Introduction

Our population is growing older and more diverse. Households are getting smaller. The stand alone house on a large section in the suburbs does not meet everyone’s need for housing, support their preferred lifestyle, or their ability to maintain a property.

Medium density housing offers a practical, often affordable alternative. It is characterised by dwelling units built close together or connected. Medium density housing includes detached and semi-detached units, townhouses, terrace and row houses, and low-rise apartments, some student housing and retirement villages but not specialised rest homes offering medical care.

When people live closer to one another, the possibility for lower amenity and nuisance can increase. Through careful planning and well-considered design, high quality housing and living environments can be achieved. Well designed medium density house types will have better privacy, security and amenity than traditional stand alone houses at higher densities such as infill.

As medium density housing is complex, design specialists should be involved to achieve good outcomes.

This guide to ‘medium density’ housing relates to comprehensively planned multi-unit residential developments of more than three units, at densities between on unit per 100m² to one unit per 325m² of land. Apartments at densities greater than 1:100sqm are considered ‘high density’, and have some additional issues not addressed in this guide.
Where medium density works

- Medium density housing works well within a 5 minute walk of a single amenity (park, shops, school, bus stop, healthcare, work) and a 10 minute walk of several. The key objective is that residents can meet most of their daily needs locally.
- The best location for medium density housing is around the fringe of retail and business centres, close to public transport and open space for active and passive recreation.
- Medium density housing does not work in the middle of ‘nowhere’. In large scale green field developments, other community amenities such as public transport nodes, shops and parks need to be developed at the same time as medium density housing to support robust community development.
- The design and scale of medium density housing that is appropriate will depend on the scale of the immediate built environment, site factors such as slope, orientation and view, and proximity to community amenities.
- Higher-density apartments are a more appropriate use of the land resource in Tauranga’s central city.

What medium density looks like

- Medium density housing is characterised by compact living environments. While a more intense use of land than detached housing it needs to retain a strongly ‘residential’ feel.
- Although buildings will be close together, or even connected, comprehensive planning and careful attention to design will often deliver more privacy and less nuisance than detached housing.
- The layout, configuration, and character of developments should be designed to emphasise Tauranga’s natural coastal landform.
- Well considered private, communal and public open space becomes increasingly important with higher density living.
- In multi-unit buildings, the individual units should be expressed with roof lines, colours and style.
Site design toolbox

- A site of with 1,500sqm minimum area, regular shape and a 30m minimum street frontage is suitable for a comprehensive medium density housing development. Lots large enough to contain a circle of 30m minimum diameter are preferable.

- In existing urban areas, lots will probably need to be combined. It is preferable to amalgamate adjacent sites sharing long boundaries rather than ones which are behind each other or connected only at a corner.

- Long narrow sites and irregular shapes are more difficult to utilise and perceived as less valuable. The wider the street frontage the better, as more units will face the street.

- Sites may need to be larger than 1,500sqm if they contain mature vegetation or other features that should be protected.

- If the site faces north, lots should be around 3m wider than lots facing east, west, or south. This allows width for outdoor living spaces to be located to the side of the unit, set back from the street, where they can be fenced off for privacy while still allowing the building to front the street.

- Check with Council that the existing infrastructure can support increased density. More residents will impact on the road network, water and wastewater, power, public transport and open space.

Well-proportioned lots for medium density housing within the 'parent' lot are commonly of the following proportions:

<table>
<thead>
<tr>
<th>Type</th>
<th>Minimum Lot Size</th>
<th>Ideal Lot Size</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>low rise apartments</td>
<td>1,500sqm</td>
<td>40m frontage preferable. Around 30m front x 50m deep as an ideal if amalgamating existing lots</td>
<td></td>
</tr>
<tr>
<td>detached or semi detached</td>
<td>250sqm</td>
<td>10m front x 25m deep ideal. These can accommodate double garages.</td>
<td></td>
</tr>
<tr>
<td>duplex or townhouse</td>
<td>200sqm</td>
<td>9m front x 22m deep ideal. These are suitable for single or stacked garages.</td>
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</tr>
<tr>
<td>terraced house</td>
<td>150sqm</td>
<td>7.5m front x 20m deep ideal. These often have living rooms above a garage, a garage accessed from a rear lane, or no garage.</td>
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</tbody>
</table>

Absolute minimum lot width is around 6m (with no garage at front).

Absolute minimum lot depth is around 18m (with extra additional width if the lot faces north).

If vehicles enter from a rear lane, minimum lot depth becomes 30m.
Open space and landscaping

- Open space is an essential consideration in a medium density housing development. Involve a landscape specialist from the start of the design so the full potential of outdoor spaces can be realised. The denser the development, the greater the need for high quality landscape design, materials and planting.
- Landscape design and plant selection should relate to the existing character of the neighbourhood or underlying ecology of the area. Retain as much of the existing vegetation as possible.
- Ensure there are clear boundaries between private, communal and public open space.
- Communal outdoor spaces often have multiple uses — outlook, car parking, greenery. Ensure pedestrians have priority over vehicles.
- Communal open space needs to be easily accessible to residents, relatively flat, of useable size. Where appropriate consider providing seating, shade and play equipment.
- Landscape may be viewed not just from ground level, but from above. Soften the impact of ground level parking areas with trees, preferably planted throughout area not just around edges.
- Provide opportunities for gardening even at a small scale of planter boxes on balconies, window boxes etc.
- Use deciduous trees in areas which provide summer shade yet allow sunlight access during winter. Ensure the falling leaves will not create a major maintenance issue.

Street frontage

- Dwellings must face public and internal streets, and communal paths and open space to provide overlooking and interest to the street scene. Avoid ground level blank walls.
- Attention to detail of the public fronts of the buildings adds value to the units and to the street.
- Provide accessible entrances on accessible paths. Ensure the front entrance is more prominent than garage doors.
- Ensure the front door to ground level units or the communal entrance is easily identified from the street on a direct path. Entrances should be protected from the weather and well lit.
- Vary the facades of adjacent units so they are distinguishable from each other to help assert individual ownership for residents.
- Through the selection of different roof form and material, wall claddings and opening sizes, the same building plan can look very different. Limit the range of materials and colours to create a cohesive image which still identifies individual units.
- Elements such as eaves, balconies, canopies, and window details create variation on the street frontage. Strategic repetition of elements can create patterns which unify the whole development.
- Balance window and door proportions with the size of the building and character of the neighbourhood.
- Add interest to the façade through the selection of materials and colour within units and across the whole development.
Security and privacy

- Locate a living space (lounge, family room, kitchen or dining space) with windows that face the street so surveillance of the street is obvious. This makes the street safer for pedestrians and surveillance from the street reduces crimes against property.
- Define the boundaries between public, communal and private space. This allows people to feel comfortable using a space and makes it easier to identify intruders.
- Locate outdoor living areas to the side or rear of the property to avoid use of high, solid fences on the street. Provide only a narrow front yard as a buffer between public and private spaces to maximise the private outdoor living space at the rear.
- On the street, solid fencing should be no higher than 1.2 metres. A higher fence should be at least 50% visually open. Front yard planting likewise must not block the visual connection between the street and the internal living space.
- An entrance and terrace raised above the street can provide a sense of privacy to residents while allowing clear overlooking of the street activity.
- Ensure communal routes through a development are visible, direct, accessible, well lit and open ended.
- In apartment buildings, provide secure access from units to communal lobbies and car parks, that is well lit with clear vision lines. Avoid recesses and enclosed pathways with single exits.
- Reduce opportunities for people to be trapped due to landscape design by keeping sight lines clear through the use of low level planting or street trees with higher canopies. Avoid blocking light sources with plant growth.
Mass, form, repetition, scale

- Developments should be compatible with the character of the surrounding neighbourhood. They should respond to and not block important views of the harbour, coast, Mauao or Papamoa Hills.
- Medium density housing needs to appear as housing not as any other type of building. This is best achieved by referencing to the human scale and ensuring individual units are identifiable.
- Reduce the bulk of large developments through variations in height and roof modulation, and vertical breaks and recessions in the façade. A collection of smaller individual buildings is less dominating than one large single building. Respond to the heights of adjacent buildings.
- Three to five levels of height should be the norm, with height beyond this reserved to define feature corners, façade elements or roof shape.
- Use a range of unit types and sizes within a development to create variation in plans and facades. This will provide greater choice to the purchaser and attract a more diverse population.
- Project and recess various building elements to create variation in elevations.
Outdoor living space and outlook

- Private outdoor living spaces should be adjacent to the main living space. Use wide and high openings to maximise the relationship and access to the outdoors.
- Create a transition zone between indoors and outdoors with verandas, pergolas, and other intermediary devices so windows and doors can remain during rain.
- A ground level unit should have an area of exclusive use outdoor space of 30sqm with a minimum dimension of three metres, a maximum gradient of 1:8 and no more than one metre below the adjoining living space.
- Locate balconies for the longest exposure to sunlight. Orient them to provide passive surveillance of streets, open spaces and communal areas.
- Balcony size needs to relate to unit size and potential number of occupants. If the balcony is the main outdoor living space, it needs to be at least 6sqm with a minimum dimension of 1.8m.
- Provide wet weather and shade protection over a portion of the outdoor living space to accommodate Tauranga’s warm wet climate.
- Provide variety in the size of outdoor living spaces and living rooms. Some people prefer an emphasis on indoors, others outdoors.
- Ensure private spaces are not overlooked to an inappropriate degree. Offset window placement of units opposite each other by a minimum of 1m lateral separation wherever possible.
- Place spaces of similar use in terms of noise and activity adjacent. Avoid placing active, noisy areas next to the neighbours’ quiet private space. The street frontage is an excellent buffer for noise.
- Do not top off a high retaining wall with an additional high fence. Consider setting the fence back behind planting, or lowering fence height. The combined boundary fence and wall height should not exceed 1.8m.
- If there is sufficient space, step the retaining wall and create garden terraces.
Transport and parking

- Promote reduced car use (as distinct from car ownership) by providing convenient quality public transport, cycling and walking routes and facilities.
- Mark pedestrian paths adjacent to vehicle access through paving or colour variation to prioritise pedestrian safety. Indicate pedestrian precedence by continuous footpath material at vehicle crossings. Reduce the width of vehicle crossings over footpaths to a minimum.
- Make all vehicle access ways as narrow as possible, with additional demarcated space for pedestrians, cyclists, and passing bays.
- Share vehicle crossings and driveways between units. Where a complex has a gated entry to a common parking area, ensure that the gates are set back from the front boundary at least 6.5m to allow a vehicle to queue, while the gate opens without blocking the footpath.
- Locate visitor parking close to site entrances.
- Provide convenient, secure cycle storage for residents and visitors.
- The level of parking provision should depend on unit sizes and proximity to public transport.
- Consider the design of houses and garaging as a cohesive whole. Garages and car parking should not visually dominate the site.
- A garage on the street frontage should be recessed behind the building frontage. A garage 5.5m from the front boundary allows a visitor vehicle to park in front of it within the site.
- Reduce the dominance of double garages by separating the two garages or providing two single garage doors in staggered facades. Consider using single width garages with stacked parking.
- Consider half-sunk basement parking to reduce the dominance of garages on the street, especially for larger numbers of apartments. If the garage is side-on to the street ensure the façade is not blank wall.
Low impact design

- Minimise impermeable surfaces such as asphalt and concrete to reduce the volume of stormwater runoff, which can be treated in kerb side swales and rain gardens. Use pavers with open joints, crushed shells, pea gravel, limestone chips and other permeable materials in preference to concrete.
- Consider rainwater collection from roofs for watering gardens and flushing toilets.
- Select locally sourced durable materials with low embodied energy, and that are low maintenance.
- Design for passive solar heat gain. Use materials with high thermal mass internally like concrete, bricks and stone, which store heat from the sun, and then release warmth in the evening.
- Consider future maintenance requirements at time of design, such as access for cleaning and replacement of elements.
Choice and flexibility

- Provide a mix of unit sizes.
- Consider providing smaller affordable units, perhaps with less expensive fittings and finishes or with no car parking, within a development that offers a range of house types.
- Ensure units at ground level on accessible sites can be easily modified for elderly or physically disabled occupants.
- In developments adjacent to town centres consider higher studs on the ground floor for potential commercial use of the property at a future date.
- Minimise circulation space when planning layouts of units. Group service areas together to create greater flexibility. Design rooms to suit a range of different activities, for example, a bedroom could be an office, media room, or library to support a range of lifestyles and households over time. Open plan living areas should allow for variety of furniture layouts.
- Arrange plans so living spaces receive the greatest amount of sunlight as possible and have the longest outlook.
- Provide sufficient storage within units. Consider lockable storage in communal parking areas for outdoor equipment usually transported by car, such as canoes or golf clubs.
Acoustic separation

- Noise can be a major source of tension between neighbours.
- Do not rely only on acoustic insulation standards under the Building Code. Design unit layouts so the same activity areas are either side of the party wall i.e. noisy areas are adjacent to noisy areas and quiet areas next to quiet areas.
- Use bathrooms, storage areas, and wardrobes as noise buffers between units, and active spaces and bedrooms within a unit.
- Locate garages of adjacent units side by side to reduce noise transmissions to separate sleep zones and so sleeping occupants are not disturbed by car movements next door.
- Locate common entrances and circulation areas adjacent to units’ service rooms and living spaces.
- Design room layouts so that stereos and televisions are not placed against party walls between units, or increase the level of acoustic insulation.
- Install double glazing to mitigate external noise.
- Locate the external fan units for heat pumps, extracts and air conditioners away from neighbours’ bedrooms and outdoor living space.
- Ensure open doors and windows do not channel noise directly at a neighbour’s quiet spaces.

Services

- Consider the requirements of service elements such as air conditioning plant, outlets and storage tanks from an early stage of the design process. Ensure that they are not intrusive in visual or nuisance terms, and can be easily accessed for maintenance.
- Developments of more than five units should engage the use of a private contractor with larger communal collection bins for on-site collection of wastes. Locate communal collection facilities in conveniently accessible areas of the site for both waste drop off and pick up. Provide units with adequate internal space to store rubbish between periodic trips to communal waste storage areas.
- Avoid solutions that require large volumes of waste to be deposited on the public street for collection.
- Facilities should be screened from public view, well ventilated and durable.
- Use building recesses and landscaping to good effect for the external storage of unit wheelie and recycling bins in standalone and semi-detached buildings.
Energy efficiency

• Tauranga has a mild climate so well designed housing should not need continuous cooling or heating.
• Site layouts, building forms and building layouts should be designed for good solar orientation and performance.
• Take advantage of larger building size in low rise apartments and terraced housing to provide thermal mass and heat exchange systems.
• Consider a communal hot water heating facility which is more efficient than heating several isolated small volumes.
• Consider a communal solar water heating device. Dividing the set up costs between several units will make it more affordable from the outset.
• Consider recycling rainwater through a communal storage tank to communal laundry and garden, and for toilet flushing.
• Allow for natural ventilation with sufficient opening windows in each unit. Place smaller windows facing the direction of the prevailing breeze with larger windows on the opposite wall to induce air flow through the unit.
• Install external louvers and shutters, and use roof forms with deep eaves to control heat gain in the building.
• Consider the colour of units. Dark walls will gain heat faster than lighter coloured ones. This may be a good or a bad thing depending on other design and micro-climate factors.
• Use coated or double glazing to reduce heat gain or loss as appropriate.
• Install energy efficient appliances, light fittings and heating.
• Require water efficient appliances such as low flow shower and tap heads.

Durability and maintenance

• Use simple building forms and sound construction techniques using durable materials. Avoid complicated shapes and numerous materials which create technically challenging junctions.
• Ensure that access for maintenance is considered at design stage.
• Use materials that have long life spans, require minimal maintenance, and contribute to energy efficiency.
• Use materials which have a high thermal mass like concrete, bricks and stone which absorb and store energy, and release it gradually into the space.
• Ensure that the cumulative maintenance burden being created is within the realistic ability of future users to meet.
• Provide material, finishing and maintenance schedules to purchasers so that they can easily source replacements.