomes more attractive.
Social Outcomes	A sense of belonging is achieved.
Arterial Frontage	Actively fronted with a mix of uses, with service roads and/or rear lanes.
Business and Employment	Locations identified and designed.
Public Transport	Development is structured to ensure reasonable level of public transport and good access to it; relatively high

density-
strengthens-
public-
transport-
viability.



4.11 PRINCIPLES OF URBAN DESIGN

A shift has occurred over the past 25 years, driven largely by the revival of Urban Design championed by Oxford Brookes Joint Centre for Urban Design.

CONNECTIVITY...

is how an area connects or stitches into the wider environment—the large movement networks or collectors/arterials. It is concerned with how the development connects to the world outside of its immediate boundaries.

Connectivity is about movement systems through an area to other places outside the settlement. This includes green and blue corridors (landscape and waterways), transit corridors, walkways/cycleways and the ability to stitch into existing networks and improve or complete access and ecological networks.

PERMEABILITY...

is the ability to move freely and unhindered throughout an area. This is provided by uninhibited access through integrated street networks including arterials, local access ways and lanes, that provide appropriate block structure. This provides maximum route choice for all users and distributes transport demands across the street network.

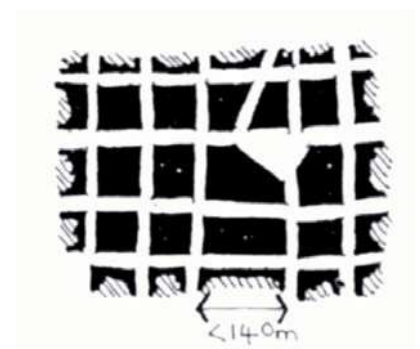
Both of these principles are strongly related to the other principles of Accessibility, Sociability and Safety.

The principles of urban design as demonstrated by Brooks are

- connectivity
- permeability
- vitality
- robustness
- regenerative
- identity
- concentration



A connected series of blocks.



A permeable network of streets and blocks provides maximum route choice.

4.11 PRINCIPLES OF URBAN DESIGN

ACCESSIBILITY, SOCIABILITY AND SAFETY....

are principles concerned with equity—the opportunity for all people to have access to facilities and resources. To develop an empowered community, access must be related to all. A range of facilities should be easily accessible through a well-designed street network.

In built form outcomes this is largely concerned with public spaces and access to resources/facilities. Communities need a wide range of public spaces—streets that are safe for children, formal parks, squares, market places, areas for festivals and community organisations, wilderness areas and lookout points, walkways, bridle ways and cycleways.

This public fabric needs to be safe and overlooked with easy, free and constant access guaranteed. If an environment is not seen as safe, culturally empowering and inclusive then it is not equitable.

Traditional NZ settlements often exhibit these qualities by providing a permeable street network, walkability, diversity, mixed use and variety of land use. Most traditional centres were developed before cars became widely available and were dependent on walking, local services and public transport.

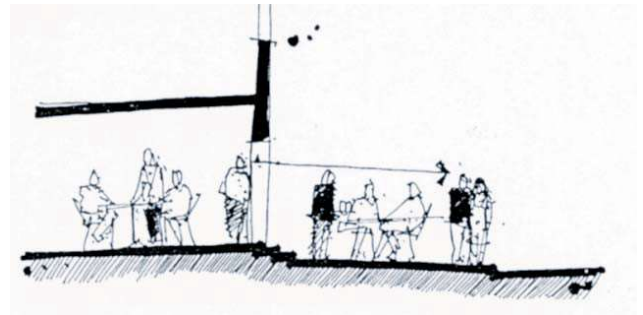
VITALITY....

is provided through a people friendly mixed-use environment with sufficient concentration of residents and visitors to generate a mix of retail, entertainment and recreational uses.

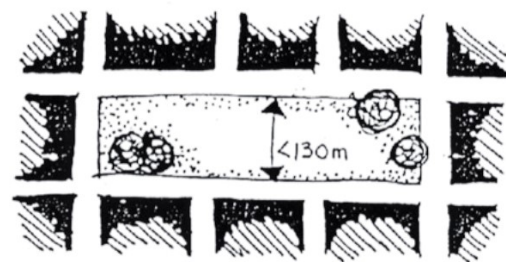
This is directly concerned with the principle of Diversity, which is a fundamental shift from conventional suburban design to a form conducive to creating a community with variety and vitality.

Fundamental to this is the mixing of uses and house types within settlements. This mix of uses and activities in an area, rather than segregation, defines this design approach. It not only adds to the vitality and safety of a place but provides opportunities to localise employment and services within walking distance of residents.

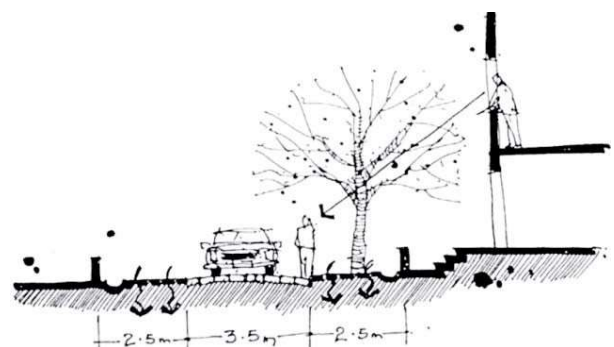
Diversity extends to other aspects including a variety of public spaces, landscapes, planting and other elements of the urban form. A diversity of building stock and house types can add to affordability and extend people's ability to stay within a community through a series of life changes.



Mixed use can add activity and vitality to the street.



Design open space to be overlooked by development.



Activity that overlooks the street can make a place safe and inclusive.



4.11 PRINCIPLES OF URBAN DESIGN

ROBUSTNESS...

The block size and structure should facilitate a wide range of uses over time and the built form should be designed for adaptive re-use. This principle is strongly related to

REGENERATIVE....

is creating environments and buildings that are resource-efficient, environmentally responsive and that have the ability to adapt to changing needs and uses over time.

It is focused on creation of an ecologically rich and balanced response to the design of a settlement. It relates to both the built and unbuilt environment. Fundamental to a resilient environment is the ability to create a balance in dealing with resources eg. stormwater, wastewater. It involves identifying ecological areas to be preserved and most importantly created or restored.

It is concerned with creating a "green" environment that absorbs CO2 and re-oxygenates the atmosphere. It is also concerned with a wide range of sustainability issues including energy-saving, use of renewable resources, recycling of materials and water, biotic support, collection, wise use and disposal of water and the creation of a clean and non-polluting environment.

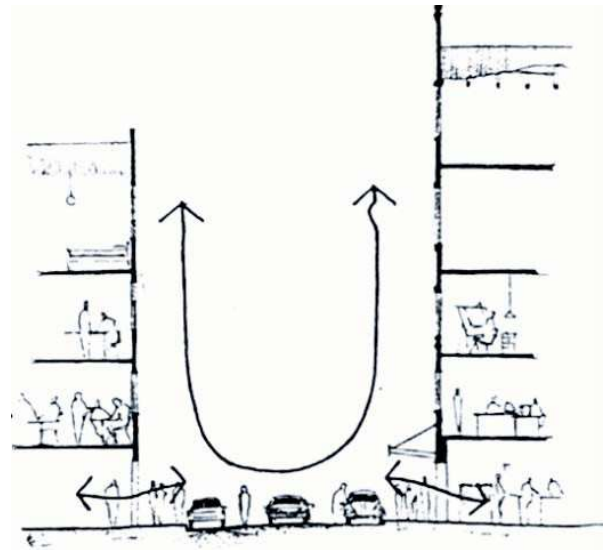
A healthy, resilient environment is prosperous, has a compact urban form and a surplus of open space. It supports local services including public transport.

IDENTITY / CHARACTER...

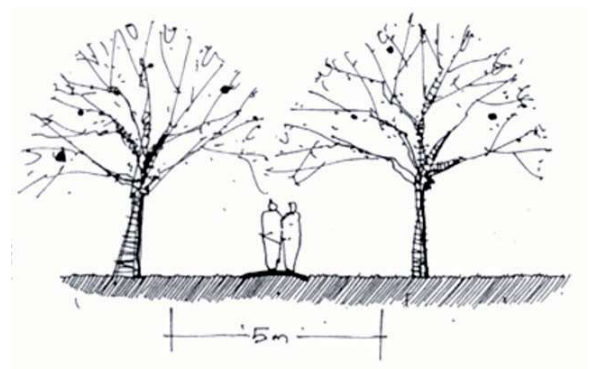
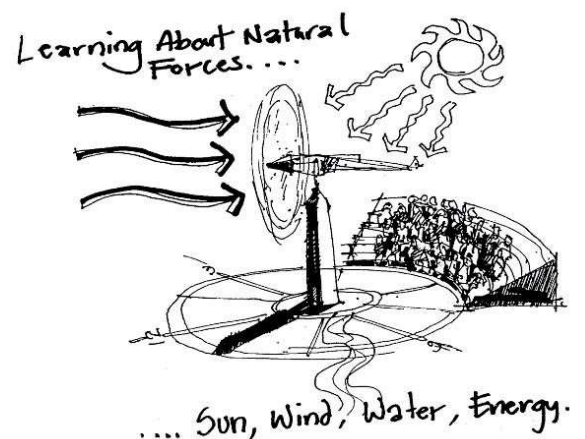
a place needs to be distinctive in character and that allows people to experience, and 'take ownership' of, their unique community. The creation of identity or sense of place and belonging is the art of town and place-making.

It requires a strong understanding of context, culture and relies on a strongly legible environment where a town can be easily read through the appropriate siting and location of buildings, streets, parks, art and decoration.

There is also an opportunity to develop regional identity and identity related to core values of the development. This may be by respecting land form, vegetation and morphology of an area, using local materials, expressing cultural identity or defining a vision through architecture and art.



Robust buildings allow a wide mix of uses that can change over time



Open Space can provide a strong sense of identity and add to local character

4.11 PRINCIPLES OF URBAN DESIGN

CONCENTRATION...

is appropriate density and intensity of use, set within an integrated permeable grid to ensure vitality. Concentration is key in developing vitality, safety, community and tolerance. It gives a greater level of accessibility to the population and limits development to those areas where it is beneficial.

Designing for concentration revolves around

- density
- connected street patterns
- mixed uses and typologies.

Densities have to be above a certain threshold to promote local services, walking and vitality in the street. The challenge for urban designers is to create these densities in environments that are marketable and liveable areas. This assumes a higher quality of environment, streets, parks, public spaces and amenities.

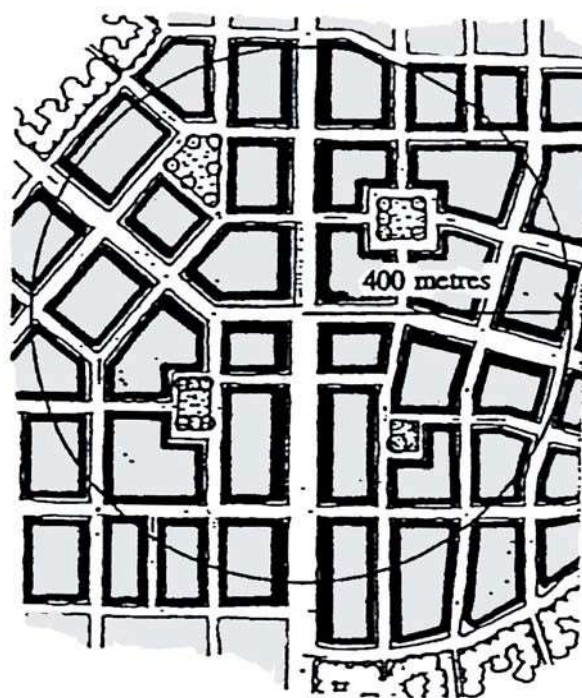
In addition to the above Principles the Principle of 'Context' is added to round off and integrate them all.

CONTEXT

is an additional principle, one which integrates them all. This is the foundation of design, whether in a Greenfield site or existing urban environment. The context creates the basis for a 'design fit'.

It consists of a layering or sieve mapping of information that will define the environmental capacity of a site to absorb growth, the impacts of that growth on the socio/economic systems of the area, the infrastructural requirements, the cultural mapping and the sense of place or 'genus loci'. All sites have a particular context and the contextual analysis and background reports shape the final design.

THE NEIGHBOURHOOD UNIT: A MODULE OF MIXED USE



A compact neighbourhood provides a range of opportunities for inhabitants.



Bay of Islands, New Zealand

4.12 MAJOR STRUCTURING ELEMENTS OF SETTLEMENTS

Settlements at any scale can be divided into three broad spatial components that are useful for analysis and design of these environments. Each of the components will be dealt with in detail, describing the major tenets of the design approach:

CIRCULATION

Represented in the structure plan by Streets (including Cycle/Pedestrian facilities) and Recreational Access Connections.

This component allows movement and mobility within and through an area, providing access and helping to bring vitality. This is an essential component to any settlement but this element needs to be balanced against other factors. Overemphasis can eliminate or reduce the diversity that a well-designed environment requires—for

example, large roads designed solely for the car.



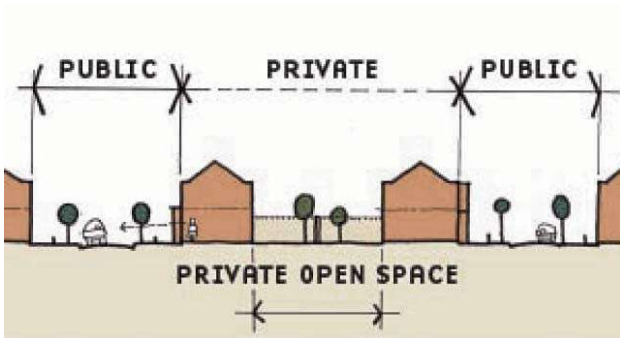
Boulder, Colorado, US.

OPEN SPACE

Represented in the structure plan by Local Open Space, Town Domain, Village Green, Open Space Linkages into the wider valley system.

This is an essential element of well-designed places, but often in conventional development is provided by the areas left over after development is planned. It is essential that open space provides a variety of environments for a variety of users—for example squares and plazas, small local parks and larger district facilities. All open space should be part of a comprehensive and accessible network

that is designed at the outset.



Source: Kapiti Coast District Council
Subdivision Design Guideline

STRUCTURES

Represented in the structure plan by Development within Urban Areas (Centre Neighbourhood, Village Core Neighbourhood, Village Residential Neighbourhood) and Rural Areas (Valley Clusters and Forest Clusters).

These are the buildings and places that are the locations of a community's daily activities, where we work, live and play. They are important in framing the relationship between circulation networks and open space. These relationships can be positive and harmonious or discordant and contrary depending on how structures are designed. Structures should ultimately seek to provide a comfortable, pleasurable and varied experience for inhabitants.

PUBLIC REALM

Together these three elements combine to form what is commonly known as 'public realm'. There is not a definite and strong line between what is and what is not 'public realm'. It is a gradation as indicated on the diagram above.

The guidelines section will relate mostly to the relationship between Circulation, Open Space and some aspects of Structures. Other aspects related to Structures will be picked up in the section titled Urban Design Principles for Private Development.

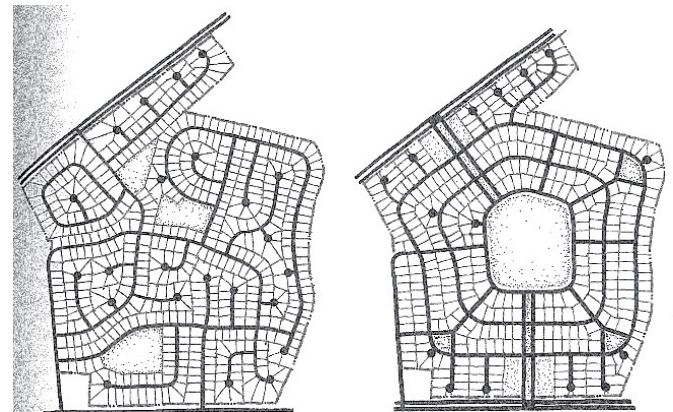


4.13 CIRCULATION

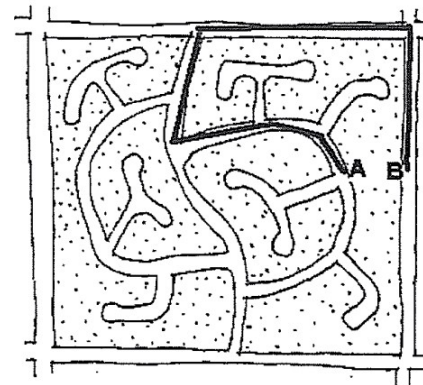
CONNECTIONS

- The street network will be designed to cater for all forms of transport, with particular focus on pedestrian and cycle users who have often been disadvantaged in the past. Promotion of these forms of transport will reduce car dependence and support casual social interaction within the community.
- All streets and pedestrian/cycle ways should be overlooked by development that fronts onto them. This will enhance passive surveillance of the street and ensure a feeling of safety for all users. High fences and blank walls reduce casual surveillance and should be avoided.
- The street network shall be a well-connected system that has clear understandable routes. It will provide many choices in route to shorten travel distances, particularly for walking and cycling.
- The street network will provide strong and logical linkages between important destinations such as open space, community and local facilities.
- Circuitous routes and cul-de-sacs should be avoided wherever possible. If required due to environmental or other constraints, they should be designed to allow safe pedestrian and cycle access through to adjoining streets.
- Signage and routes should enable people to

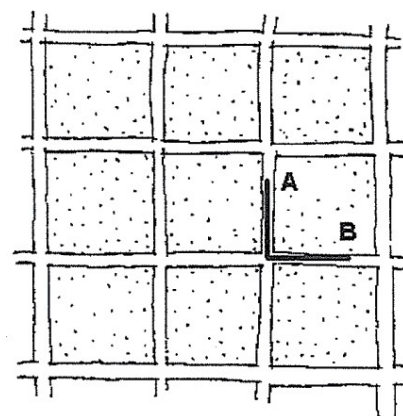
safely navigate their way through the urban area.



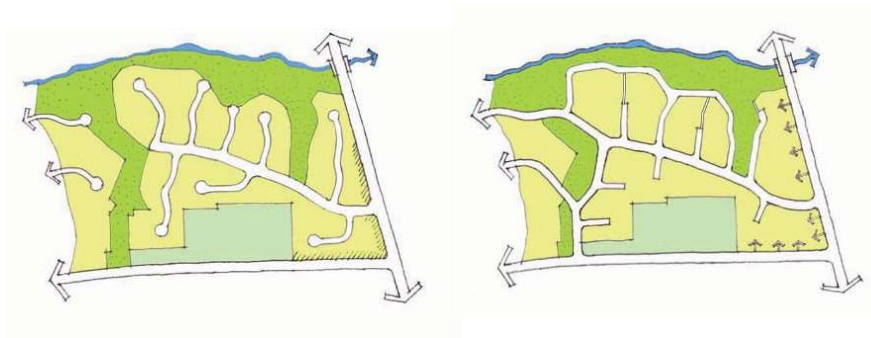
Comparing the two approaches. Source: Community By Design



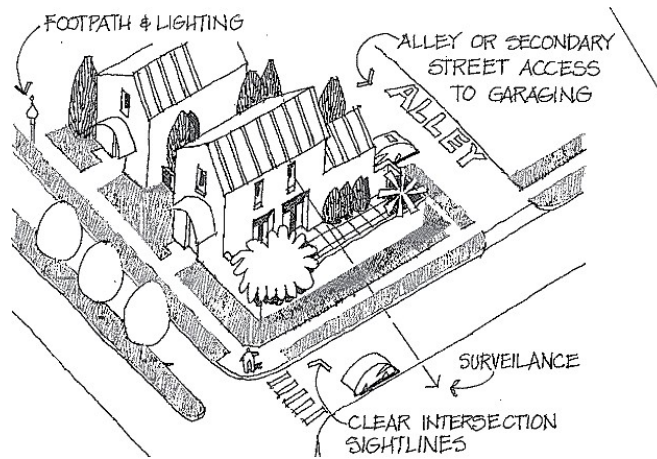
Limited connectivity and permeability in CSD.



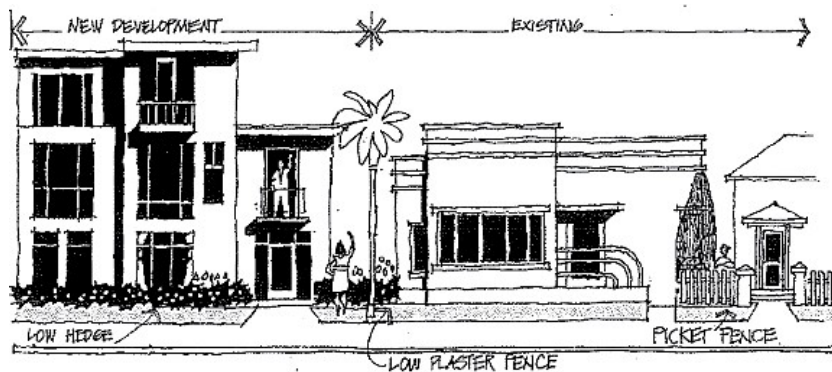
Maximum connectivity and permeability in a connected grid system.



*Connected cul-de-sacs versus conventional approach.
Source: Kapiti Coast District Council Subdivision Design Guideline*



*Above and below: Surveillance of the street and alley provided by fronting development to the street.
Source: Auckland City Council Residential Design Guide*



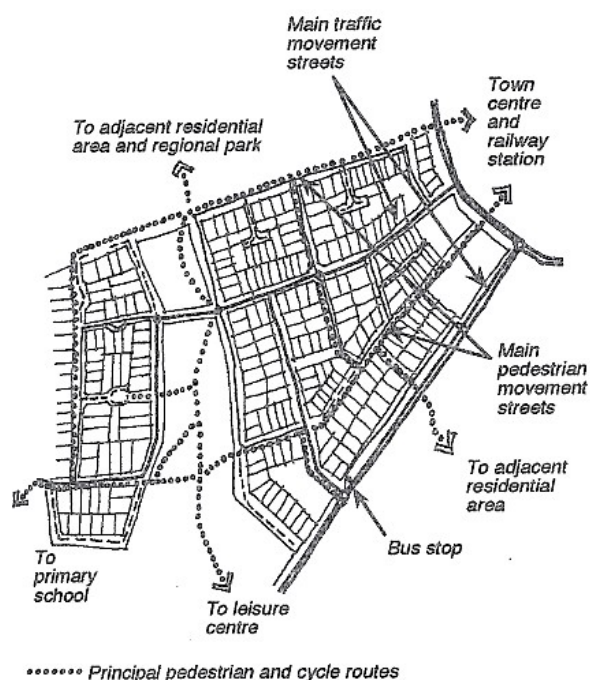


PEDESTRIAN AND CYCLE

- Pedestrian and cycle access should be provided on the public street network wherever possible. Separate access is allowable where this is part of a safe and overlooked recreational movement network (including open space) or where provision is not desirable in terms of providing quality facilities.
- All weather access for pedestrians and cyclists should be provided on all routes. Footpaths should be provided on both sides of the street unless environmental constraints prevent this.
- Recreational paths should widen at meeting points and junctions in high use areas to allow for passing of pedestrians/cyclists.
- Facilities should be provided in high use cycle areas including bicycle parking facilities, slower vehicle speeds, wide kerbside lanes on busier streets and routes that are parallel to arterial streets.
- On higher order streets like the Main-Neighbourhood Street dedicated on-street cycle lanes should also be provided.
- Facilities should be considered to meet the needs of commuting walkers and recreational walkers. This includes shelter from sun and wet weather, rest areas, a source of drinking water such as a fountain or tap for public use,

car parking facilities and park furniture. All these contribute to increased patronage, and are linked with positive health outcomes.

NETWORK OF PEDESTRIAN AND CYCLE ROUTES



Source: Victorian Code of Residential Development

4.13 CIRCULATION

LANDSCAPE/STREETSCAPE

- Streets should contain trees planted at uniform intervals in the amenity strips to provide an extension of and link to the open space network. Choice of species should reflect the local identity and help provide comfortable and safe environments such as shade in summer, light in winter.
- The street network should be designed around the existing landform, natural and cultural features. Layout should protect and enhance riparian margins, stream corridors and existing native vegetation.
- Existing trees and vegetation within street reserves should be retained and utilised where they can make a positive contribution to the visual character of the street.
- A Low Impact Design approach to managing stormwater should be built into the street. This should utilise swales, bio-retention and rain gardens to reduce stormwater flows and contaminant loadings. These should be used to supplement open space and traffic-calming measures within the street network where possible.

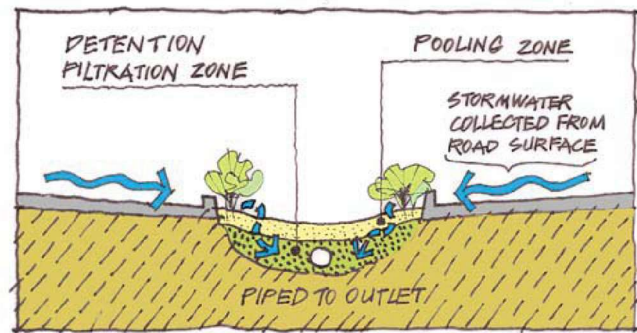


Diagram of a typical swale with photograph.

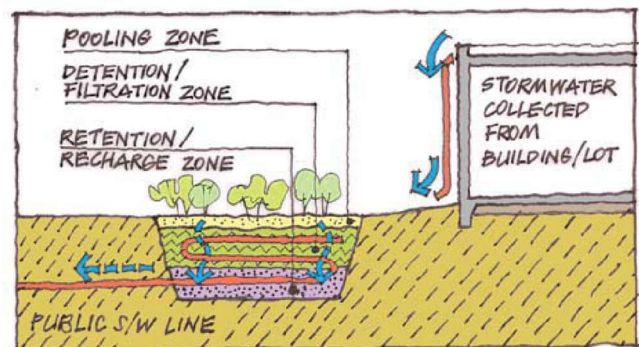


Diagram of a typical rain garden.

Source: Kapiti Coast District Council
Subdivision Design Guideline

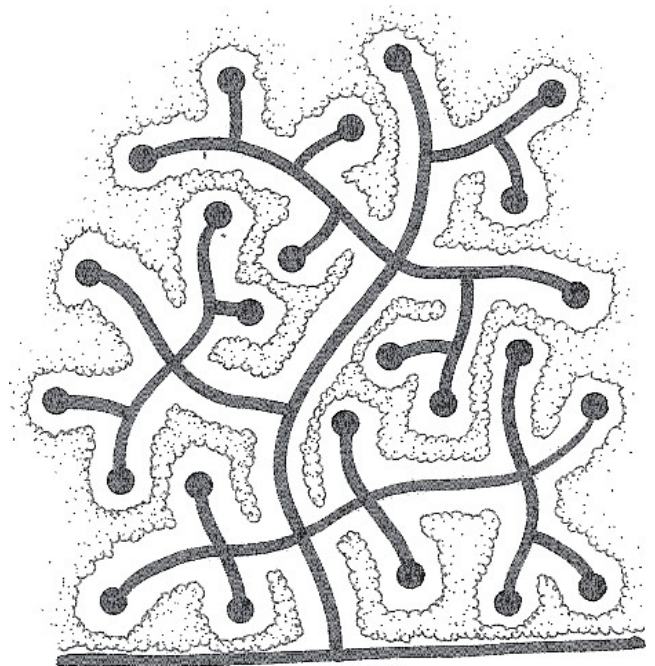


Source: Technical Publication 124—Low
Impact Design (ARC)

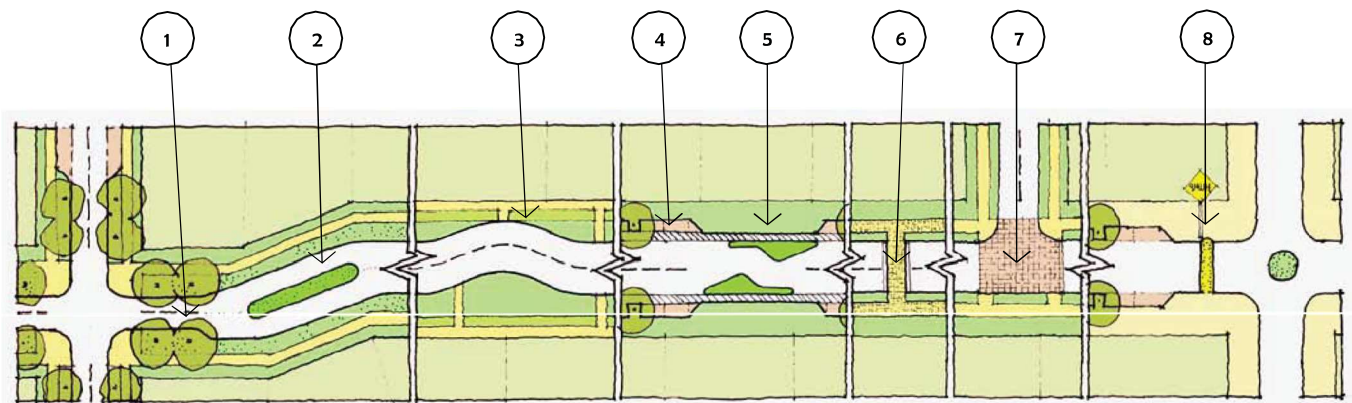
4.13 CIRCULATION

TRAFFIC

- A hierarchy of streets is proposed in the Street Typologies, but this is a flatter hierarchy than in conventional development. All streets are intended as through-routes to distribute traffic evenly, but some lower order streets may be designed for much lower speeds.
- A well-connected network of streets will help to distribute traffic evenly, reducing the potential for streets to become dividers within the community.
- Streets should be designed to encourage speed reduction through the use of subtle traffic calming. This could include limitations on the real and perceived street width—for example through the use of street trees and street furniture.
- Street geometry should be designed to limit the extent of long stretches of road and promote short leg lengths. Intersections and turning radii should be physically designed to minimise speeds.
- Higher order streets like the Main Neighbourhood Street should be capable of accommodating public transport such as buses, unimpeded by parked cars. These routes will link smaller nodes within the urban area that have greater concentration of development and local facilities.



*CSD model which concentrates traffic on a few major arterials
Source: Community By Design*



Source: Kapiti Coast District Council Subdivision Design Guideline

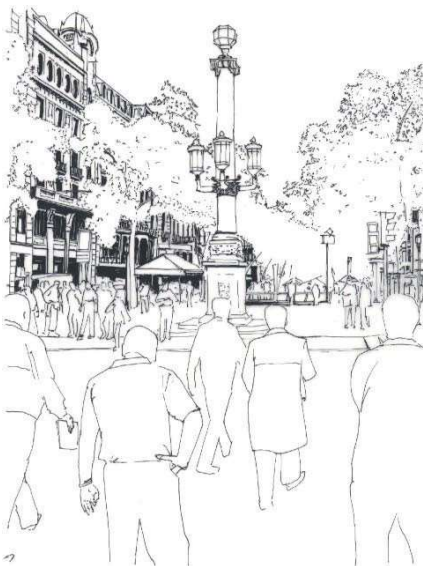
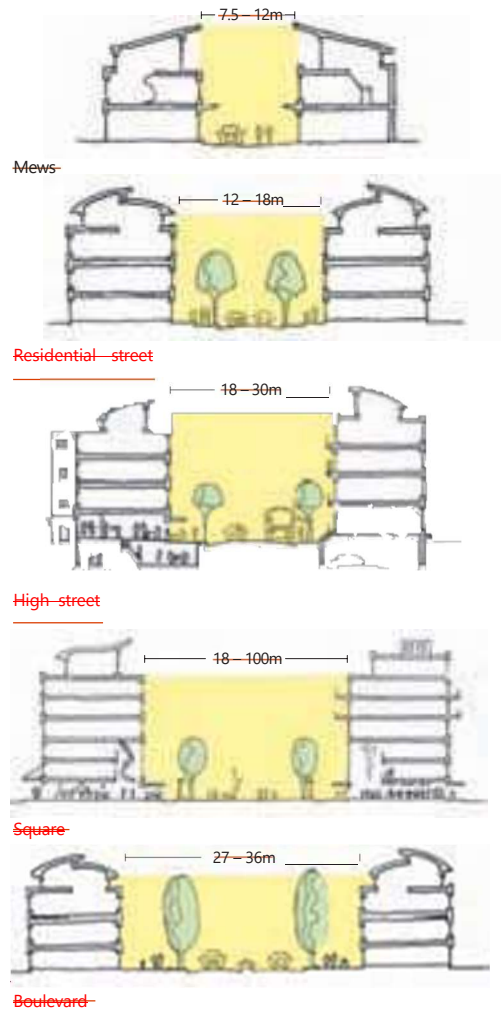
Traffic Calming Techniques

1. Tight intersection corners to slow traffic
2. Islands or raised berms
3. Bends in street reserve to minimise long straight sections
4. Landscaping in parking bays
5. Chicanes and chokers to minimise carriageway
6. Tables to aid pedestrian crossing
7. Material differentiation for prominence
8. Speed humps

4.13 CIRCULATION

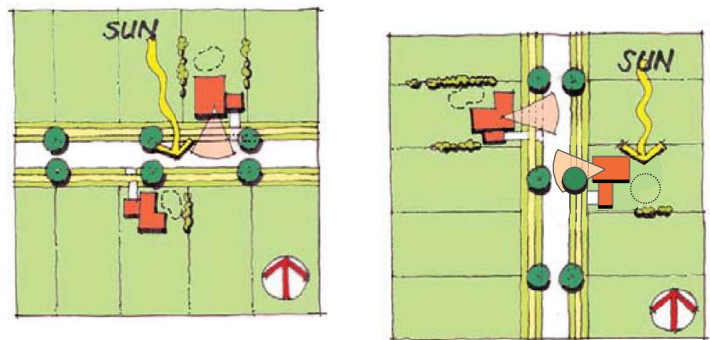
ORIENTATION AND DESIGN

- Streets should be oriented north-south where possible to maximise solar potential of buildings. Where this is not possible then block design should incorporate responses to maximise solar potential.
- Street width should be directly related to the height of development proposed. Greater street width requires greater height of development to enclose the street and ensure that the space is of a human scale.
- Signage and routes should enable people to safely navigate their way through the urban area.
- Streets should be terminated by vistas or points of visual interest such as major buildings and landscape features.

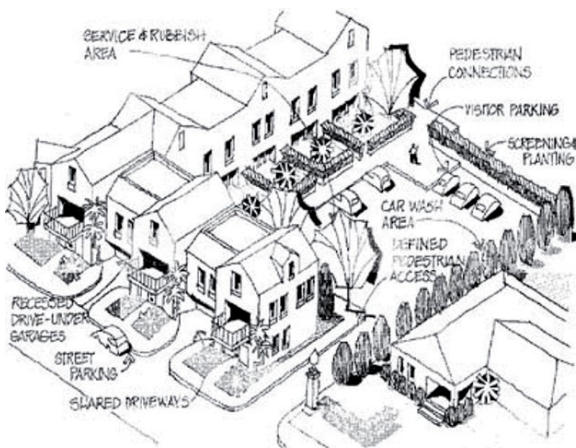


Landmarks can provide a focal point for the termination of streets.

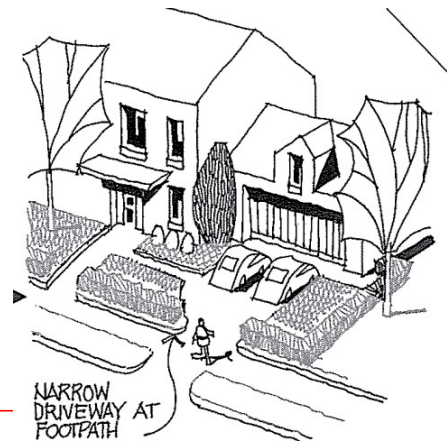
Above: Varying the widths of streets according to the height of development anticipated. The wider the street, the higher development needs to be to enclose the space. Source: Urban Design Compendium by English Partnerships



Solar orientation maximised by aligning streets north-south (on right), giving all dwellings a north facing outdoor space. Source: Kapiti Coast District Council Subdivision Design Guideline



*Parking provided at the rear of a development.
Source: Auckland City Council Residential Design Guide*



*Parking narrowed to reduce crossings of the footpath where this can't be provided to the rear.
Source: Auckland City Council Residential Design Guide*

4.13 CIRCULATION

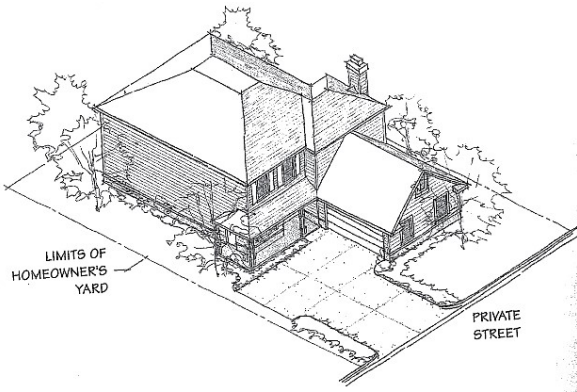
PARKING

- Parking should be located to the rear of sites and ideally accessed by rear lanes in higher density areas, eliminating regular crossings of the footpath. This will enable a shared pedestrian and cycle space on the footpath for all lower order streets.
- Where garages are provided to the front of sites off street these should limit the number of street crossings—for example, utilising shared driveways, and the visual impact on street—for example recessed garages.
- On-street car parking should be provided on all streets except lanes, providing convenient parking close to destinations and activity in the street, and reducing vehicle speeds.
- Parked vehicles should not obstruct the passage of vehicles and pedestrians on any streets or create traffic hazards. They should not detract from the amenity and surveillance of the street.

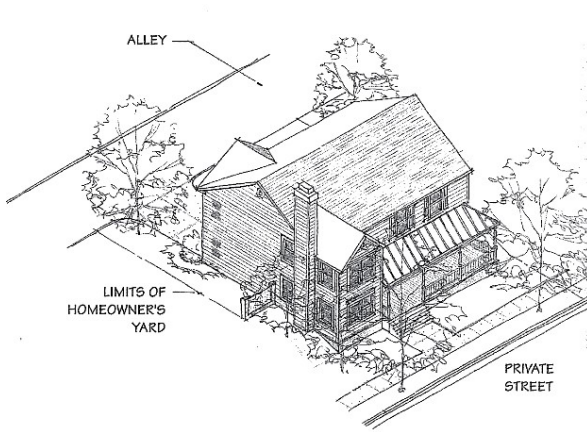


Where possible parking should be provided to the rear and accessed from rear lanes under passive surveillance.

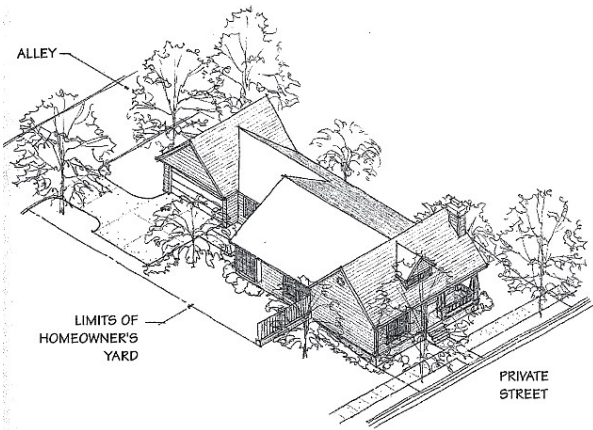
4.13 CIRCULATION



If parking is provided to the front this can be offset to minimise the visual impact on the street.



Where possible parking should be provided to the rear and accessed from rear lanes under passive surveillance.

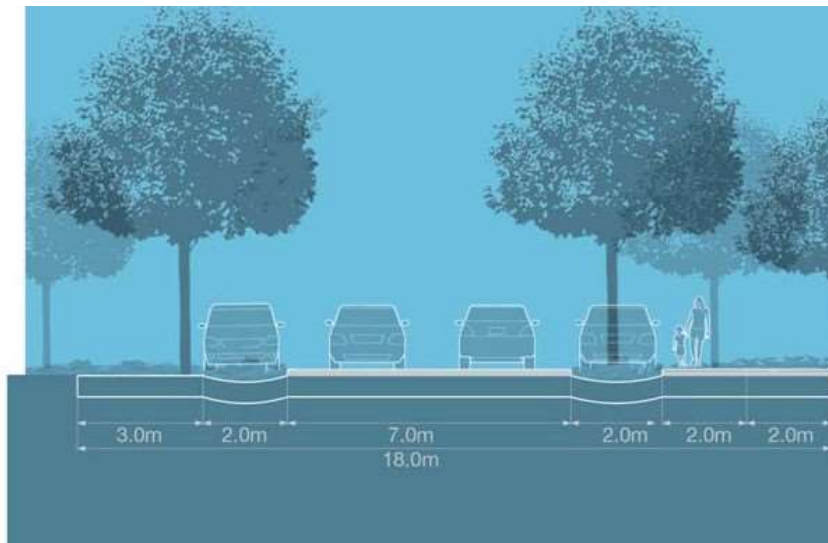
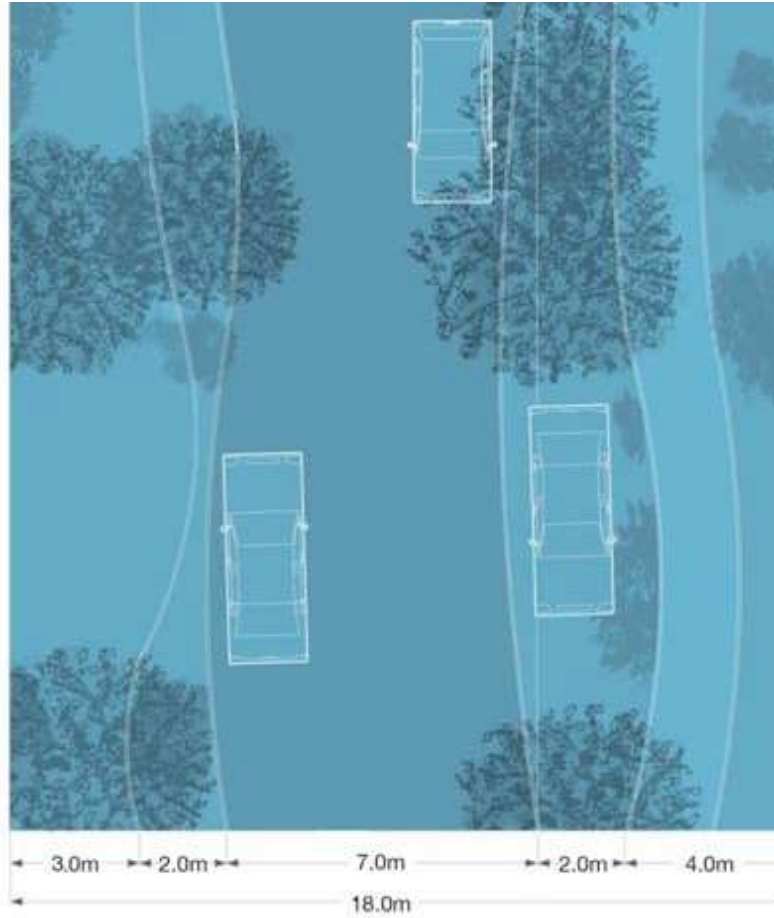


Rear lane parking can enclose the rear yard, providing additional privacy.

Source: Community By Design



4.14 STREET TYPOLOGIES: RURAL TRANSITION ROAD

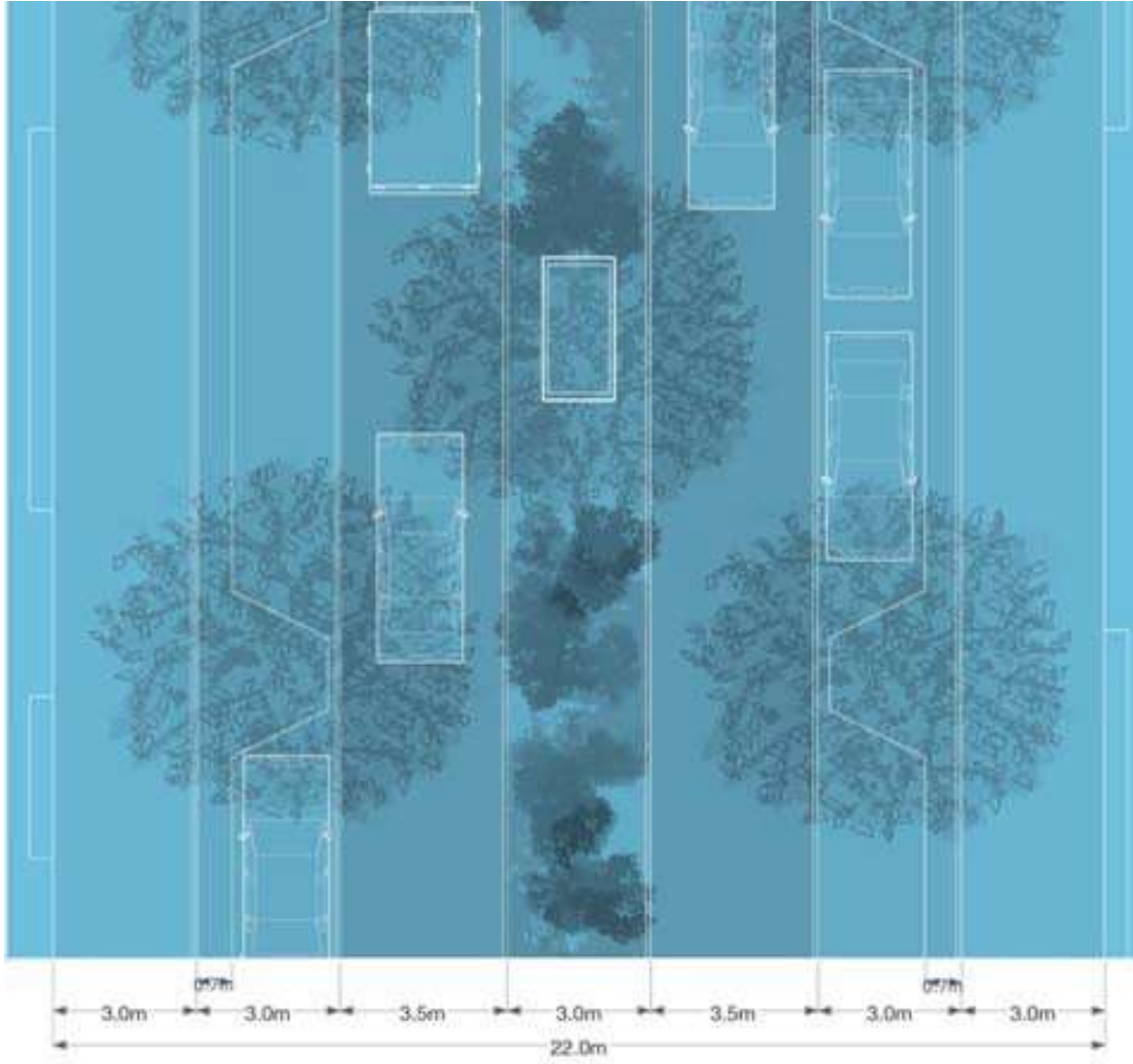


4.14 STREET TYPOLOGIES: RURAL TRANSITION ROAD

CHARACTERISTIC	REASON AND COMMENT
ROAD CHARACTER	This is a medium-scale road with an open, park-like character. It is designed to serve as an edge to both the rural and urban areas as well as a major amenity route for pedestrian and recreational users.
RESERVE WIDTH	±8.0m
CARRIAGEWAY	7.0m
PARKING	Provision for some emergency informal parking in some areas beside carriageways defined by permeable surface materials and integrated within the landscape zone between
KERBING	Dish kerbing sloping to rain gardens and permeable surfaces within the landscape zone.
FOOTPATH	2.0m wide, informally placed within a 4.0m wide landscape corridor on the north/western side of the road. Grassed path suitable for bridleway/walking on south/eastern side.
CYCLE PATH	To be provided within the carriage way.
BRIDLE PATH	None integrated with road but would potentially be close by on the valley side of the road.
DRIVEWAY ACCESS	No private residential driveways off the Rural Transition Road.
LANDSCAPE APPROACH	Use of large specimen tree planting to contain carriageways and blend the road into a park-like and treed rural landscape. The Taupo District Council Tree and Vegetation Policy should be considered to ensure the selection of appropriate tree species.
MEDIAN STRIP	None.
STORMWATER	To rain gardens, soak holes, ponds or permeable surfaces beside carriageway.



4.14 STREET TYPOLOGIES: MAIN NEIGHBOURHOOD STREET

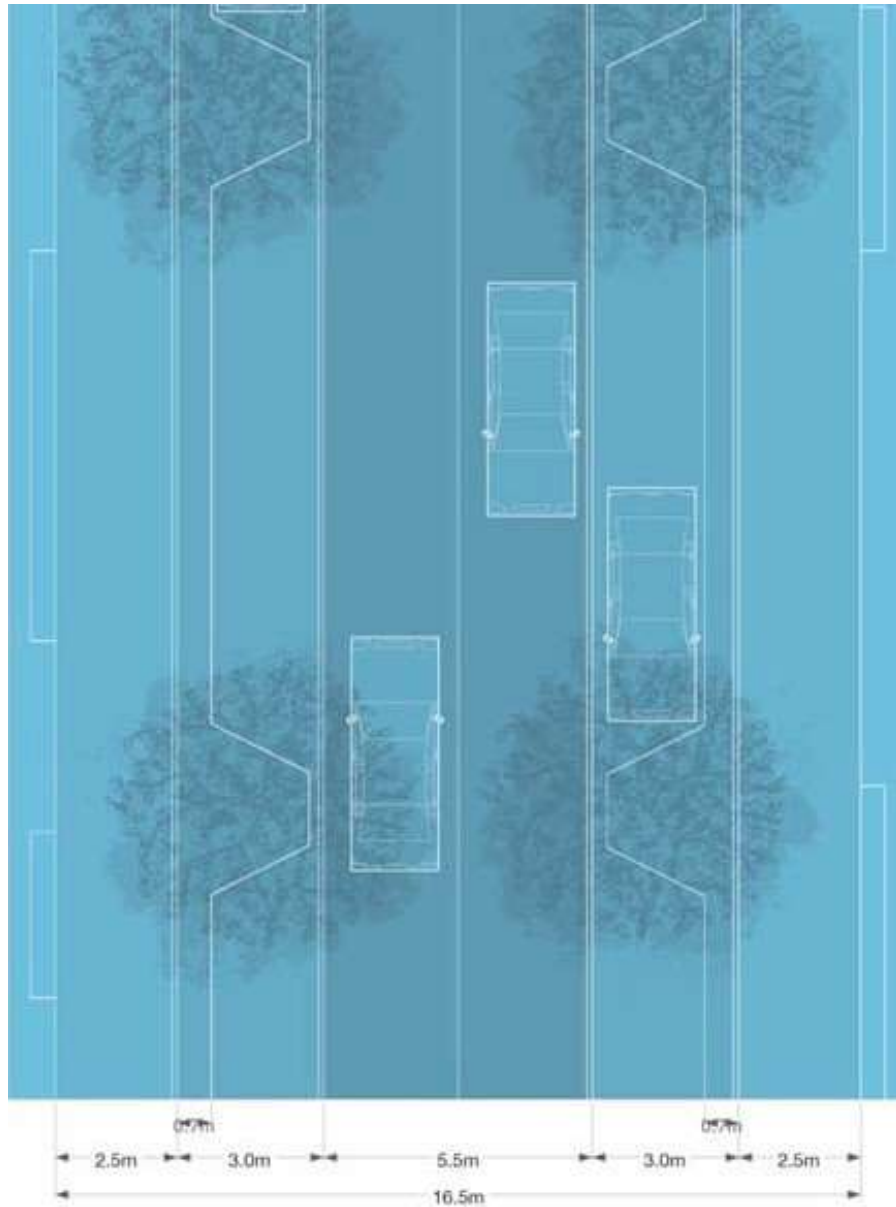


4.14 STREET TYPOLOGIES: MAIN NEIGHBOURHOOD STREET

CHARACTERISTIC	REASON AND COMMENT
STREET CHARACTER	This is a busy primary movement route within the urban areas. It appears more formalised within the Centre neighbourhood with an emphasis on legible, generously spaced and comfortable pedestrian areas.
RESERVE WIDTH	22.0m
CARRIAGEWAY	2 separate lanes of 3.5m each. Asphalt surface material (excluding pedestrian crossings which form part of the recreational movement network).
PARKING	Parallel parking beside carriageways. Parking integrated with landscape provision for trees. Permeable surface materials to be used.
KERBING	Formal kerbing between parking lane and cycle way/footpath.
FOOTPATH	2.5m—4.0m width. Pavers/styled concrete. Routes/access to both sides of these streets.
CYCLE PATH	Integrated into footpath. Distinguished through different surface material.
BRIDLE PATH	None
DRIVEWAY ACCESS	No private residential driveways off Main Neighbourhood Streets. Only driveway access into public parking areas and residential lanes.
LANDSCAPE APPROACH	Use of large specimen tree planting to define carriageways and to scale buildings to the street. The Taupo District Council Tree and Vegetation Policy should be considered to ensure the selection of appropriate tree species.
MEDIAN STRIP	Grassed and paved for pedestrian and safe zone crossing. Paved sections should be flush with street surface.
STORMWATER	Stormwater to rain gardens, soak holes, ponds and gutters at kerbs.



4.14 STREET TYPOLOGIES: NEIGHBOURHOOD STREET

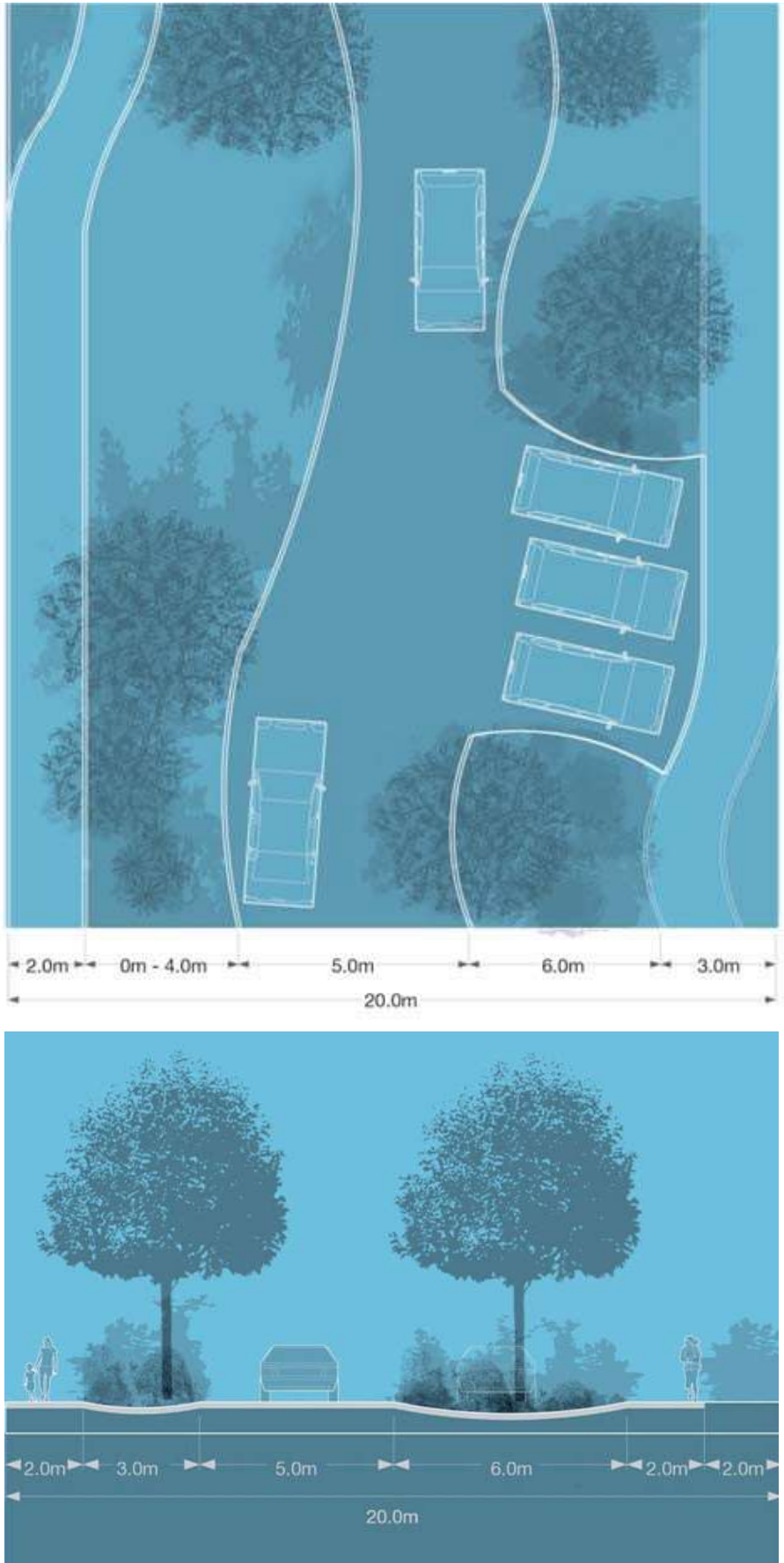


4.14 STREET TYPOLOGIES: NEIGHBOURHOOD STREET

CHARACTERISTIC	REASON AND COMMENT
STREET CHARACTER	This normal residential street form has a more intimate scale with high levels of landscaping to visually separate opposing dwellings.
RESERVE WIDTH	±6.5m
CARRIAGEWAY	5.5m
PARKING	Parallel parking between street trees within a landscape zone to the side of the carriageway. Permeable surface materials to be used.
KERBING	Formal kerbing separating the footpath from the landscape strip.
FOOTPATH	2.5m wide. Pavers/styled concrete. Routes/access to both sides of these streets.
CYCLE PATH	Integrated into footpath.
BRIDLE PATH	None.
DRIVEWAY ACCESS	Driveways (either private or shared) are predominantly accessed from rear lanes.
LANDSCAPE APPROACH	Use of large specimen tree planting to define the carriageway in relation to the pedestrian zone and to separate and scale the buildings to the street. The Taupo District Council Tree and Vegetation Policy should be considered to ensure the selection of appropriate tree species.
MEDIAN STRIP	None.
STORMWATER	Stormwater to rain gardens, soak holes, ponds and gutters at kerbs.



4.14 STREET TYPOLOGIES: WOONERF

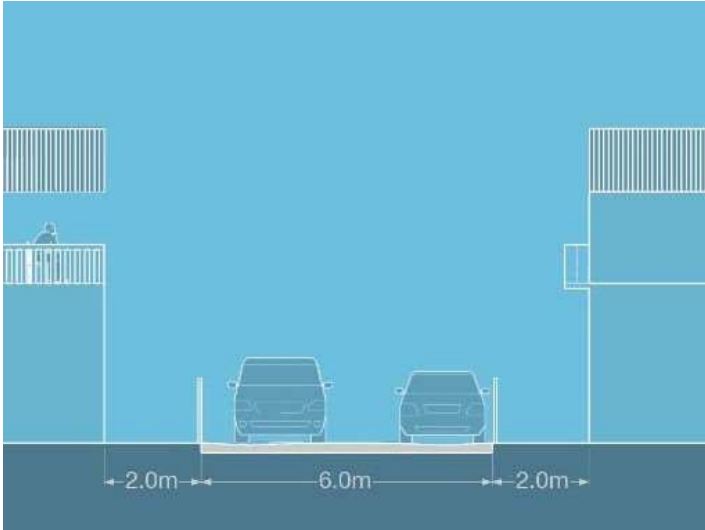
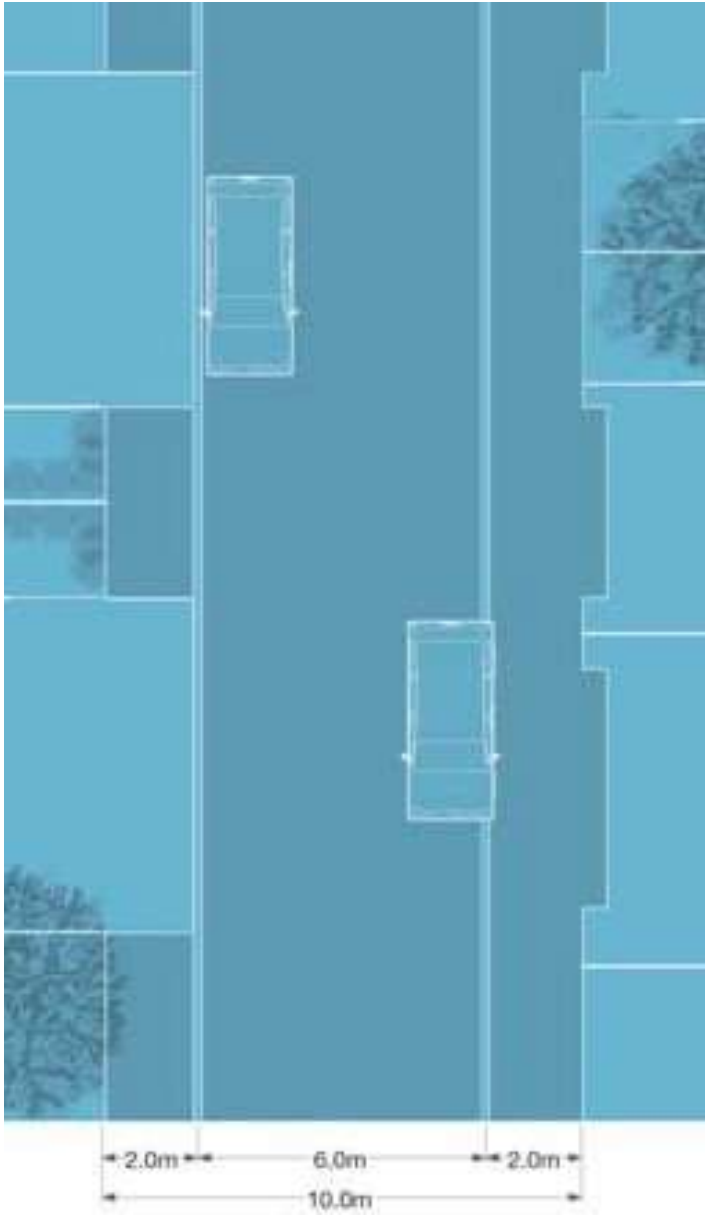


4.14 STREET TYPOLOGIES: WOONERF

CHARACTERISTIC	REASON AND COMMENT
STREET CHARACTER	Woonerfs are designed to create a more integrated neighbourhood living space as opposed to a vehicular street. Slow to negotiate, they discourage through traffic and instead develop the street reserve as a system of small pocket parks, parking and play areas.
RESERVE WIDTH	20.0m.
CARRIAGEWAY	Varying width 3.5-6.0m to allow for passing bays at intervals. Woonerf access is to be continuous from one entry to another exit and should not terminate in parking or a turn around circle. Variable materials should be used to define transit, parking and pedestrian hierarchy and to give the appearance of private access ways rather than typical streets. Streets should provide appropriate street lengths, bends and turning radii to allow for optimum traffic speeds.
PARKING	Parallel bays or right-angled/diagonal parking in pockets.
KERBING	Flush kerbs to landscape areas.
FOOTPATH	2.0m width. To be provided to both sides of the carriageway. Concrete/pavers/ variable width to include informal courts. Meandering footpath to both sides of the street. These may be incorporated into the carriageway reserve, as long as such an area is defined by raising the footpath/court level, providing bollards to define space and by using different surface materials. Street furniture should be included at points besides pedestrian routes.
CYCLE PATH	None. Cycling provision is on the carriageway and in the landscaped area.
BRIDLE PATH	None.
DRIVEWAY ACCESS	No private residential driveways occur off woonerfs, as this takes place from rear lanes.
LANDSCAPE APPROACH	Mix of open paved, permeable, grassed and planted areas. The Taupo District Council Tree and Vegetation Policy should be considered to ensure the selection of appropriate tree species.
MEDIAN STRIP	None.
STORMWATER	Stormwater to swales, rain gardens, soak holes, ponds and permeable landscape surfaces.



~~4.14 STREET TYPOLOGIES: LANE~~

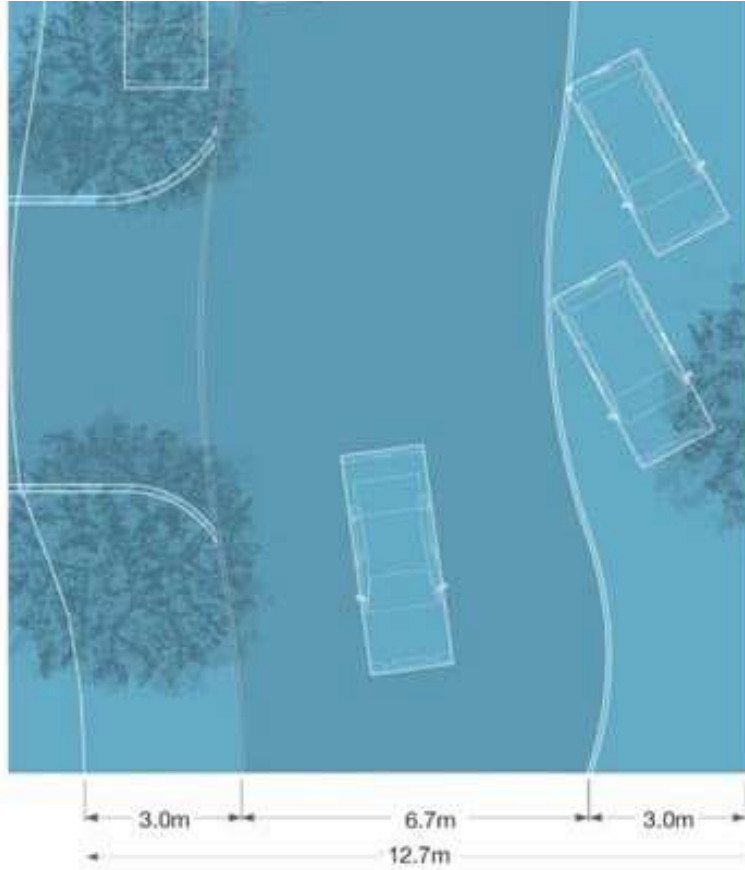


4.14 STREET TYPOLOGIES: LANE

CHARACTERISTIC	REASON AND COMMENT
STREET CHARACTER	These streets are placed to the rear of sites within a block and are used for vehicular access to garages and residential properties. They are functional, yet together with the appropriate setback rules for residential properties provide a domestic, semi-private environment.
RESERVE WIDTH	6.0m. This allows for two cars to pass comfortably. In addition, a 2.0m setback is required for any garages or parking bays to allow for sufficient turning circles. This setback may also provide parallel parking bays for private use beside the street reserve.
CARRIAGEWAY	6.0m width. Lane to have permeable surface materials. Lane access is to be continuous from one entry to another exit and should not terminate in parking or a turn around circle. Material variation at the entry should be used to give the appearance of private accessways rather than typical streets. Lanes should provide appropriate lengths, bends and turning radii to control traffic speeds. They should allow sufficient turning circles for vehicles entering and exiting garages and parking areas, as well as the requirements for any service vehicles and trucks.
PARKING	No on street parking. Parking occurs within private lots.
KERBING	Dish drains to either side of carriageway defining a central 4.0m wide strip.
FOOTPATH	Pedestrian access incorporated into the carriageway reserve. Speeds should be limited to provide a safe environment for pedestrians.
CYCLE PATH	None. Cycling provision is on the carriageway.
BRIDLE PATH	None.
DRIVEWAY ACCESS	Residential driveways, parking and garages are accessed directly from lanes.
LANDSCAPE APPROACH	Mix of open paved, permeable, grassed and planted areas. The Taupo District Council Tree and Vegetation Policy should be considered to ensure the selection of appropriate tree species.
MEDIAN STRIP	None.
STORMWATER	Infiltration through use of permeable surface materials on lanes, as well as dishdrains, soak holes and ponds.



4.14 STREET TYPOLOGIES: RURAL ROAD



4.14 STREET TYPOLOGIES: RURAL ROAD

CHARACTERISTIC	REASON AND COMMENT
STREET CHARACTER	Rural streets are relatively slow landscaped lanes that connect settlement nodes over short distances.
RESERVE WIDTH	±2.7m
CARRIAGEWAY	6.7m width with run-off areas. This allows for two cars to pass comfortably at slower speeds. Materials can be asphalt/chip seal or gravel. Traffic speeds are controlled by the level of openness and appropriate street lengths, bends and turning radii.
PARKING	Limited pockets for parking beside the carriageway, integrated with landscaped verges.
KERBING	Flush kerb to carriageway
FOOTPATH	No dedicated footpath within the reserve.
CYCLE PATH	Cycling provision is on the carriageway.
BRIDLE PATH	Potential to incorporate with reserve to the side of carriageway.
DRIVEWAY ACCESS	Residential driveways (either private or shared) are accessed directly from the carriageway.
LANDSCAPE APPROACH	Landscape contains carriageway and provides visual screening to residential lots. The Taupo District Council Tree and Vegetation Policy should be considered to ensure the selection of appropriate tree species.
MEDIAN STRIP	None.
STORMWATER	Stormwater to swales, rain gardens, soak holes, ponds and permeable landscape surfaces.



4.15 STREET TYPOLOGIES / BUILDING-TYPOLOGIES AND HEIGHTS ANTICIPATED

		STREET TYPOLOGIES				
		Rural Transition	Main	Neighbourhood	Woonerfs	Lanes
BUILDING TYPOLOGIES	Commercial/Community	Not Anticipated	Frequent	Occasional	Not Anticipated	Frequent
	Mixed Use Business	Not Anticipated	Frequent	Occasional	Not Anticipated	Frequent
	Apartments	Not Anticipated	Frequent	Occasional	Occasional	Frequent
	Walk up Apartments	Not Anticipated	Frequent	Occasional	Occasional	Frequent
	Terraced Housing	Occasional	Frequent	Frequent	Frequent	Frequent
	Linked Housing	Occasional	Frequent	Frequent	Frequent	Frequent
	Row Housing	Occasional	Frequent	Frequent	Frequent	Frequent
	Semi-detached	Frequent	Frequent	Frequent	Frequent	Frequent
	Detached	Frequent	Occasional	Frequent	Frequent	Frequent
	Large Lot	Frequent	Not Anticipated	Frequent	Frequent	Not Anticipated

Matrix showing relationship of Building Typologies to Street Typologies

		STREET TYPOLOGIES				
		Rural Transition	Main	Neighbourhood	Woonerfs	Lanes
HEIGHTS	1 Storey	Frequent	Not Anticipated	Frequent	Frequent	Frequent
	2 Storey	Frequent	Frequent	Frequent	Frequent	Frequent
	3 Storey	Occasional	Frequent	Frequent	Frequent	Frequent
	4 Storey ⁽¹⁾	Not Anticipated	Frequent	Not Anticipated	Frequent	Frequent
	5 + Storey	Not Anticipated	Not Anticipated	Not Anticipated	Not Anticipated	Not Anticipated

Matrix showing relationship of heights to Street Typologies

Notes

1-4 Storey development allowed in all parts of the Centre-Neighbourhood

Occasional



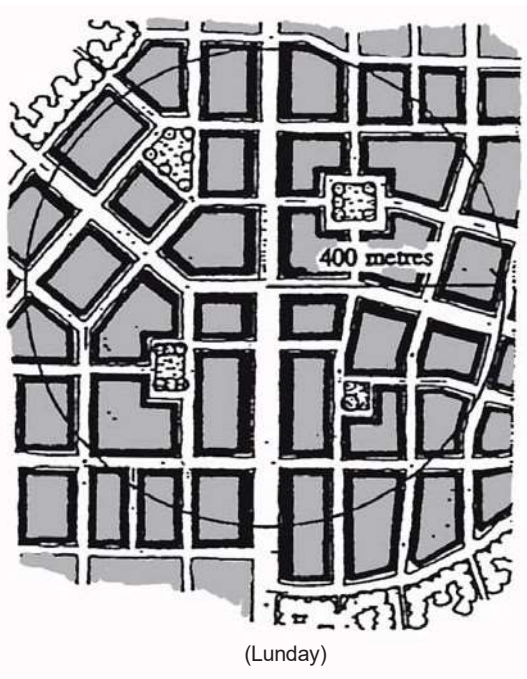
Frequent



Not Anticipated



Varied open space distributed through the neighbourhood area



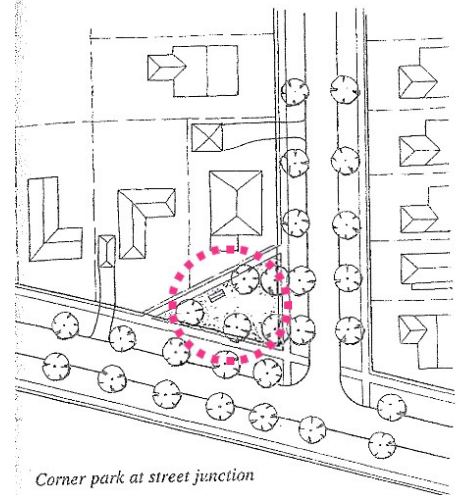
4.16 OPEN SPACE

LOCATION

- Open space should be distributed throughout the urban area to provide safe walkable access to inhabitants. Compact and efficient open space like pocket parks and squares should be located at the core of the urban area and larger areas such as neighbourhood parks to the periphery.
- All open space should link logically to other areas of open space via a connected street pattern.
- All open space should be highly prominent within a neighbourhood. Open space should be the focus of the built environment and other facilities within an area.
- Open space should provide the focal point for community interaction in a neighbourhood. Along with streets that promote walking and cycling, open space contributes to casual social interaction and reduces isolation within neighbourhoods.
- Open space should serve as landmarks to contribute to making a neighbourhood understandable and should be linked by a connected network of green streets.
- Where fault lines, other areas of instability or landscape features are encountered these should be considered for open space and integrated into the design of an area.

DESIGN

- Open space should be designed to respond to the local context, incorporating features like materials and visual references that reflect local heritage, culture and identity.
- Open space should be designed to work with the existing landscape. At the outset areas/features to preserve should be identified and incorporated into the design of open space.
- Where appropriate open space should be well lit and signed.



200 - 600m² PARK

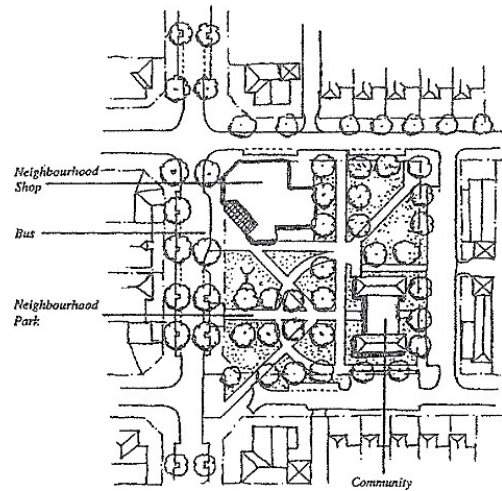


Above and Below: Open space should be prominent in the design of a neighbourhood

Source: Liveable Neighbourhoods: A Western Australian Government Sustainable Cities Initiative



Open space can serve multiple uses, including providing links between areas of ecological significance and being part of the LID stormwater approach.



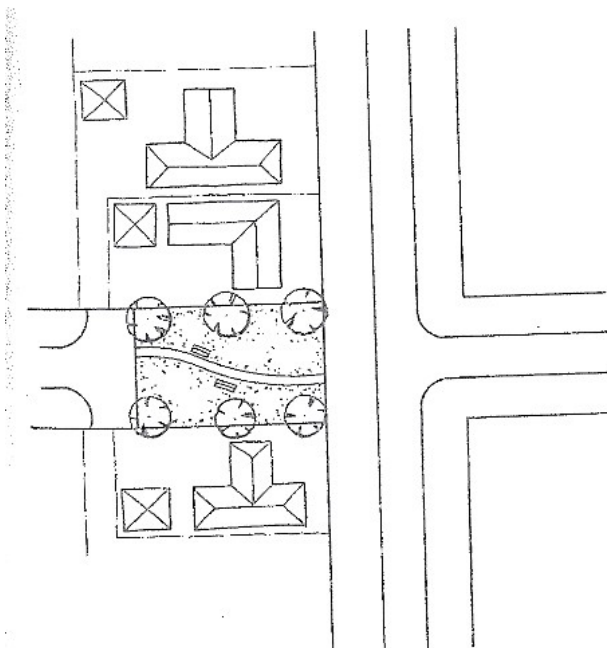
Joint usage of open space with other community facilities creates attractors and community focal points.

Source: Liveable Neighbourhoods: A Western Australian Government Sustainable Cities Initiative

4.16 OPEN SPACE

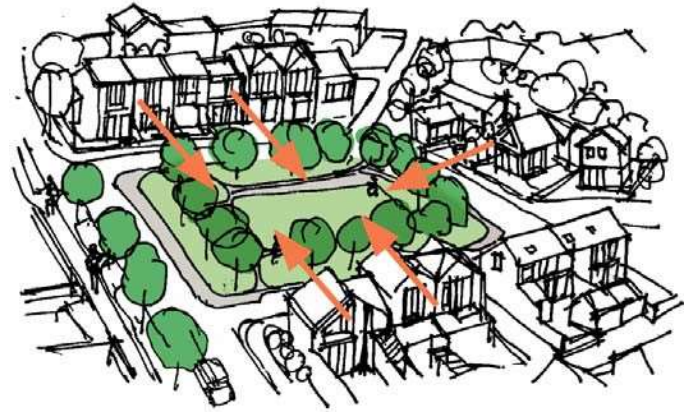
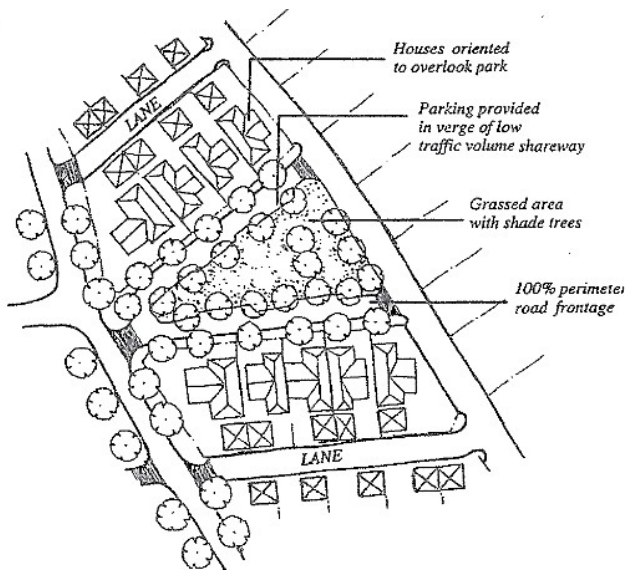
USES

- A variety of open spaces should be provided within the urban area, reflecting the Open Space Hierarchy outlined in the section below. These should provide for a wide range of users and activities, both passive and active.
- Open space should be designed to be universally accessible by all segments of the community.
- Open space should be designed for a wide range of activities, both formal and informal and have different areas for seasonal use, for example well drained hard surfaces, shelter areas that provide shade in summer and shelter/sun in winter.
- Where green space is provided this should be seen as part of the ecological network within urban areas and attempt to connect these to natural areas outside. These should connect into the wider walk and cycle way network as well as to other open space such as lookouts.
- Open space should be designed to function as part of a Low Impact Design approach to stormwater management. Where features are designed into open space, these should be highly prominent and serve a hydrological and educative function—for example signage outlining their role in water management.
- Joint usage with other community facilities like a Library, community centre, bus stop and co-location near other neighbourhood facilities such as local shops should be promoted. This will make open space multi-use and promote them as a site for social interaction within the neighbourhood.



Open Space can be an integrated part of pedestrian linkages.

Source: Liveable Neighbourhoods: A Western Australian Government Sustainable Cities Initiative



A variety of activities should co-locate near open space, including more intensive housing.

Source: Liveable Neighbourhoods: A Western Australian Government Sustainable Cities Initiative

Above and Below: Open space should be overlooked by development and separated by a street or footpaths

4.16 OPEN SPACE

SURROUNDING LAND USES

- All open space should provide well-overlooked pedestrian and cycle access through, linked into the surrounding street network.
- All open space should be fronted by development to provide casual surveillance and overlooking of the space. Backs of buildings and/or high fences are not appropriate as this reduces natural surveillance and can make places appear unsafe.
- If blocks front both a street and open space then they should be designed to enable overlooking on both sides.
- Where possible open space should be fronted by streets to provide a clear transition between public and private space. Where this is not possible, footpaths indicating the transition between public and private space should be used.
- Open space should be enclosed by buildings appropriate to its scale, to provide a sense of enclosure at a human scale. Where buildings front open space these should have active frontages wherever possible and have minimal blank walls and fences.

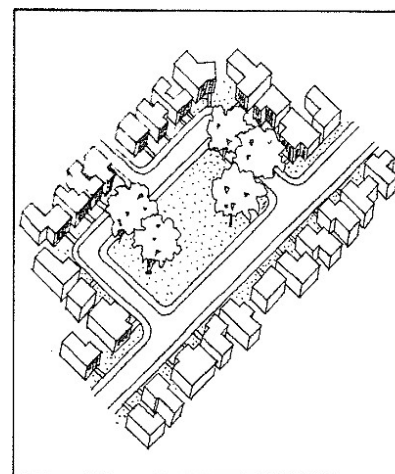


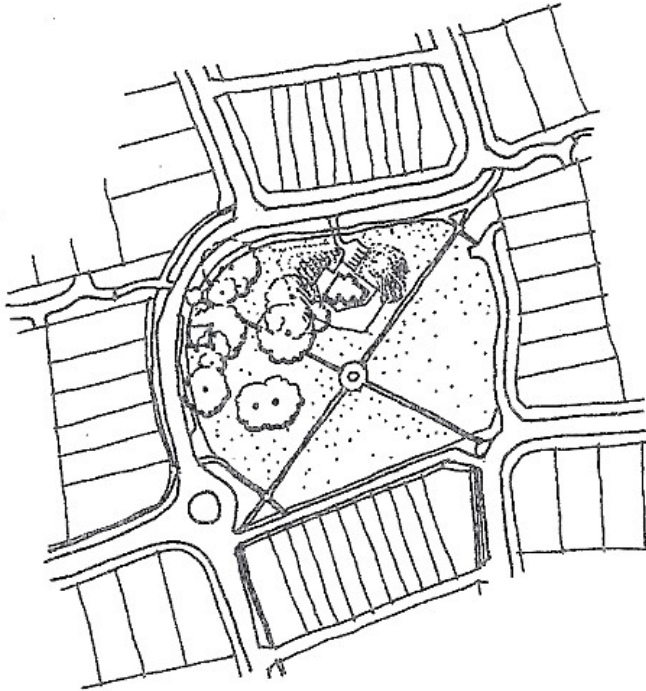
Figure 2 Public open space

Public open space can generally be bordered by roads which are fronted by dwellings and which are part of the public road network.

Source: Liveable Neighbourhoods: A Western Australian Government Sustainable Cities Initiative



Source: Liveable Neighbourhoods: A Western Australian Government Sustainable Cities Initiative

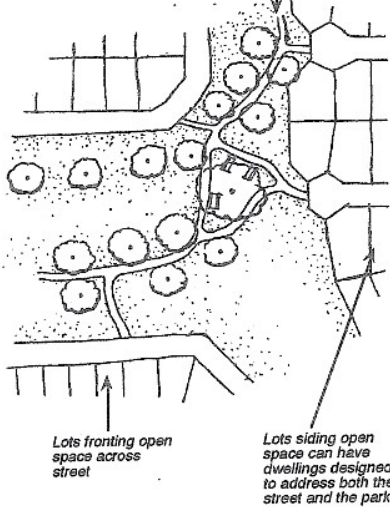


An urban park located to incorporate existing vegetation and bounded by streets to provide outlook for dwellings

OPEN SPACE LINKS

Minimise the number of lots/dwellings backing onto open space to improve surveillance of open space and its users

Open space may form part of pedestrian network connecting adjacent areas



Lots fronting open space across street

Lots siding open space can have dwellings designed to address both the street and the park

Left: If housing faces both a street and open space it should be oriented to face both directions.
Source: Liveable Neighbourhoods: A Western Australian Government Sustainable Cities Initiative

4.17 OPEN SPACE HIERARCHY

1) VALLEY AND HILLS

The valley floor and the surrounding hills provide a strong base from which to provide open space and recreational linkages for any development within the Mapara Valley. The approach outlined within the Land Use diagrams and text has been to attempt to enhance these resources through revegetation measures or protection of rural uses. At the same time the incentive-based cluster-subdivision approach has sought to enable public access through any land that has been subdivided in this way.

This combination means that the urban areas contained within Sub Area 7 are surrounded by both the hills and valley floor. This is enhanced further by the strong revegetation/amenity-planting and recreational linkages that bisect the discrete urban areas. These ensure that the urban areas have their own character and feel but also provide strong open space linkages of a structured and unstructured nature into and between these areas.

2) UNSTRUCTURED OPEN SPACE LINKED TO THE VILLAGE DOMAIN

Opposite the Village Domain of each centre on the edge of the valley floor is an area of less-structured open space that should be managed to help prevent urban development from moving unintentionally into the valley floor. This area forms a buffer to the urban areas but is not always an intensively managed open space area.

It would be an area of parkland managed in a similar way to the current farmland in the valley floor and would provide recreation opportunities in a more rural environment for example Cornwall Park in Auckland.

This could be achieved in a number of ways:

- a) Through direct purchase and management by Taupo District Council. This may be preferable for some of the areas, in particular those bordering on the urban areas, as this will supplement open space provided in these.
- b) Through covenanting/restrictions undertaken by landowners in conjunction with Taupo District Council and/or parties to preserve its current form and function, with public access provisions provided. This would be provided as part of any subdivision application under the Valley Cluster provisions.



Looking over the valley, the hills and valley floor can provide unstructured open space.



An example of an unstructured open space which could link to a Village Domain.

- c) Transferable development rights (TDRs) for any potential development currently allowed in the rural environment that may be removed.

This area would be separated from the Village Domain by the Rural Transition Road, a strongly defined rural road that has provision for recreational access—cycleways, walkways and bridleways alongside it.



3) VILLAGE DOMAIN

At the edge of the valley floor each urban area will have a structured open space, here called the Village Domain. This is a major structuring element of each of the urban areas that provides a place for public engagement and community life. Each of these domains would be different but all would be at least 3-5 hectares in size. As shown on the attached diagram the aim is to link this into the Centre Neighbourhood by way of a smaller more formal open space called the Village Green/Square. Together these spaces provide access to and from the valley floor and focus attention on this space by opening out onto it.

Around the Village Domain higher density development within the Village Residential Core Neighbourhood and Centre Neighbourhood would be located, providing a critical mass of activity in these areas. Where the Village Residential Core Neighbourhood meets the Rural Transition Road this development would be of a lower scale, with a particular focus on restricting heights to ensure that a natural transition from the valley floor is achieved.

4) VILLAGE GREEN / SQUARE

This central piece of open space is the most formal and structured open space within the urban areas. While the Village Domain provides opportunities for active recreation, this area should be designed to be a place of passive recreation and enjoyment that is compatible with the Centre Neighbourhood and its smaller size.

The Village Green/Square is either physically connected or very close to the Village Domain, reinforcing the strong linkages between these two spaces. Both would contain the local landmarks that signify the central and important nature of these spaces to the community. Depending on the nature of the centre the Village Green/Square could take the form of a high quality hard open space like a piazza or square that functions in a similar fashion.

5) NEIGHBOURHOOD RESERVES AND 6) AMENITY SPACES

In the Village Residential and Village Residential Core neighbourhoods around the centre would be located medium/large sized Neighbourhood Reserves and smaller local Amenity Spaces. It would be around these spaces that higher density development such as apartments could be provided in the Village Residential Core Neighbourhood and medium density development like row houses and semi-detached houses would be provided in the Village Residential Neighbourhood.



An example of a Village Domain.

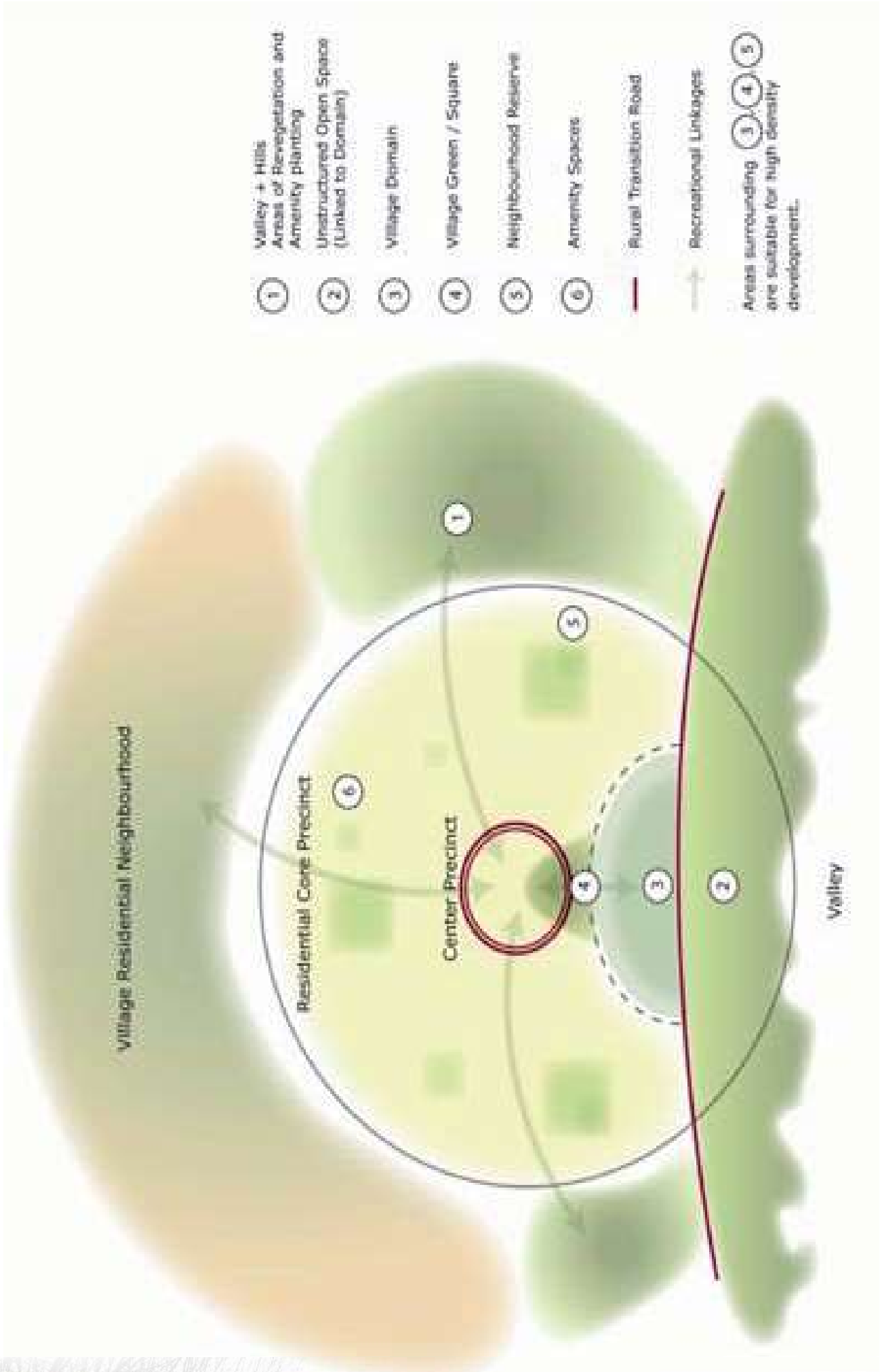


An example of a Village Green/Square.



An example of a local neighbourhood park.

These areas provide the local amenity for residents and need to be reinforced by strong walking and cycle linkages between them, the centre and recreational spaces in the hills and on the valley floor.

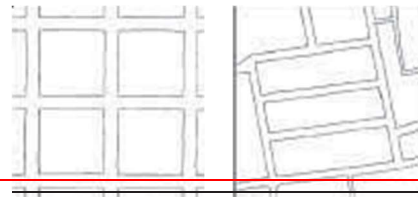


4.18 STRUCTURES

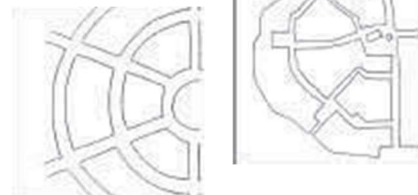
BLOCK DESIGN

- The layout of blocks should be based on a connected grid pattern that maximises pedestrian accessibility and the number of routes in the urban environment. This can be a modified grid format to allow for natural deviation and topography.
- Blocks should generally be about the size of 70m by 120m, to allow maximum permeability. Smaller blocks should be placed in areas with greater density of development – for example the Centre Neighbourhood, Residential Core Neighbourhood and Local Centres in the Village Residential Neighbourhood.
- The block pattern should provide for a legible layout of streets. Landmark buildings and community focal points like shops and open space should be strategically located to create an easily understandable and walkable neighbourhood that serves local needs.
- Blocks should be oriented to maximise solar potential. Ideally these should be oriented north-south to give maximum solar exposure. Where other orientations are needed then other configurations can be used.

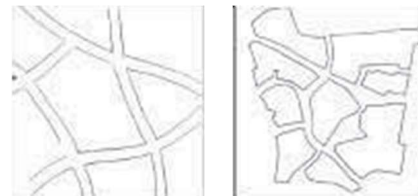
Right and Below: Opportunities for good solar orientation are provided by many different aspects.
Source: People, Places, Space by Ministry for the Environment



Regular blocks — Jesmond, Newcastle

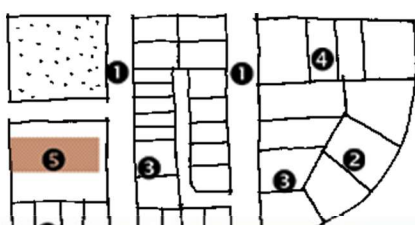
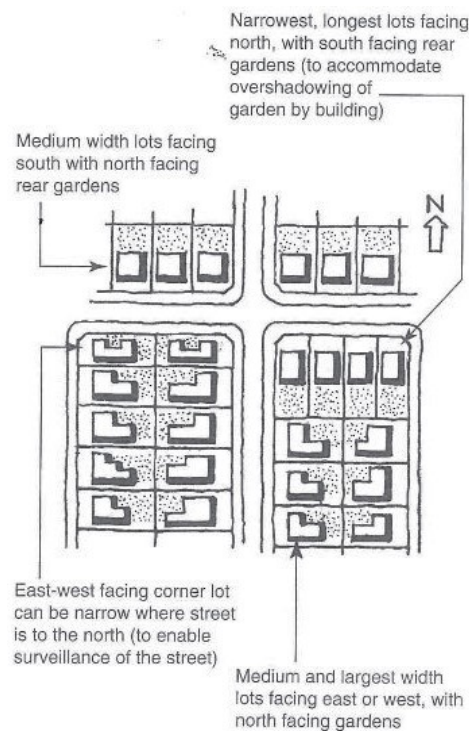


Concentric blocks — Poundbury, Dorchester



Irregular blocks — Thorley Lane, Bishops Cleeve, Shropshire

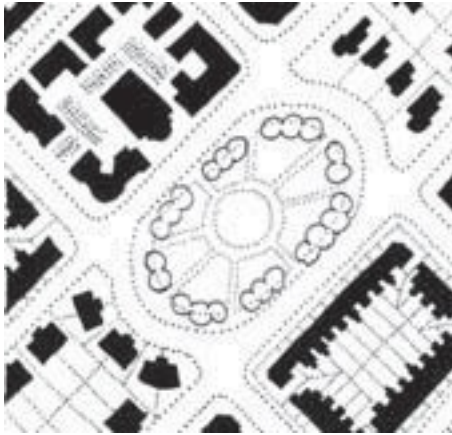
A grid-based street pattern can take on a number of different shapes yet retain its inherent connectivity advantages.
Source: Better Places
To Live: By Design



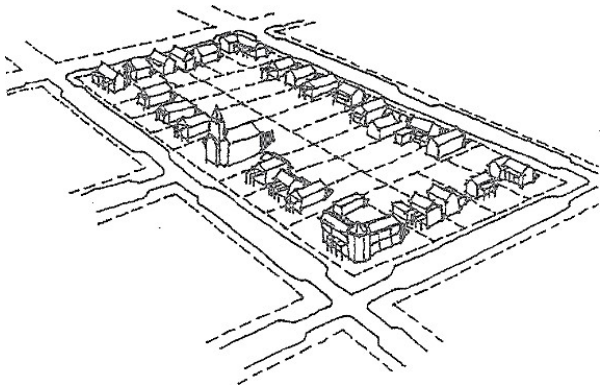
- 1 Where there is a choice, align streets north/south.
- 2 South entry lots with north-facing backyards are ideal for terrace houses and other dwellings with living rooms at ground level.
- 3 East or west entry lots get morning and evening sun, as well as north sun if the buildings are located on the southern boundary.
- 4 North-fronting lots work well for mixed-use units with workspaces at ground level and dwellings above with decks.
- 5 North-facing apartments with balconies work well

4.18 STRUCTURES

RELATIONSHIP TO STREET/OPEN SPACE



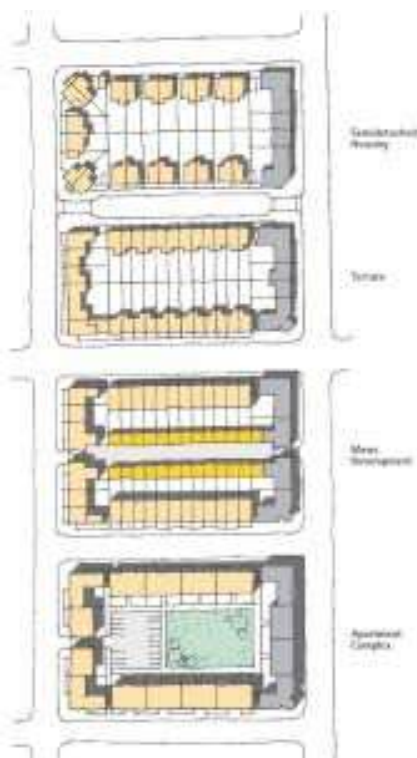
Source: Councillors Guide to Urban Design by CABE



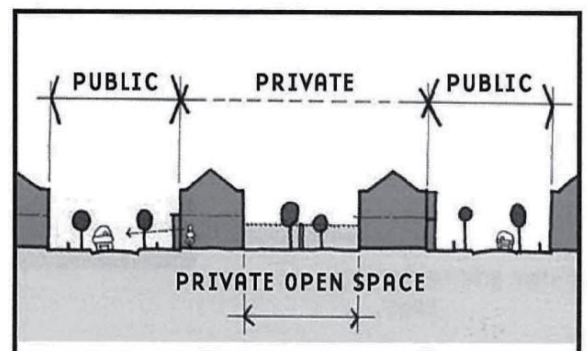
Source: Liveable Neighbourhoods: A Western Australian Government Sustainable Cities Initiative

- Blocks should be developed in 'perimeter block' fashion as this layout is robust and allows for change in the future, for example conversion of residential to commercial uses.
- Perimeter blocks strongly define open space from private space, making a clear separation that enables an environment to be understood clearly by its users. Private space should be provided behind the buildings that line perimeter blocks to maximise privacy.
- Fronts of blocks should face the fronts of other blocks and backs should face backs to ensure that privacy is retained.
- The public faces of these blocks should provide enclosure of the street or open space network and be oriented to the street to provide casual surveillance of these. High fences and/or blank surfaces should be avoided as these can make areas feel unsafe.
- Enclosure of the street is important to provide a comfortable and pleasant pedestrian environment. Without this sense of enclosure it is difficult to achieve a 'sense of place' and facilitate walking and cycling. Development should be of a 'human scale' that reflects its relationship to the street and/or open space network.

Source: Councillors Guide to Urban Design by CABE



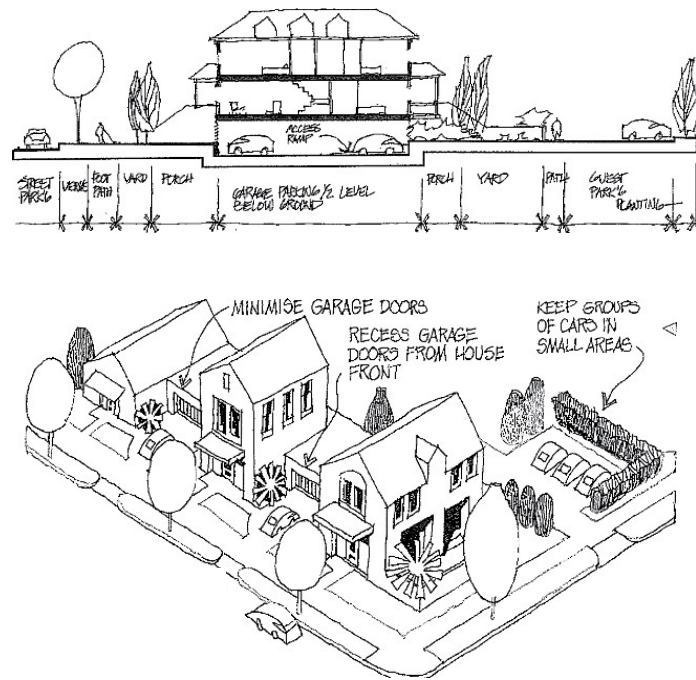
This page: Perimeter block development can occur at many different building forms



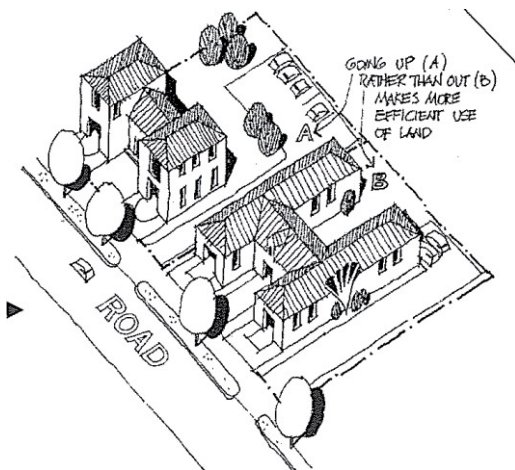
4.18 STRUCTURES

DEVELOPMENT CONTROLS

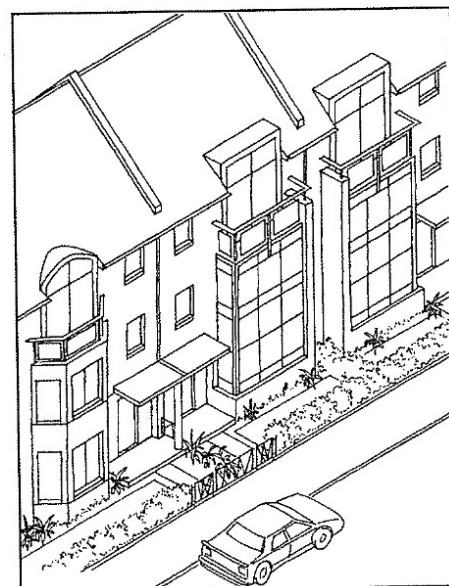
- Parking should be provided at the rear of blocks or underground in the highest density areas. This provides flexibility for change and reduces the visual impact of car park provision.
- Where larger areas of parking need to be provided these should be broken up into smaller car parks and visually improved by planting etc.
- Development should be encouraged to build to the maximum allowable height for all densities. This has a number of advantages including minimising impervious surfaces on site, maximising the usable area within the building, maximising private space and provide enclosure to the street.
- In areas of greater density continuous frontages to the street should be used, with minimal setbacks to define and enclose the street and/or open space network.
- Attaching houses for thermal efficiency should be considered in lower density areas, where these can still retain the amenities associated with more suburban typologies.



Above: Parking provided to the rear of development or underneath.



Below: Developing to maximum height can maximise the efficient use of land.



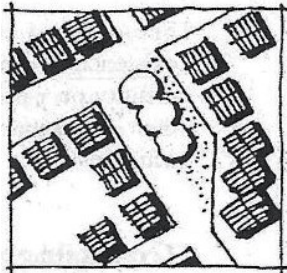
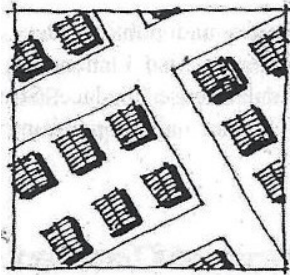
Minimal setbacks in areas of greater density help to define the street.

Source this page: Auckland City Council Residential Design Guide

4.18 STRUCTURES

DEVELOPMENT CONTROL

- In areas of greater density, narrower lots should be provided to create a more diverse street edge. This is particularly important in centres and key public spaces.
- In areas of lower density, perimeter block development can be used to enclose the street and provide more continuous frontages than in conventional development.
- Nodes should contain entrance features and landmark buildings that are linked to other nodes by a clear and strongly defined street network.
- Edges of nodes should be clearly defined through the use of additional height, massing and open space provision.
- Corner features on blocks should allow additional height to define these areas and enhance legibility of streets.
- Where higher density areas border on lower density, massing and height should be graded to ensure compatibility with neighbouring sites. Landscaping should be introduced to soften the built environment and provide a buffer where necessary.



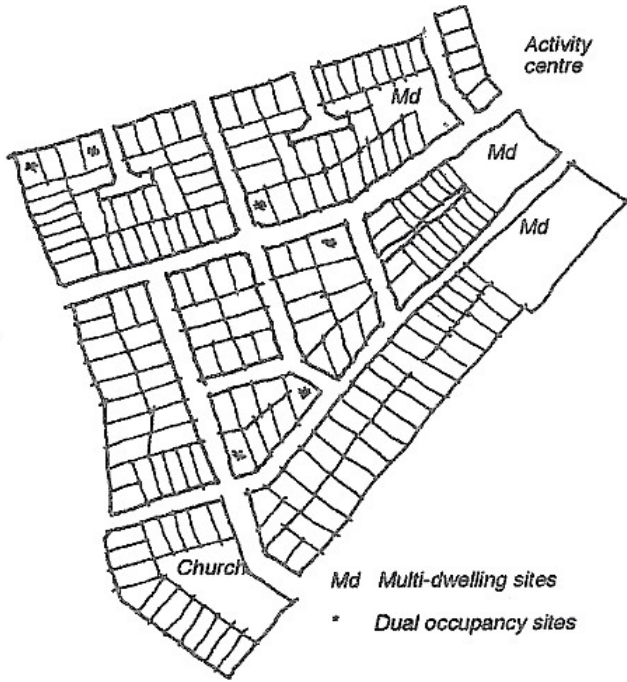
Top: Diversity of frontages makes for a more interesting visual environment and can be achieved in a low density environment (below).



Source: Auckland City Council
Residential Design Guide

4.18 STRUCTURES

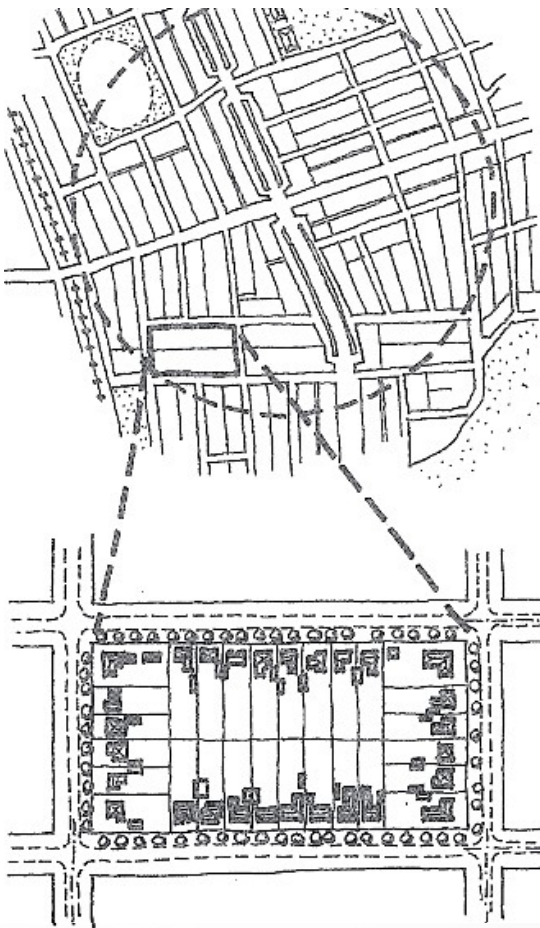
LAND USE



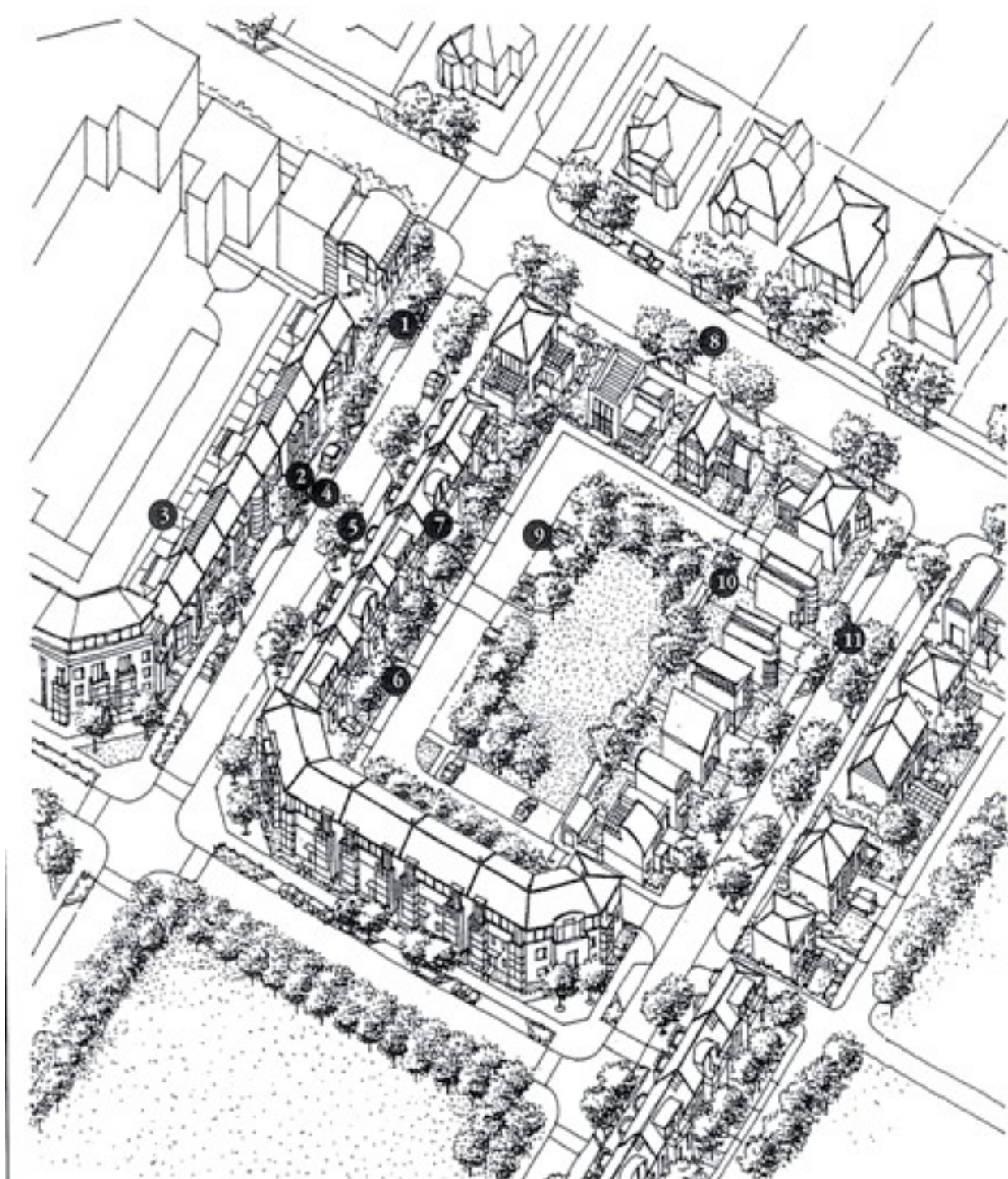
Source: Victorian Code of Residential Development

Source: Liveable Neighbourhoods: A Western Australian Government Sustainable Cities Initiative

- A mixture of land use densities, building types and forms should be provided in neighbourhoods to allow for economic and social change over time—for example larger floor heights in mixed use apartments to allow for conversion to commercial activities in the future if needed.
- There should be a maximum variety of residential development, densities and forms to cater for all segments of the community. This will facilitate social diversity, affordability and inclusion within a neighbourhood. The aim should be to mix building sizes, dwelling sizes and tenure to provide opportunities for a wide range of inhabitants.
- Density of development should reflect accessibility and proximity to a range of local facilities, with the aim to provide local facilities and open space within a short walk of inhabitants. Greater density should be provided near open space and local facilities throughout the urban area to promote the use of these as focal points of community interaction.
- Mixed Use development can be provided throughout the Centre and Core neighbourhood. In the Village Residential Neighbourhood some Mixed Use can be provided in strategically positioned nodes (called Local Centres).
- Local Centres would be located on Main Neighbourhood Streets and would be made up of a small mixed use cluster—for example a dairy/local shopping, with apartments above. Open space would be located in conjunction with this and medium density housing located nearby.



The example on the following page brings many of the preceding ideas together (from Auckland City Council Residential Design Guide.)



1. Car parking and trees into roading design.
2. Windows of principal rooms overlook the road, providing good supervision and security.
3. Consideration of design and massing of corner buildings.
4. Windows, canopies and entrances vary the building elevations facing the road.
5. Different roof forms articulate the mass of the buildings.
6. Apartments address the public open space.
7. Internal road provides rear access for car parking. Car parking does not dominate the road.
8. New development faces the road and respects the form of existing dwellings opposite.
9. Communal open space provided.
10. Where car parking is accessed directly from the road, garages are set back from the principal elevations of the dwellings.
11. Provision of rear lane access to parking.



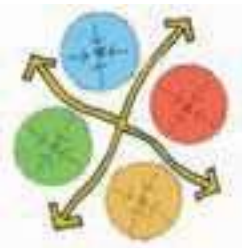
4.18 STRUCTURES

LAND USE

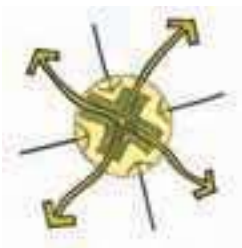
- A range of mixed use opportunities should be provided in different locations as this can support businesses of many sizes.
- Initially these buildings may be used for residential purposes but they should be designed for flexible adaption to mixed use. Mixing uses can promote vitality, vibrancy and surveillance during off peak periods and can reduce the need for travel.
- Lower density development should be provided where preservation of natural/cultural features, or environmental constraints dictate this is necessary.
- The Centre Neighbourhood is the focus for future Public Transport in the structure plan and these should be linked by higher order streets like Main Neighbourhood Streets.
- The Centre Neighbourhood and any Local Centres should locate at the intersection of main streets to provide the necessary activity and vitality to support commercial and other activity.
- Where large single uses need to be provided these should interface with surrounding streets, allow movement across the site and include facilities of use to locals located within site where accessible.



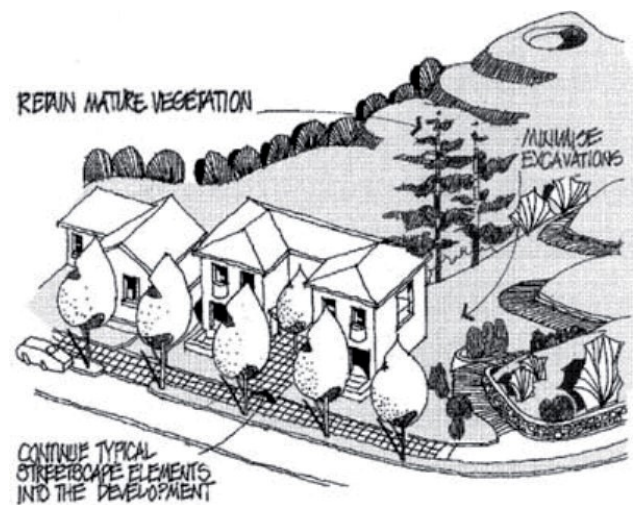
Above: Mixed use in the Residential Core and Local Centres can provide reduce the need to travel and add vitality.



Right: Lower density development can be integrated with other development where this is necessary due to constraints.



Activity nodes like Local Centres should be placed on main streets to ensure viability and vitality.



Source: Auckland City Council Residential Design Guide

Source: Urban Design Compendium by English Partnerships

4.19 LAND USE TABLES

The following land use tables outline an approach for locating activities and density that is compatible with the guidelines above. They should be used to help guide the creation of Development Area Plans down to the masterplan level. They will also be used to evaluate Development Area Plans when they are submitted with land use applications.

TABLE 1....

outlines the density targets for each neighbourhood and proposes some sub-categories within each of these, for example High, Medium, Low, Very Low. These densities would be applied within each Development Area Plan to give a first level of detail as to the location/type of development that would be further refined in the Development Area Plan.

TABLE 2....

outlines the distribution of each density sub-category. The general principle seeks that greater density be located in areas with greater accessibility and local facilities like open space / shops and other facilities. Lower density should be located where there are environmental constraints to development.

TABLE 3....

proposes a series of development controls to be applied to each of the development density sub-categories. These should be read in conjunction with the Indicative Building Typologies attached and used to guide the creation of Urban Design and Architectural Codes.

TABLE 4....

outlines the potential building typologies that would be found within each density sub-category.



4.19.1 NEIGHBOURHOODS AND TARGET DENSITIES

Neighbourhood	Density	Density Target	Density Range	Comments
Centre	H	25ha	20-30ha	Density target is in addition to commercial uses in Centre Neighbourhood. Can be located anywhere in the Centre.
	M	25ha	15-20ha	Density target is in addition to commercial uses in Centre Neighbourhood. Can be located anywhere in the Centre.
Core	H	20ha	20-30ha	Located near open space and Main-Neighbourhood Streets. Can be located around local facilities such as shops.
	M	20ha	15-20ha	Located near open space.
	L	20ha	10-15ha	Located near the periphery.
	VL	20ha	3-10ha	Located where there are environmental constraints to development.
Village	M	10ha	15-20ha	Located near open space and local facilities. Can be located in and near Local Centres.
	L	10ha	8-12ha	Can be located anywhere.
	VL	10ha	3-8ha	Located where there are environmental constraints to development.

Note:
Density targets are gross (inclusive of open space and roads)

Key:
H = High Density
M = Medium Density
L = Low Density
VL = Very Low Density



4.19.2 DENSITIES AND STREETS/OPEN SPACE

Neighbourhood	Density	Open-Space-(1)	Streets				
			Rural-Transition	Neighbourhood	Main-Neighbourhood	Woonerf	Lanes
Centre	H	NR	NA	Y	Y	Y	Y
	M	NR	NA	Y	Y	Y	Y
Core	H	R	N	N	Y	Y	Y
	M	R	Y	Y	Y	Y	Y
Village	L	NR	Y	Y	S	S	Y
	VL	NR	Y	Y	N	N	N
	M	R	N	Y	Y	Y	Y
	L	NR	Y	Y	S	S	Y
	VL	NR	Y	Y	N	N	N

Notes:

1. This refers to open space required within a short walk (less than 2 mins or as part of the development itself). The Taupo District Council standards apply where this is not the case.

Key:

H=High-Density-
M=Medium-Density
L=Low-Density
VL=Very Low-Density

NR=Not-Required
NA=Not-Applicable
R=Required

Y=Yes
N=No
S=Some



4.19.3 DENSITIES AND DEVELOPMENT CONTROLS

Neighbourhood	Density	Max-Height(1)	Development Controls		Parking	Block-Size
			Frontage	Max-Setback		
Centre	H	4	Continuous	2m	Underground or Lane access	Med
	M	3	Mixed	2m	Underground or Lane access	Med
Core						
	H	4	Continuous	2m	Underground or Lane access	Med
	M	3	Mixed	2m	Underground or Lane access	Med
Village	L	2	Detached	4m	Lane access	Med-large
	VL	2	Detached	6-15m	Normal access	Large
	M	3	Mixed	2m	Lane access or limited frontal access	Med
	L	2	Detached	6m	Lane access or limited frontal access	Med-Large
	VL	2	Detached	6-15m	Normal access	Large

Notes:

1. Height is measured in stories. For further guidance regarding height and other development controls see the building typologies.
2. Medium blocks should measure approximately 60-70m deep by 120m-140m long. Large Blocks should measure approximately 90m deep by 150m long except in areas of very low density.

Key

- H = High Density
- M = Medium Density
- L = Low Density
- VL = Very Low Density

4.19.4 DENSITIES AND BUILDING TYPOLOGIES

Neighbourhood	Density	Detached Large	Detached	Semi-detached	Row	Linked	Terrace	Walk Up Apartment	Apartment	Mixed Use Apartment
Centre	H	N	N	N	N	N	N	Y	Y	Y
	M	N	N	N	N	N	S	Y	Y	Y
Core	H	N	N	N	S	S	Y	Y	Y	Y
	M	N	Y (1)	Y	Y	Y	Y	Y	N	S
	L	N	Y	Y	S	N	N	N	N	N
	VL	Y	N	N	N	N	N	N	N	N
Village	M	N	N	S	Y	Y	Y	N	N	S (2)
	L	N	Y	S	N	N	N	N	N	N
	VL	Y	Y	N	N	N	N	N	N	N

Notes:

- This would be of a smaller size than in the Village Neighbourhood.
- Mixed Use development could take place in Local Centres within this neighbourhood.

Key:

H = High Density
M = Medium Density
L = Low Density
VL = Very Low Density

NR = Not Required
NA = Not Applicable
R = Required

Y = Yes
N = No
S = Some



INDICATIVE SAMPLE-
VILLAGE CORE-
NEIGHBOURHOOD

Scale 1:2000

Areas with potential for mixed use/apartments to define corners

Medium density development such as Terrace Housing, Row Housing, Mixed Use and Apartments

Lower density development such as Detached and Semi-detached housing

1ha sample area = 28 dwelling units plus limited mixed-use commercial

Note: 1ha area includes representative amounts of roads and open space



INDICATIVE SAMPLE OF
A LOCAL CENTRE IN A
VILLAGE RESIDENTIAL-
NEIGHBOURHOOD

Scale 1:2000

Areas with potential for mixed use to define corners

Medium density development such as Terrace Housing, Row Housing, Mixed Use

Lower density development such as Detached and semi-Detached housing

1ha sample area = 18 dwelling units plus limited mixed-use commercial

Note: 1ha area includes representative amounts of roads and open space.

4.20 URBAN DESIGN PRINCIPLES FOR PRIVATE DEVELOPMENT

The previous sections have focused on the creation of a sustainable urban structure at the level of Development Area Plans and land use consents. This section focuses on useful principles that should be used to guide the creation of Urban Design and Architectural Codes and applied at the resource consent level to ensure a quality built form outcome is reached.

This section is set up around two fundamental exercises and the application of a series of design principles.

CONTEXT ANALYSIS

A Context Analysis can help to identify the constraints and opportunities available within each neighbourhood and how development of the subject site can ensure that these are mitigated or maximized respectively.

Early discussions with Taupo District Council staff to discuss options for a site in relation to its neighbourhood should be undertaken wherever possible.

A Context Analysis is a graphical representation that indicates, among other things, the following:

- the neighbourhood movement networks eg. streets, arterial roads, cycle and pedestrian routes
- any opportunities to connect into direct routes promoting walkable catchments (“pedsheds”) from facilities
- existing or planned open spaces, parks, and linkages
- existing and planned local centres, community facilities (schools, parks), public transport and direct routes to these
- existing and planned residential areas, surrounding subdivision lot density, housing typologies or styles, parks and networks
- existing infrastructure and reticulated services (including overhead power lines), available connections and capacity
- the form and scale of the built and natural environment
- the amenity and character of the neighbourhood
- notable natural and cultural features and/or characteristics of the neighbourhood
- landscape or landform features such as wetlands, streams, rivers, vegetation and heritage features
- significant views and aspect

An example of a Context Analysis (source:- Kapiti Coast District Council Subdivision Guide)

- | | |
|----------|---------------------------------------|
| 1 | subject site |
| 2 | local shops / mixed use |
| 3 | school |
| 4 | reserves / parks / open space |
| 5 | existing business / employment |
| 6 | existing residential |
| 7 | rail station |



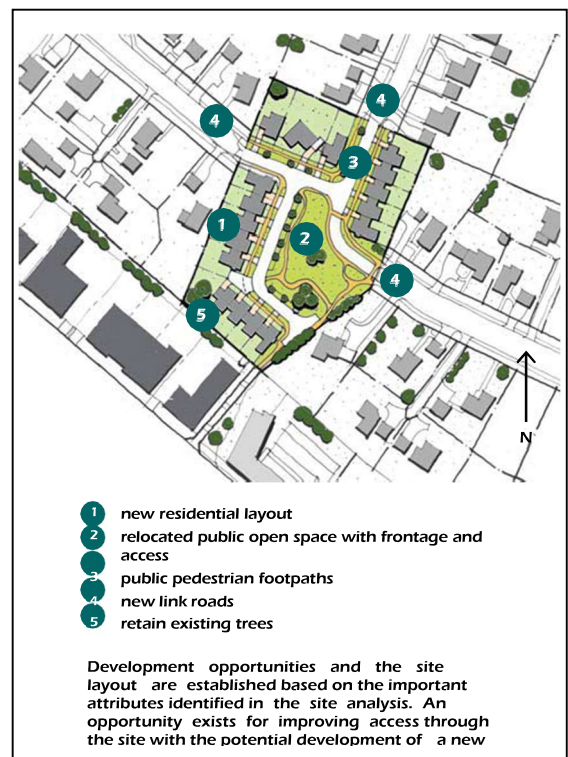
4.20 URBAN DESIGN PRINCIPLES FOR PRIVATE DEVELOPMENT

SITE ANALYSIS

A Site Analysis should be completed once a Context Analysis has been completed. This will outline the key responses to the site and surrounding area, including the issues raised in the Context Analysis. It should cover the site but also an area up to 400m away, representing a 5-minute walk.

A Site Analysis will include

- topography and landforms
- flora and fauna, including existing trees
- natural features, wetlands and streams
- soils and groundwater, including geotechnical and stability issues
- views and orientation, solar access, wind and climatic considerations
- existing buildings and structures
- heritage and cultural sites and features
- all possible vehicle and pedestrian access points
- opportunities for street connections to neighbouring sites and facilities such as open space
- any existing or proposed opportunities for cycleway, walkway and bridleway linkages
- overland flow paths and stormwater catchments
- location of proposed stormwater infrastructure
- historic or existing contamination
- local sources of irritants for example noise, dust, odour, vibration, light glare
- natural hazards and faultlines
- character and land uses of surrounding area
- orientation and layout of neighbouring buildings
- nearest local facilities such as public transport, shops, schools and park and connections to these
- character and form of surrounding buildings
- heritage or cultural features
- existing pedestrian and cycle routes
- night-time conditions eg. safety and street lighting
- views
- availability and capacity of site services such as water pipes and roads
- how residents and other users will move through and access the site
- arrangement of buildings/blocks/streets to maximise solar access eg. north-south roads and ensure correct orientation of buildings eg. backs face backs and fronts face fronts to maintain privacy
- the location of public open space and the inclusion of existing natural features
- location of areas of higher density and/or mixed use activities to ensure maximum accessibility
- location and description of landscape treatments.



An example of a Site Analysis
(source: Kapiti Coast District Council Subdivision Guide)

~~4.20 URBAN DESIGN PRINCIPLES FOR PRIVATE DEVELOPMENT~~

~~OTHER PRINCIPLES~~

~~High quality landscaping should be undertaken to soften impact of built environment.~~

~~Subdivision and development should work with the land, placing development where this can be accommodated. Trees and other natural features should be retained on site wherever possible.~~

~~Development should ensure a variety of different sized lots, creating a diverse community, rather than catering for only one residential market.~~

~~The street side of development should have a high degree of diversity. Facades of buildings should be highly detailed and break up the mass of buildings on the street.~~

~~Use secondary elements such as balconies and other projections to break up the mass of buildings.~~

~~Large masses of building should be visually broken up into smaller components. Large scale developments that address significant lengths of road frontage should be broken into smaller sections of different character.~~

~~In areas of greater density street edges should be 'activated' by development facing the street. Blank walls and areas of limited activity should be avoided.~~

~~Apply variations in height and setback, material and colours to create diversity in building response.~~

~~Roof form should contribute to the facade articulation and where appropriate act to decrease the visual bulk of a building.~~

~~High quality materials that reflect a local vernacular and architectural identity should be used.~~

~~Buildings should be located to the front of the site to maximise private open space at the rear. Any setback to the road should be treated as transition space and not as amenity or open space area.~~

~~Private open space should be provided to the rear of properties and be located in areas that maximise solar exposure. Generous private open space should be provided that has high levels of privacy.~~

~~Private open space should be designed to help mitigate environmental impacts of buildings. The open space should be designed to contribute to a rich and diverse ecology and minimise on-site imperviousness.~~

~~Fences and walls fronting the street should generally be low to maximise passive surveillance. Security and a sense of transition should be provided by other means, uc a a han e in le cl, wh e possible.~~



4.20 URBAN DESIGN PRINCIPLES FOR PRIVATE DEVELOPMENT

Visually permeable fences of high quality materials and moderate height are acceptable where other methods of delineating private from public space are unavailable. They should be seen as part of the building and architectural response.

Balconies should be oriented to provide casual overlooking and surveillance of the street.

Buildings should be designed so that windows in other buildings do not overlook private open space.

Frontages of new development should be oriented towards the road with the front door and one or more main habitable room windows overlooking the road.

Active rooms within a building, such as the kitchen and lounge should be designed to face out onto the street, while private rooms like bedrooms should be located to the rear of buildings.

Buildings that are between 10–14 metres deep can provide good natural lighting and ventilation. They are also robust and can provide for a range of uses over time.

Adequate distance should be provided between the rear boundaries of building to ensure privacy.

Buildings should be oriented to maximise solar gain and utilise multi-storey and shared wall typologies where possible.

Energy efficient and reusable materials should be used wherever possible to minimise the ecological footprint of buildings.

Parking should be provided to the rear and/or underground in areas of greater density.

Rear lane access is preferred in all areas. Front loading garages may be used where this is not possible in lower density areas but the visual impact of garages must be reduced and the number of footpath crossings kept to a minimum.

If present garages and parking areas should be sited and detailed to ensure they do not dominate the road frontage. Garages that are at the front of the house should be set back from the façade of the house.

Large parking areas should be broken up by planting or other surface treatments.

Design the layout of roads and lots to work with the contours and natural characteristics of the site.

Local identity and heritage should be incorporated into subdivision and design.



4.20 URBAN DESIGN PRINCIPLES FOR PRIVATE DEVELOPMENT

~~Passive solar techniques should be utilised on all buildings for example overhangs and eaves/external screens should be used along with concrete floors.~~

~~Developments should be designed and materials selected to reduce winter heat loss and make use of solar energy.~~

~~Roof space suitable for Photovoltaic panels should be designed on all buildings, north facing where this is possible.~~

~~Stormwater and water re-use and recycling should be incorporated into the design of all development for example roof tanks and low flow water devices.~~

~~Limited impervious surfaces should be promoted along with other Low Impact Design techniques to limit stormwater flows during events.~~

~~On-site stormwater detention and treatment should be utilised wherever feasible, linking into the wider stormwater treatment systems. (for further information see Technical Publication 124 produced by the Auckland Regional Council).~~

~~Earthworks related to lot and site development should be limited to the minimum necessary. Development should be shaped around the existing landforms, with only minor modification in order to allow development to proceed.~~

~~Connections to the pedestrian/cycle network should be maximised from the site. Internal circulation should ensure that safe, overlooked and high quality pedestrian/cycle access is paramount in the design.~~

~~Avoid gated developments which prevent useful links being established between different parts of the neighbourhood.~~

~~Where multi-storey and/or denser development shares a boundary with lower density development there should be a gradation of massing and height. Greater height and massing should occur at the street edge and be reduced to the other boundaries if required.~~

~~Higher height ground floors should be provided in areas of higher density and/or mixed use development, to allow a transition to this use in the future if required. This should be accompanied by greater sound insulation and other features required in a mixed use environment.~~

~~Consider separate access to the ground floor in higher density development to provide work from home opportunities.~~

~~Development on corners or at the entrance to nodes or higher density areas should provide a gateway function.~~



4.20 GLOSSARY FOR URBAN DESIGN AND LOW IMPACT DESIGN TERMINOLOGY IN APPENDIX THREE

Street Geometry: The arrangement and layout of the street, in particular the lengths and curvature of the road carriageway.

Solar Potential: The potential to receive ambient energy/light from the sun.

Permeable surface materials: Building materials that are hard surfaces for example paving but allow water to infiltrate and be absorbed by the soil.

Rain gardens: Small planted gardens used to absorb stormwater, treat it and then release it slowly to the surface or sub-surface.

Woonerfs: A woonerf (dutch for 'street for living') is a common place shared by pedestrians, cyclists and low speed motor vehicles. Vehicles are slowed with the placement of green areas, parking and other obstacles in the street.

Swales: Swales are planted un-piped drainage systems that are designed to slow and capture runoff by spreading it horizontally across the landscape (for example along a contour) and facilitating its infiltration into the soil.

Transferable Development Rights (TDRs): This is the exchange of zoning privileges from areas of higher sensitivity requiring environmental protection to areas of lower environmental sensitivity.

Perimeter Block development: This is development that fronts and encloses the street and forms an area of private space to the rear of buildings.

Nodes: An area of increased activity or development.

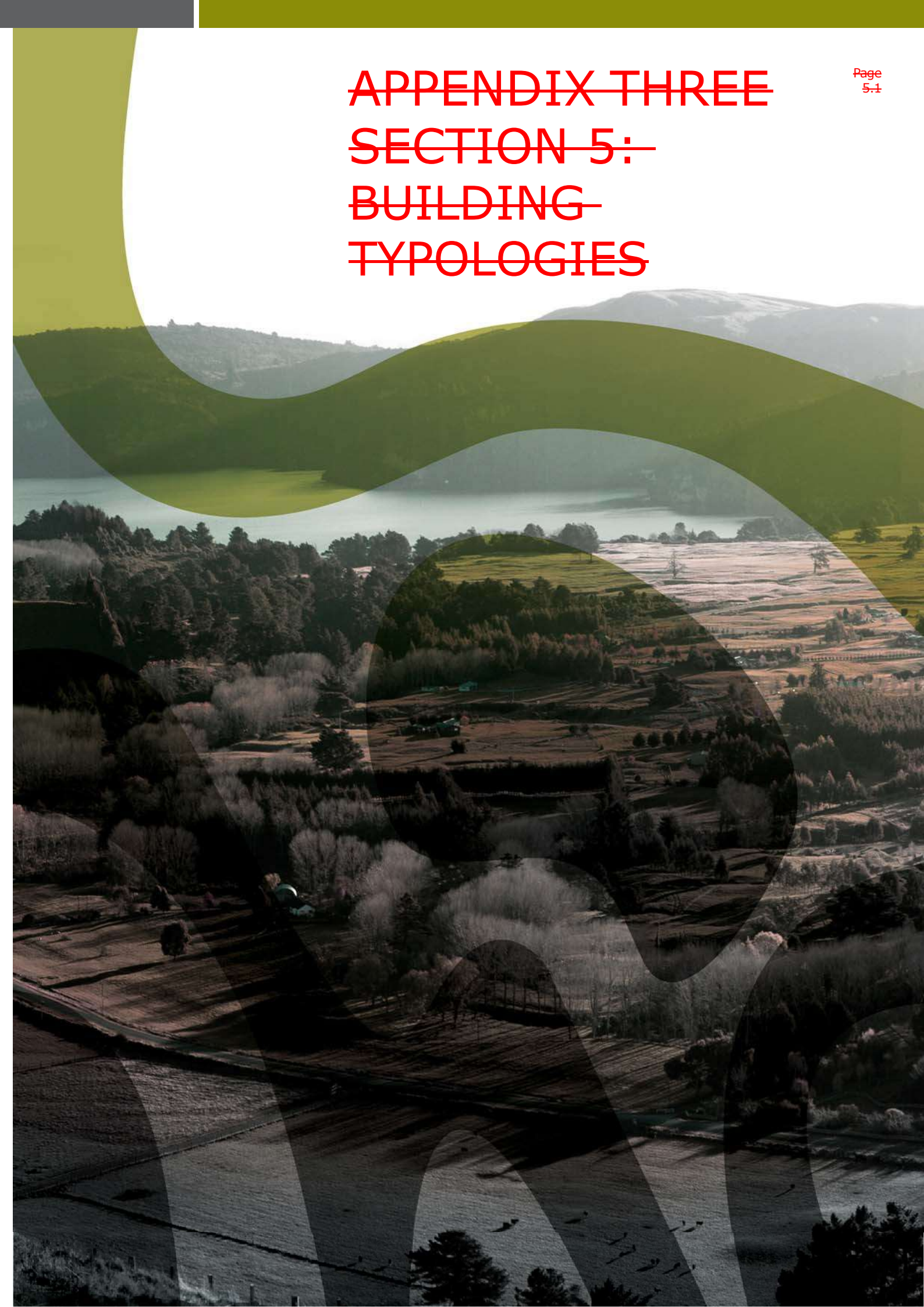
Mixed Use: Is where multiple uses are spread through a building or development eg. ground floor retail with flats/apartments above.

Ped Sheds: The radius from a node / facility eg. town centre, library, bus stop that is walkable by a pedestrian in either 5 minutes (400m radius) or 10 minutes (800m).

Facades: A side (most often the front) of a building facing the street or public space



~~APPENDIX THREE~~ ~~SECTION 5:~~ ~~BUILDING~~ ~~TYOLOGIES~~



5.1-INTRODUCTION

The following building typologies have been put forward to guide further discussion the type of development suitable within particular areas of the structure plan:

The typologies listed here are referenced against the neighbourhoods where they would be found in the body of the Urban Design Guidelines. While many of the typologies put forward are for medium-higher density development this is only reflective of the need for a wide variety within this type of development, not the quantities proposed.

Instead they should be seen as components from which the target densities are assembled. These typologies should be read along with the text accompanying map 1, Indicative Land Uses and map 1a, Indicative Land Uses and Centres Diagram — Mapara Valley.

Note 1:

Where Taupo photos were available these have been used but where not, New Zealand and Australian examples have been used to show images that are contextually close.

Note 2:

Commercial / community typologies have not been covered as it is assumed that conventional typologies may be used where these are not part of a mixed use area within a centre or neighbourhood.



5.2 CENTRE AND RESIDENTIAL CORE:
MIXED-USE BUSINESS



Height:
2-4 storeys

Lot Dimensions:
Width: max 30m
Depth: max 50% of block depth

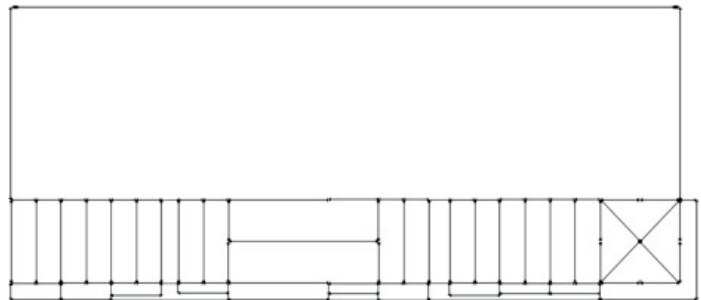
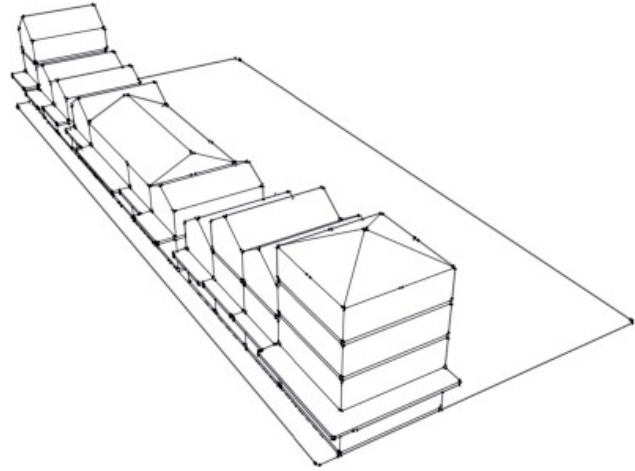
Lot Size: _____
maximum 800m²

Setback:
0-2m to provide strong
enclosure of the street and
opportunities for ground-based
retail

Frontage:
Continuous—buildings are
attached or in close proximity to
provide a continuous streetscape
and enclosure.

Parking:
Basement/semi-basement
parking or provided at the rear
to eliminate interference with
the street.

Open Space:
Private open space (floor 1),
terraces (floors 2 and 3),
roof space/gardens (floor
4). Communal open space
provided on the balance of the
development if residential uses
present.



- This typology is found predominantly in the Centre Neighbourhood and in activity nodes in the Residential Core neighbourhood near main roads and open space.
- The aim is to provide ground floor retail/commercial opportunities, with commercial uses and some residential use in the floors above.
- Generous stud heights are required to service retail and commercial uses.



5.3 CENTRE AND
RESIDENTIAL CORE+
APARTMENTS



Height:
Up to 4 storeys

Lot Dimensions:
Width: max 30m
Depth: max 50% of block depth

Lot Size:
Maximum 800m²

Density:
Approximately 96dus/ha
(assuming 50% coverage, 80%
development efficiency and
100m² average units).

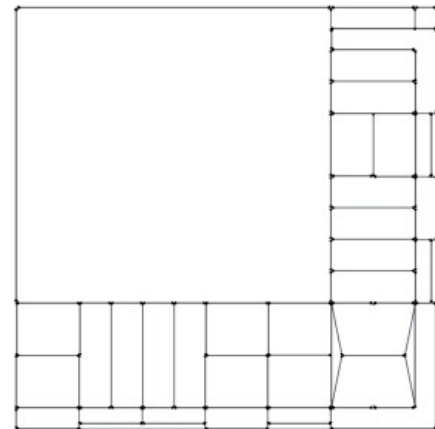
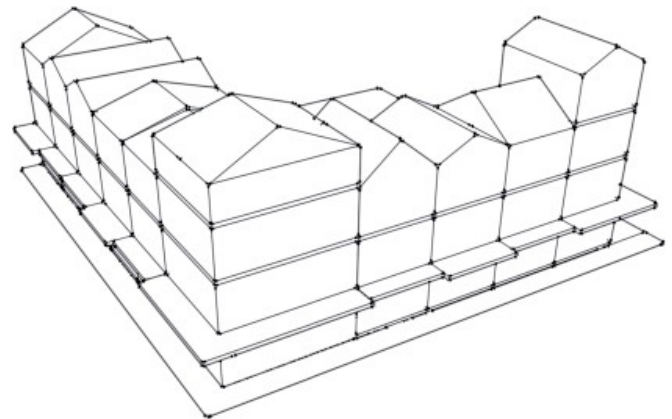
Setback:
0-2m to provide strong
enclosure of the street.

Frontage:
Continuous—buildings are
attached or in close proximity
to provide a continuous
streetscape and enclosure.

Parking:
Basement/semi-basement
parking or provided at the rear
to eliminate interference with
the street.

Open Space:
Private open space (floor 1),
terraces (floors 2 and 3),
roof space/gardens (floor
4). Communal open space
provided on the balance of the
development.

- These are attached higher density dwelling located in the Centre and Residential Core neighbourhoods.
- Within the Residential Core area these will be located in activity nodes within close proximity to major roads and/or open space.
- The majority of these will be residential in nature but they should be designed with greater stud heights on the ground floor to allow for a transition to commercial or retail uses if necessary.
- The emphasis is on providing a dense, high quality built form that will provide a critical mass in or in the direct vicinity of each centre.



*Note: All densities are gross per ha:
40% for roads and open space has
been allowed in all figures.*

5.4 CENTRE AND RESIDENTIAL CORE: WALK-UP APARTMENTS



Height:
3-storeys

Lot Dimensions:
Width: min 15m max 40m
Length: min 25m

Lot Size:
Maximum 1000m²

Density:
Approximately 58 dws/ha
(assuming 40% coverage, 80%
development efficiency and
100m² average units)

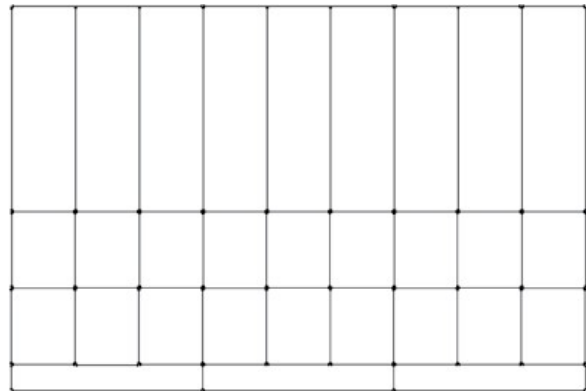
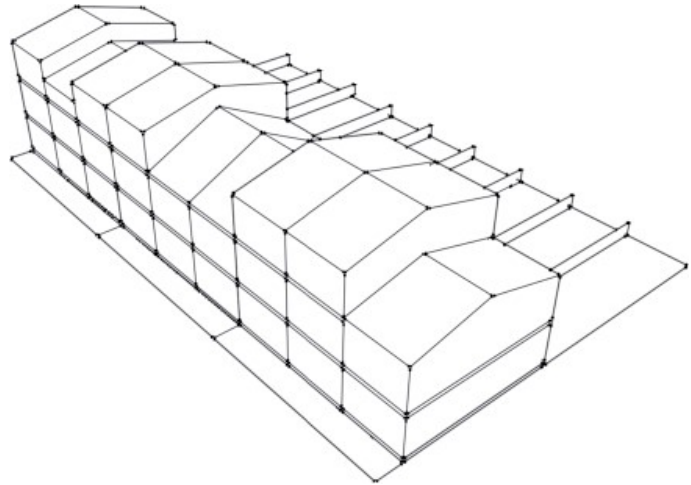
Setback:
2-4m to provide a strong
enclosure of the street in areas
of greater density.

Frontage:
Generally continuous —
buildings are attached or in
close proximity to provide a
continuous streetscape and
enclosure. Some flexibility in
areas of less density.

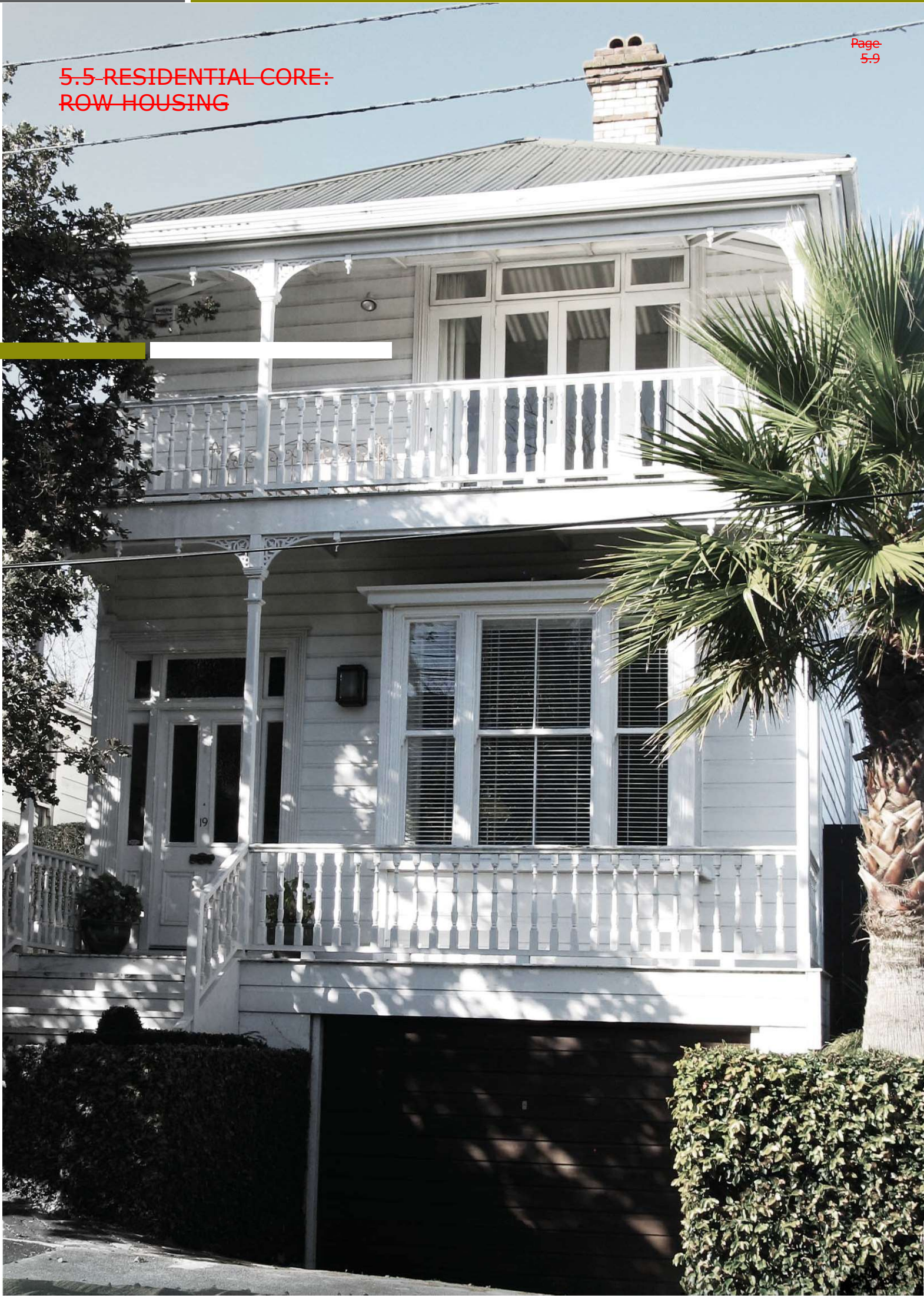
Parking:
Basement parking or provided
at the rear to eliminate
interference with the street.

Open Space:
Private open space (floor 1),
terraces (floor 2), Roof space/
gardens (floor 3). Communal
open space provided on the
balance of the development.

- These are attached higher-density dwellings located in the Centre and Residential Core neighbourhoods.
- Within the Residential Core area these will be located in activity nodes within close proximity to major roads and/or open space.
- The emphasis is on providing a dense, high-quality built form that will provide a critical mass in or in the direct vicinity of each centre.
- These differ from conventional apartments in that they are solely residential and have a lower height.



5.5-RESIDENTIAL-CORE:
ROW-HOUSING



Height:
2-3 storeys

Lot Dimensions:
Width: 8-10m
Length: 25-35m

Lot Size:
200m²-350m²

Density:
17-30 dws/ha

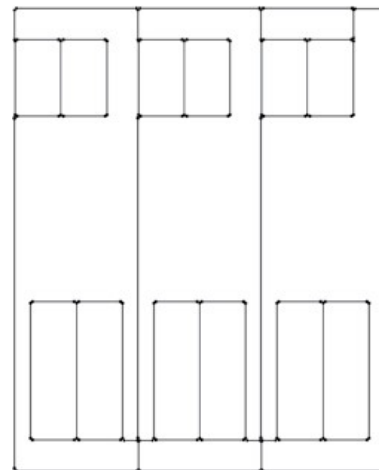
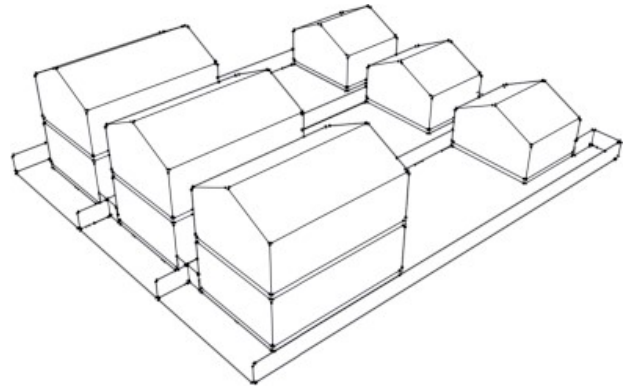
Setback:
2-4m

Frontage:
Detached

Parking:
Lane access to the rear of
the property to eliminate
interference with the street.

Open Space:
Private open space located
behind the building.

- This is a detached form of housing separated by narrow sideyards from adjoining properties.
- This is similar in other ways to terrace housing but provides a greater internal area.
- These will be located throughout the Residential Core neighbourhood and within the Village Residential neighbourhood when located near activity nodes beside major roads and/or open space.



5.6-RESIDENTIAL-CORE: TERRACE-HOUSING



Height:
2–3 storeys

Lot Dimensions:
Width: 5–7m
Length: 25–35m

Lot Size:
125m²–245m²

Density:
25–48 dus/ha

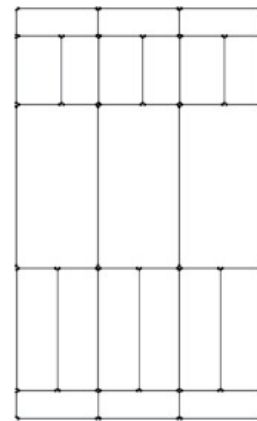
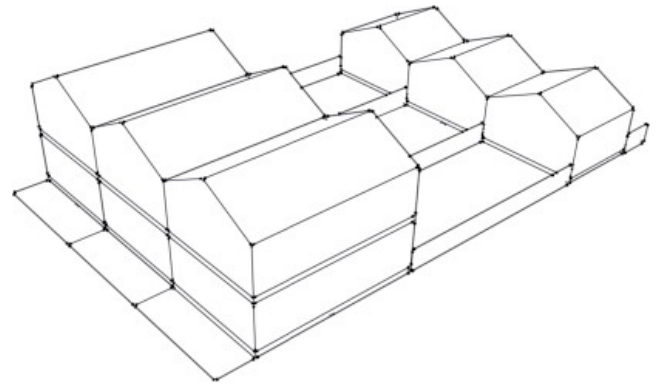
Setback:
2–4m to provide strong
enclosure of the street with an
area of interface between the
public and private realm.

Frontage:
Generally continuous—
buildings are attached or in
close proximity to provide a
continuous streetscape and
enclosure. Some flexibility in
areas of less density.

Parking:
Lane access to the rear of
the property to eliminate
interference with the street.

Open Space:
Private open space is located
behind the building.

- This is an attached form of housing that provides a dense built form with a high proportion of private open space and internal space.
- These will be located throughout the Residential Core neighbourhood and within the Village Residential neighbourhood when located near activity nodes by major roads and/or open space.



5.7—RESIDENTIAL CORE:
SEMI-DETACHED



Height:
2-storeys

Lot Dimensions:
Width: 13–15m
Length: 18m–25m

Lot Size:
234m²–375m²

Density:
16–25 dus/ha

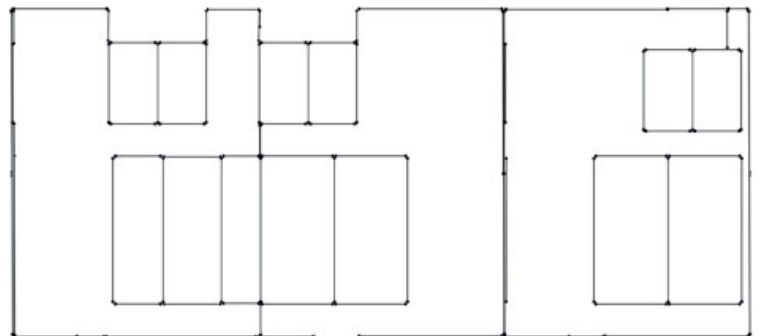
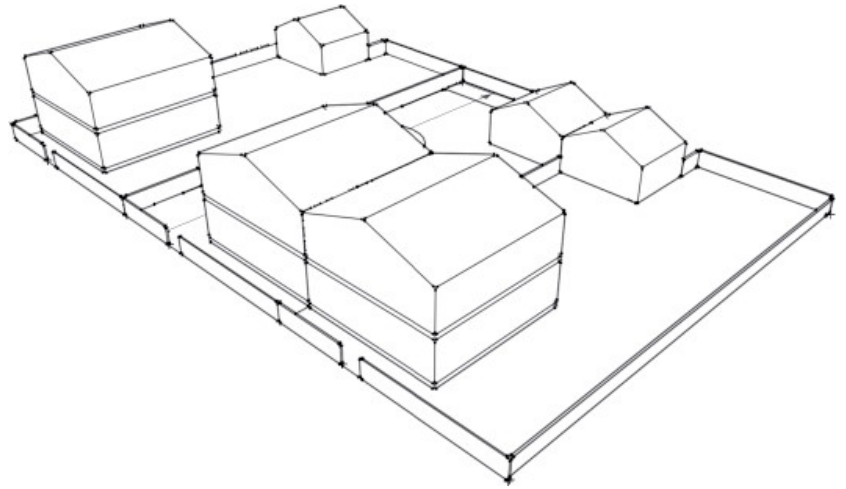
Setback:
2–4m to provide strong enclosure of the street with an area of interface between the public and private realm.

Frontage:
Mixed—a combination of attached and detached building types.

Parking:
Lane access to the rear of the property to eliminate interference with the street.

Open Space:
Private open space behind and to the side of the building.

- This is a form of housing that is attached on one boundary, giving an area of private open space to the rear and side.
- This typology provides a greater density than detached suburban typologies while providing similar amenities and with less massing lining the street than terraces / row houses.
- These can be located throughout the Residential Core neighbourhood and Village Residential neighbourhood.



5.8 RESIDENTIAL CORE: LINKED HOUSING



Height:
2-storeys

Lot Dimensions:
Width: 10m
Length: 30-35m

Lot Size:
300m²-350m²

Density:
17-20 dus / ha

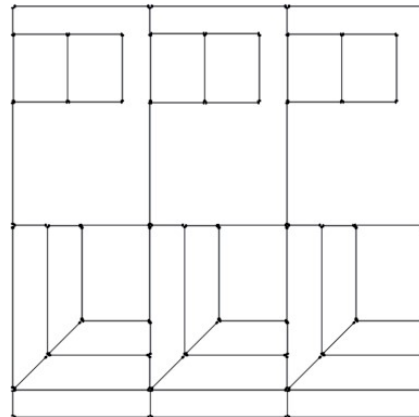
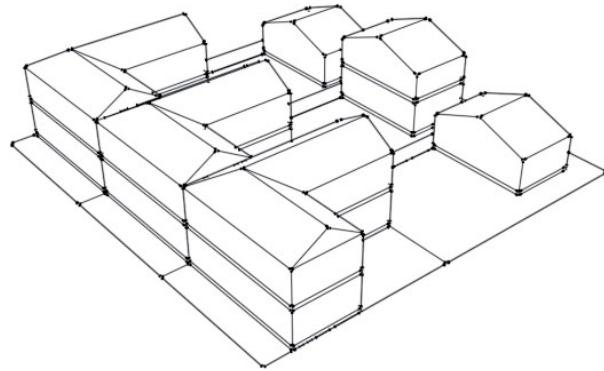
Setback:
2-4m to provide strong enclosure of the street with an area of interface between the public and private realm.

Frontage:
Mixed — a combination of attached and detached building types.

Parking:
Lane access to the rear of the property to eliminate interference with the street.

Open Space:
Private open space located behind the building

- This is an attached form of housing that has an annex on one side to enclose a private open space in addition to that provided at the rear of the property.
- The use of angles and windows allows visual privacy to the courtyard of each dwelling.
- These will be located throughout the Residential Core neighbourhood and within the Village Residential neighbourhood when located near activity nodes by major roads and/or open space.



5.9 RESIDENTIAL CORE: DETACHED HOUSING



Height:
1-2 storeys

Lot Dimensions:
Width: 12-18m
Length: 28-32m

Lot Size:-
336m²-556m²

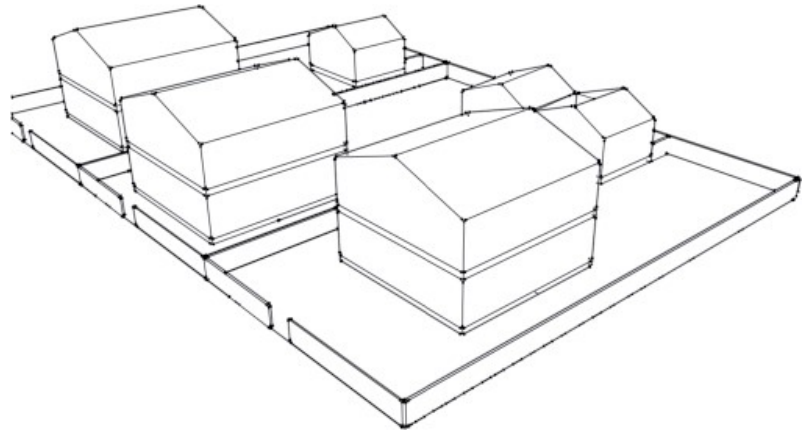
Density:
11-18 dus/ha

Setback:
2-6m

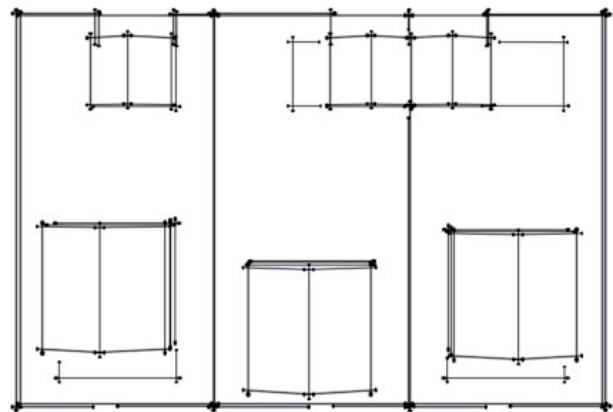
Frontage:
Detached

Parking:
Lane access to the rear of the
property.

Open Space:
Private open space behind and
to the side of the building.



- This is a detached form of housing that is found in conventional suburban areas.
- These will be located in the Village Residential neighbourhood and in limited amounts in the Residential Core neighbourhood.
- Where found in the Village Core Neighbourhood these will be of higher density than in the Village Residential neighbourhood.
- Parking will generally be provided via a lane but some areas where this may be precluded can be serviced by recessed off-street parking.



5.10 VILLAGE RESIDENTIAL: MIXED-USE BUSINESS



Height:
3-4 storeys

Lot Dimensions:
Width: max 30m
Depth: max 50% of block depth

Lot Size:
maximum 800m²

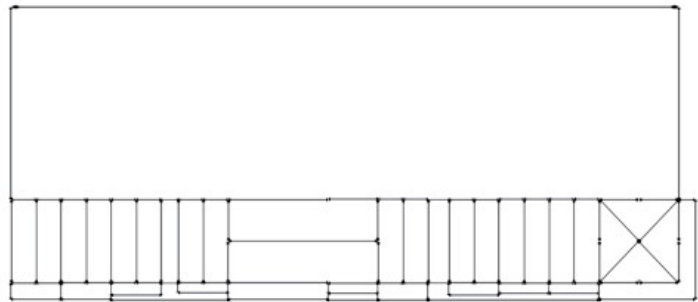
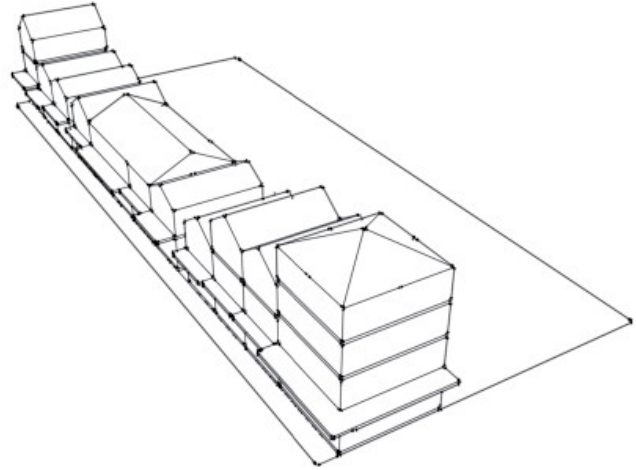
Setback:
0-2m to provide strong enclosure of the street and opportunities for ground based retail.

Frontage:
Continuous—buildings are attached or in close proximity to provide a continuous streetscape and enclosure.

Parking:
Basement/semi-basement parking or provided at the rear to eliminate interference with the street.

Open Space:
Private open space (floor 1), terraces (floors 2 and 3), roof space / gardens (floor 4). Communal open space provided on the balance of the development if residential uses present.

- This typology is found in activity nodes within the Village Residential neighbourhood. These will take the form of local centres with small amounts of mixed use commercial activity, designed as community focal points.
- They will be located adjacent to open space and should be the focus of more intensive development for example medium density in the surrounding area.
- The aim is to provide ground floor retail/commercial opportunities, with commercial uses and some residential use in the floors above.
- Generous stud heights are required to service retail and commercial uses.



5.11-VILLAGE RESIDENTIAL: DETACHED HOUSING



Height:
1-2 storeys

Lot Dimensions:
Width: 18-25m
Length: 28-32m

Lot Size:
504m²-800m²

Density:
11-18 dus/ha

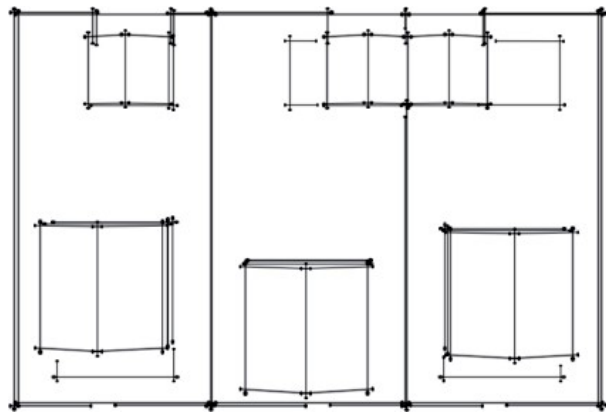
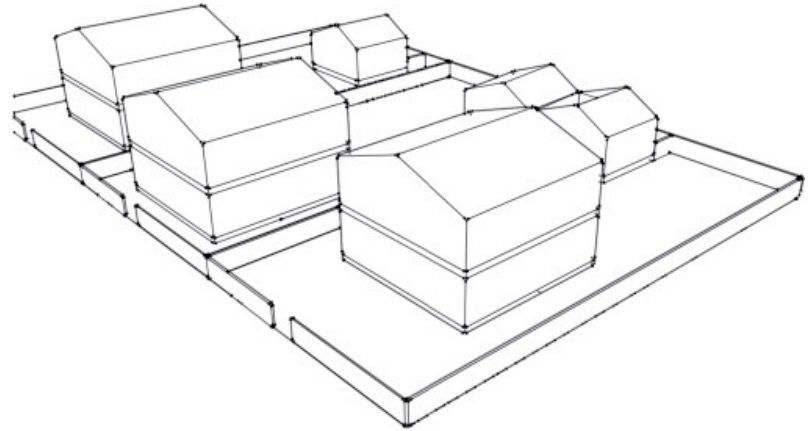
Setback:
2-6m

Frontage:
Detached

Parking:
Lane access to the rear of the property or limited recessed off-street parking

Open Space:
Private open space behind and to the side of the building.

- This a detached form of housing that is found in conventional suburban areas.
- These will be located throughout the Village Residential neighbourhood.
- Parking will generally be provided via a lane but some areas where this may be precluded can be serviced by recessed off street car parking.



5.12 VILLAGE RESIDENTIAL: LARGE LOT HOUSING



Height:
1-2 Storeys

Lot Dimensions:
Width: 25-40m
Length: 40-100m

Lot Size:-
1000m²-4000m²

Density:
2-8 dus/ha

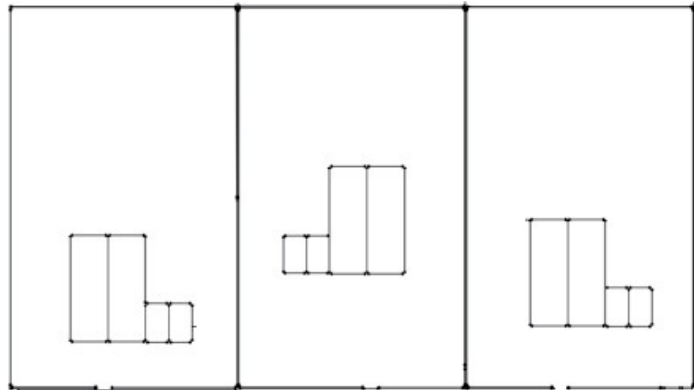
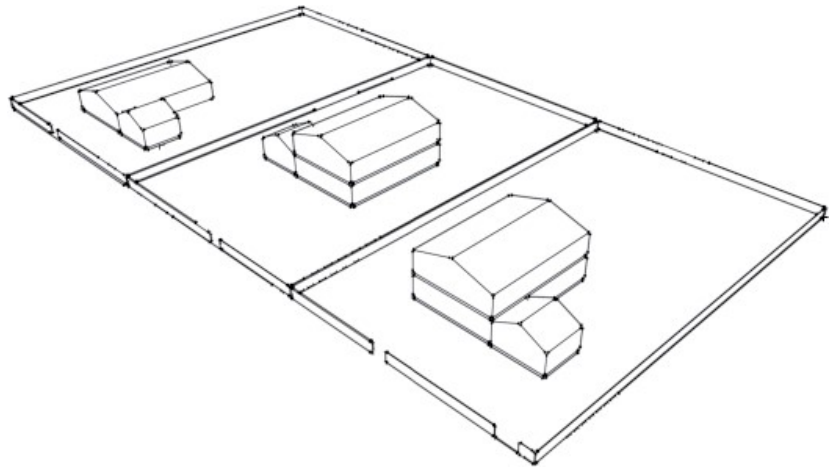
Setback:
6-15m with flexibility provided

Frontage:
Detached

Parking:
Recessed off-street parking to
the front of the lot.

Open Space:
Private open space located
behind and to the side of the
building.

- This is a larger form of detached housing that will be located towards the periphery of the Village Residential area and where geotechnical limitations require a lower density to secure adequate building platforms.
- This typology will be accompanied by significant planting provisions, creating a very green low density garden suburb typology.



5.13 VILLAGE RESIDENTIAL: TERRACE HOUSING, ROW HOUSING, SEMI-DETACHED, LINKED HOUSING

- These typologies are expressed in a similar way in the Village Residential neighbourhood as in the Residential Core neighbourhood. However, it is anticipated that the lower densities in the density ranges would be predominant.
- In the Village Residential neighbourhood the typologies other than detached and large lot detached will be located near local centres or activity nodes by main roads and/or open space.
- With Detached housing and lower density forms of Semi-detached and Row Housing car parking can sometimes be provided as recessed offstreet parking to the front of the site.
- Lane access should still be the predominant method of access but where this is not provided other methods such as shared driveway access should be provided to limit the number of footpath crossings.

