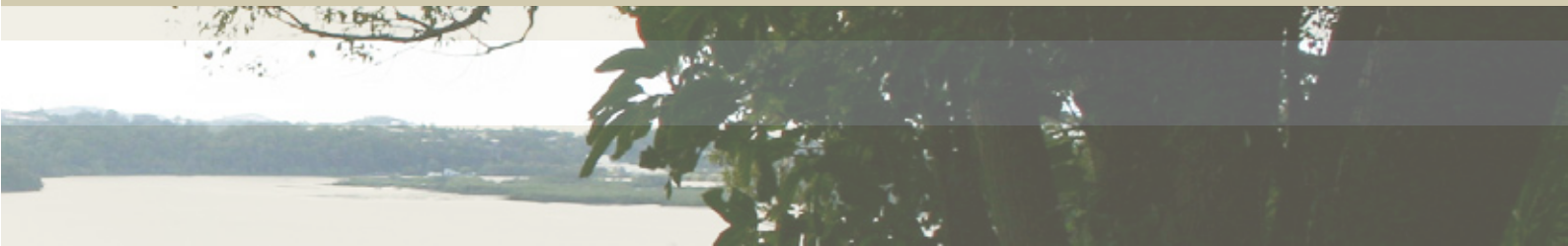


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## PART 04 RESIDENTIAL

- 4.1 Built Form
- 4.2 Cut and Fill
- 4.3 Landscaping
- 4.4 Topographically Sensitive Development Opportunities
- 4.5 Climatically Sensitive Design
- 4.6 Small Lot Housing



Some of the key information which you should record during a site analysis includes:

- Where's north?
- How does the sun move around your site?
- What are the key topographic characteristics?
- What is the subsurface condition / soil type?
- Any drainage lines?
- Where do the cooling summer breezes come from?
- Where do the cold breezes in winter come from?
- Where is your primary view?
- Where is the best spot for your garden or outdoor space?
- Which way does your site slope?
- Where are the key natural features on your site?
- What will be the best location to gain vehicular access and/or build a garage?
- Where are surrounding buildings located and how will they overshadow or overlook your site?

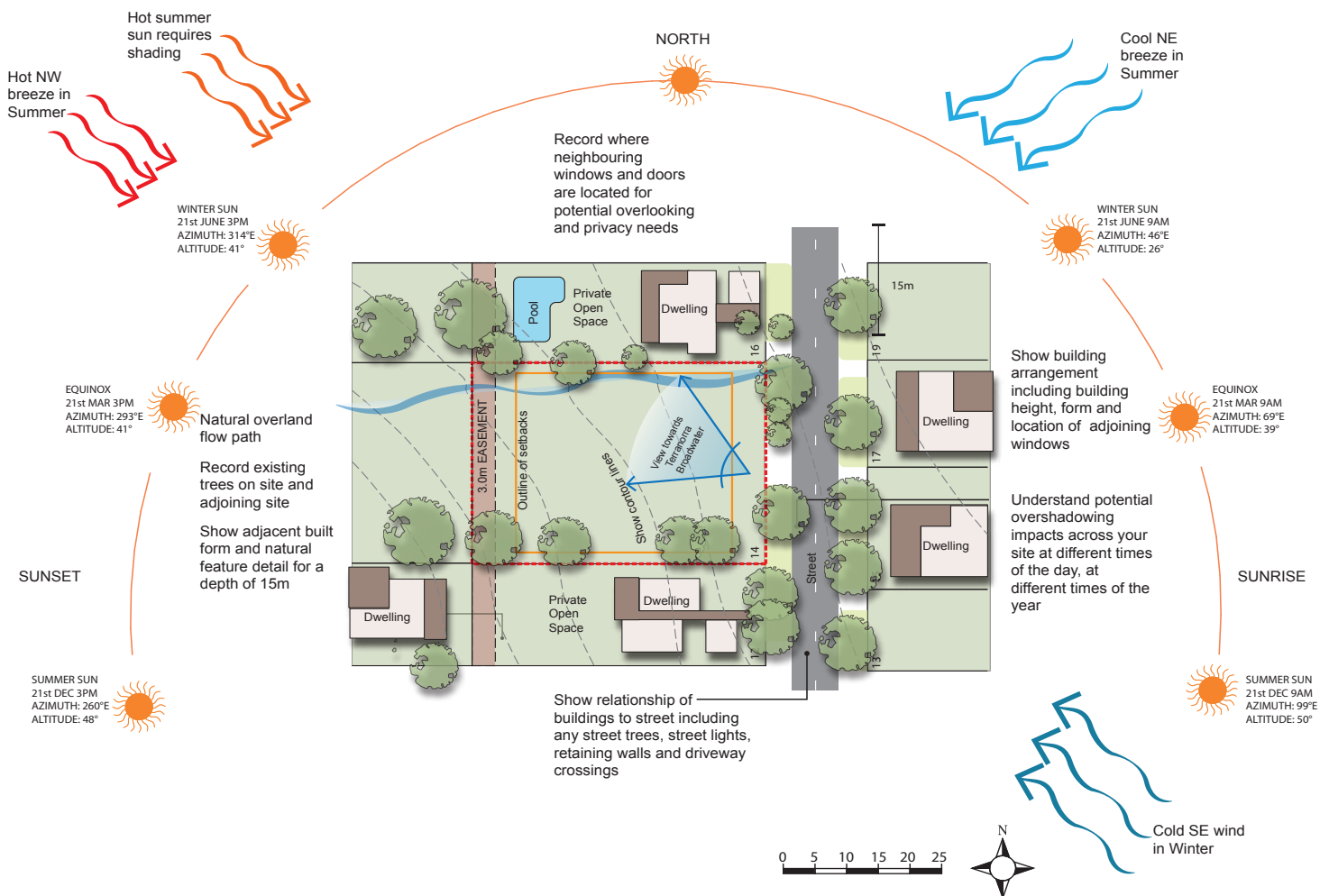


Figure 4.1 - A site plan forms the foundation of a good house design. This sample site plan provides simple graphical information

## 4.1 - Built Form

### Vision

*Area E's residential estate is to be characterised by lightweight construction and integration of building design with sloping sites, landscape, visual character and climatic sensitive design. This Code advocates responsive housing design, initiated through holistic site planning, active and passive design features, materialities and construction type within a subtropical coastal hinterland context. A range of dwelling types, sizes and densities is to be provided, catering to a wider population demographic, pricing and further contributing to visual diversity.*

*Tweed DCP Section A1 – Residential and Tourist Development Code sets the general objectives and development controls for residential development and should be read in conjunction with this part.*

*Where departures from the projected density yields are proposed, these need to be appropriately justified on design and site constraint grounds rather than basic 'market' considerations.*

Building form and materials should be a response to holistic site planning considerations and be designed to suit solar orientation, prevailing winds, view, landscape, outdoor living areas and privacy. Building planning founded on these principles will result in a building form, variety, elevational articulation and materials which respond to the climatic and contextual situation. To assist landowners in achieving this vision, Figure 4.1 provides further information on how to prepare an appropriate Site Plan. Undertaking a comprehensive site plan as the first step towards residential development will be critical in the context of Area E and achieving the objects and controls established throughout this Code. Residential development that does not respond to the site conditions, objectives and controls of this Code will not be supported.

A Materials Guide is also provided, establishing desired materials, colours and variety. The Materials Guide does not form a development control, nor does it establish the only materials to be pursued within residential development, it only forms a guide. Whilst it may not form a control, landowners should be aware that alternate materials, (particularly the use of products that are diametrically opposed to those within the guide such as large expanses of brick, masonry or rendered concrete) will need to demonstrate how such materials positively contribute to the landscape and visual character and residential development vision and objectives identified within this Code.

Table 2.1 is provided to guide residential mix and density, ensuring a variety of housing types and sizes is provided throughout Area E.

### Objectives

All residential development within Area E (new build or alterations and additions) is to:

- foster high quality environmentally responsive and sensitive design.
- be appropriately sited within the natural context, (including native vegetation, and wildlife habitat) maintaining integrity of ridgelines and undulating topography and preserving the landscape and visual character of Area E.
- be architecturally appropriate to the specific site, aspect and the sloping coastal hinterland subtropical location through planning, materiality, and construction type.
- pursue development and density that is appropriate and responds to site constraints.

| Housing / Lot Type  | Mahers Lane Precinct   | Central Precinct | Fraser Drive Precinct | Total       |
|---|--|------------------|-----------------------|-------------|
| Transitional and Large Lot Residential (Lots >800m <sup>2</sup> or 1200m <sup>2</sup> for Transitional)   | 8  | 60               | 47                    | 115         |
| Suburban Lot Residential (Lots between 450 – 800m <sup>2</sup> at a general rate of 1 dwelling per 650m <sup>2</sup> of site area)                                | 428  | 265              | 229                   | 922         |
| Small Lot and Medium Density (Lots between 250 – 450m <sup>2</sup> and medium density development at a general rate of 1 unit per 333m <sup>2</sup> of site area) | 174  | 58               | 55                    | 287         |
| Neighbourhood Planning Housing  | 0 (* but could be in lieu of some suburban lots on western facing slope) | 114              | 32                    | 146         |
| Shop-Top & Village Centre Residential   | 0  | 120              | 0                     | 120         |
| <b>Total</b>  | <b>610</b>   | <b>617</b>       | <b>363</b>            | <b>1590</b> |

Table 2.1 - Residential Density Targets

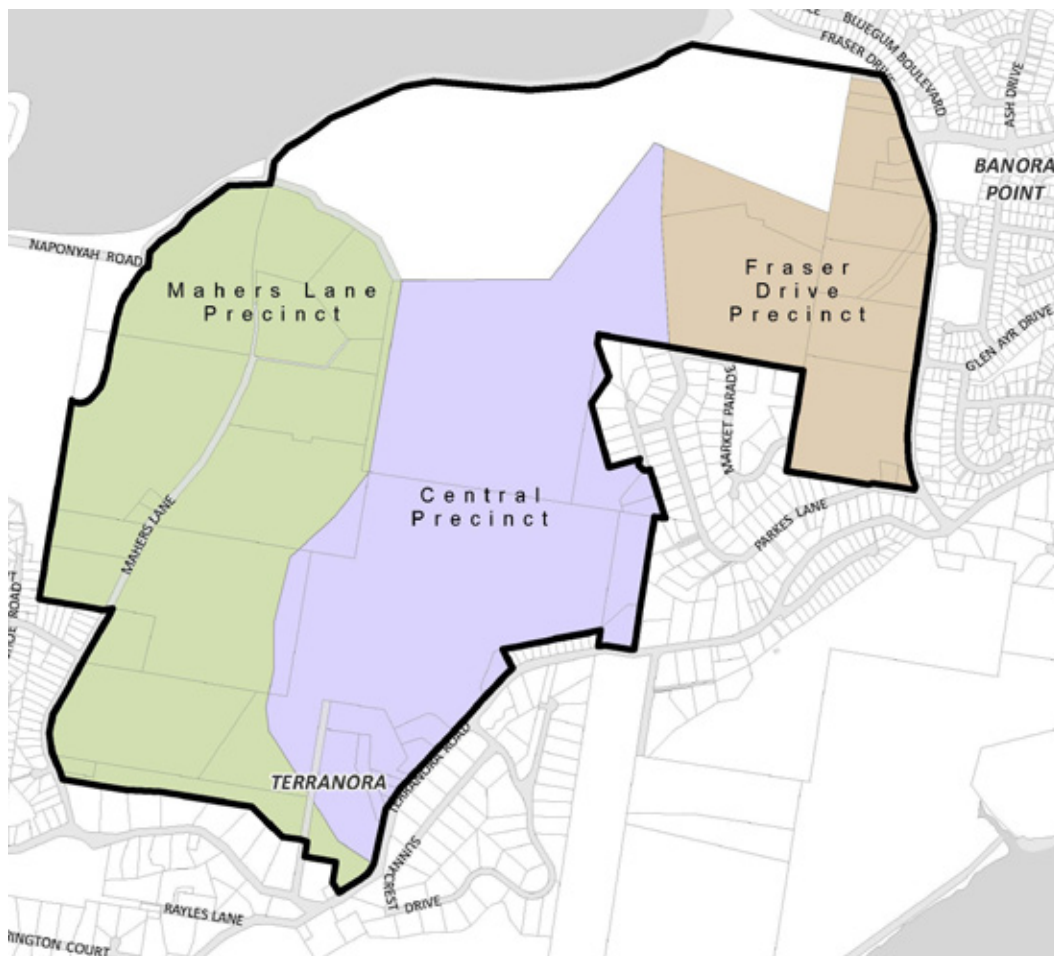


Figure 4.2 - Area E Precincts

- provide for alternative housing options within Area E.
- pursue design excellence through promotion of holistic approach to site design including an understanding of solar path, prevailing breezes, as well as integrating landscape with building.

### Development Controls

1. All new dwellings are to comply with the housing type development control matrix detailed in Figure 4.4.
2. Demonstrate how the proposal is consistent with the approved Density Projection Plan, or the residential yield targets established within Table 2.1.
3. All Development Applications are to be accompanied by a site analysis plan demonstrating an understanding of slope, view, orientation and aspect which demonstrates how the new dwelling(s) has been design in consideration of these contextual elements.
4. All dwellings are to address good streetscape design principles with the primary frontage incorporating at least 3 of the following design elements:
  - Mix of building materials (at least 3) and colours,
  - Landscaping of front yard and use of landscaping to define frontage,
  - Using low and/or partially transparent front fences,
  - Providing architectural detail through entry porticoes, verandahs, balconies, pergolas and screens to provide depth to the buildings street elevations,
5. On downslope blocks, Council will consider a reduced front setback for carports (which can include storage and screens but no garage door) where appropriate car parking and manouevring can be achieved without impacting pedestrian and vehicular movement.
6. Finishes and materials should be appropriate to the local climatic conditions, solar orientation and site specific aspect, opportunities and constraints. Suitable materials include but are not limited to:
  - Timber, weatherboards, fibre cement sheeting, custom orb, mini orb and other metal sheeting.
  - Face brick and rendered concrete block (or rendered foam panels) is not to be used as the only material.
  - Walls of masonry, stone or brick are permissible where it adds to the detailing of an elevation.
7. No building shall be erected having eaves of less than 600mm with the exception of garages which have a zero lot setback on the zero boundary interface;
8. Roof materials must contribute to the overall coastal hinterland character in terms of form and colour. Metal sheet roofs are preferred due to the range of muted landscape tones which are less visually obtrusive, low thermal mass and ability to withstand intense weather and high wind conditions unlike tiled roofs. Terracotta, red, blue or white coloured roofs are not permitted due to the impact on regional view fields. Metal roofs should be muted to prevent glare and reflectivity.
9. Use of metal sheet fences is prohibited due to reflective heat impacts and incompatible visual quality.
10. The return of side fences is to be set back at least 1.0m from the front building line, as displayed within Figure 4.3.

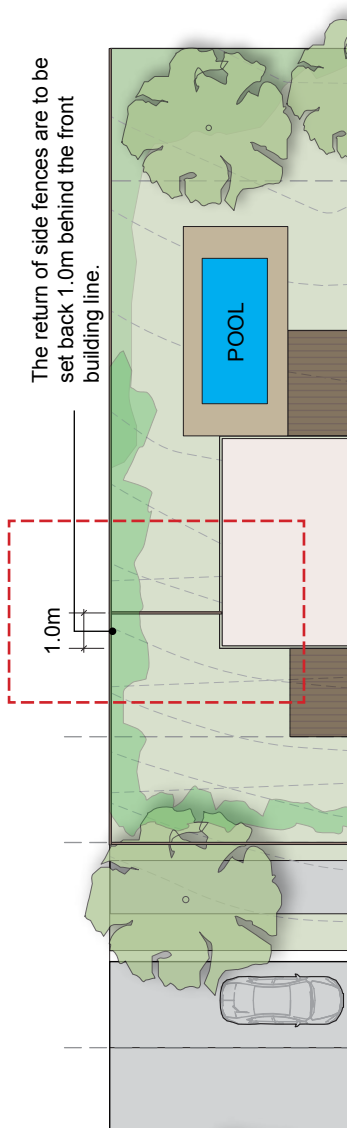


Figure 4.3 - Side Fence Setback

| Building Type                             |                               | Site Requirements                         |   | Max Height   |              |               |
|---|-------------------------------|---|---|--------------|--------------|---------------|
|   |                               | Lot Type                                  | Min Lot Size                                  | 0-6 degrees  | 6-12 degrees | 12-18 degrees |
| Dwelling                                  | Medium Density Lot            | <450m <sup>2</sup>                        | 250m <sup>2</sup>                             | 9m           | 10m          | 12m           |
|   | Suburban Lot                  | 450-800m <sup>2</sup>                     | 450m <sup>2</sup>                             | 9m           | 10m          | 12m           |
|   | Large Lot<br>Transitional Lot | >800m <sup>2</sup><br>>1200m <sup>2</sup> | 800m <sup>2</sup><br>1200m <sup>2</sup>       | 9m           | 10m          | 12m           |
| Dual Occ.<br>Attached and Detached        | Medium Density Lot            | <450 m <sup>2</sup>                       | 500m <sup>2</sup>                             | 9m           | 10m          | 12m           |
|   | Suburban Lot                  | 450-800m <sup>2</sup>                     | 750m <sup>2</sup>                             | 9m           | 10m          | 12m           |
|   | Large Lot<br>Transitional Lot | >800m <sup>2</sup><br>>1200m <sup>2</sup> | 1200m <sup>2</sup> *<br>1600m <sup>2</sup> ** | 9m           | 10m          | 12m           |
| Row<br>Townhouse<br>Villa<br>Soho         | Medium Density Lot            | <450 m <sup>2</sup>                       | 500m <sup>2</sup>                             | 12m          | 12m          | 12m           |
|   | Suburban Lot                  | 450-800 m <sup>2</sup>                    | 500m <sup>2</sup>                             | 12m          | 12m          | 12m           |
|   | Large Lot                     | -   | -   | -            | -            | -             |
| Shoptop Housing                           |                               | Refer DCP A1                              | Refer DCP A1                                  | 15m          | 15m          | na            |
| Residential Flat Buildings &<br>Aged care |                               | Refer DCP A1                              | Refer DCP A1                                  | 12.2m<br>15m | 12.2m<br>15m | na            |

Figure 4.4 - Housing Type Development Control Matrix

| Setback      |              |              | Deep Soil Zone | Comment  |
|--------------|--------------|--------------|----------------|--|
| Front (m)    | Side (m)     | Rear (m)     |                |  |
| 2m           | Zero         | Refer DCP A1 |                | Whilst houses are not the preferred typology within medium density areas small lot housing provides flexibility and variety of housing choice whilst meeting medium density targets.   |
| 4m           | Refer DCP A1 | Refer DCP A1 |                | Zero side setbacks for garages are permissible if 3.0m setback on alternate side boundary.   |
| 6m           | Refer DCP A1 | Refer DCP A1 |                | Transitional lots have a minimum lot size of 1200m <sup>2</sup>  |
| 2m           | Zero         | Refer DCP A1 |                | Minimum lot size of 500m <sup>2</sup> not applicable to battleaxe arrangements. Each dwelling to have street address of minimum width of 5m within 6m of primary frontage.   |
| 4m           | Refer DCP A1 | Refer DCP A1 |                | Minimum lot size of 750m <sup>2</sup> not applicable to battleaxe arrangements where minimum lot size is 900m <sup>2</sup> .   |
| 6m           | Refer DCP A1 | Refer DCP A1 |                | *On large lots minimum lot size of 1200m <sup>2</sup> for attached dual occupancies, otherwise min lot size of 1600m <sup>2</sup> .<br>**On transitional lots minimum lot size of 1600m <sup>2</sup> for attached dual occupancies, otherwise min lot size of 2400m <sup>2</sup> . |
| 2m           | Zero         | Refer DCP A1 |                | Rear lane or common driveway access preferred, however if each unit has driveway access from primary frontage garage/carport is to be setback set back a minimum of 5.0m.  |
| 2m           | Zero         | Refer DCP A1 |                | Rear lane or common driveway access preferred, however if each unit has driveway access from primary frontage garage/carport is to be setback set back a minimum of 5.0m.  |
| -            | -            | -            |                | Medium density typologies not preferred on large lots.   |
| Refer DCP A1 | Refer DCP A1 | Refer DCP A1 |                | Consider aged care residential as shop top housing type taking advantage of reduced carparking requirements.   |
| Refer DCP A1 | Refer DCP A1 | Refer DCP A1 |                | Consider aged care residential as shop top housing type taking advantage of reduced carparking requirements.<br>15.0m building height limit allowed within the village centre<br>12.2m building height limit outside of village centre   |

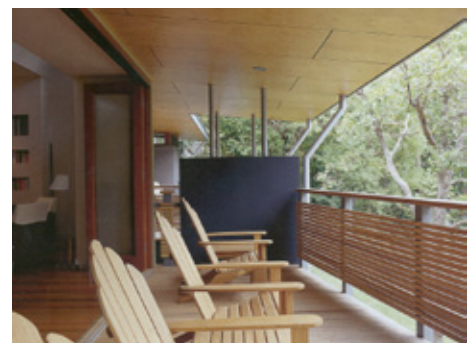
# MATERIAL GUIDE

**Finishes and materials** should be appropriate to the local climatic conditions, solar orientation and site specific aspect, opportunities and constraints.

Suitable materials include:

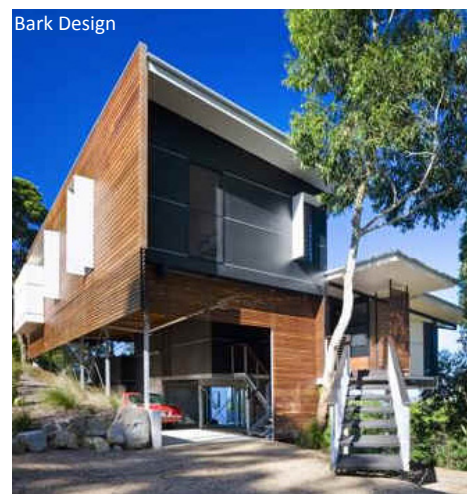
- Timber, weatherboards, plywood, fibre cement sheeting, custom orb, mini orb;
- Face brick and rendered concrete block (or foam) is not to be used as the only material;
- Walls of masonry, stone or brick are permissible where it adds to the detailing of an elevation or forms the lower level of a two storey building.

Consider roof colour in terms of balancing reflectivity and glare (resulting from white or lighter colours) with unwanted heat gain (from dark colours). As such choose neutral greens, browns and grey tones which is more related to the natural landscape.



**Colours** should:

- be complimentary to the natural landscape;
- consist of natural native palette;
- be resultant of the natural inherent colours of the materials e.g.) timber, stone, metal;
- consider reflectivity and glare to neighbouring properties.







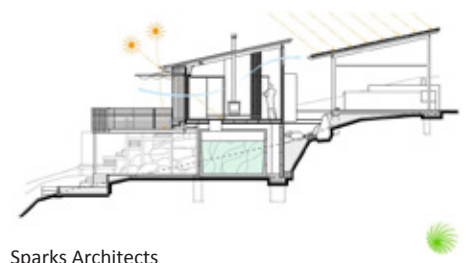
**Outdoor areas** including deep verandahs and balconies as an extension of indoor living space. Screening to balconies, doors, windows including drop blinds, fixed or moveable louvres and timber battens both assist in passive climatic controls (sun and breeze) as well as add to a buildings street appeal.



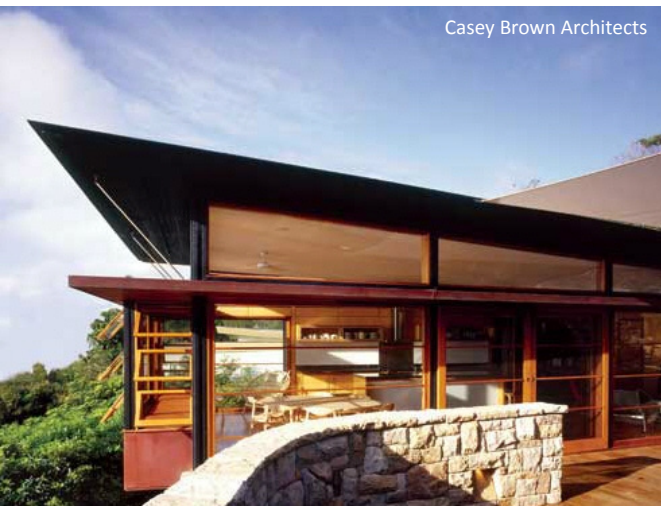
Sparks Architects

**Structural Systems** should be closely suited to the sloping site to reduce construction costs, expensive earthworks, retaining walls and the amount of cut and fill.

Construction type should be appropriate to degree of slope where a hybrid of slab on ground and suspended post and beam combinations can minimise cut and fill. Reduce impacts of cut and fill and site retaining walls with landscaping.



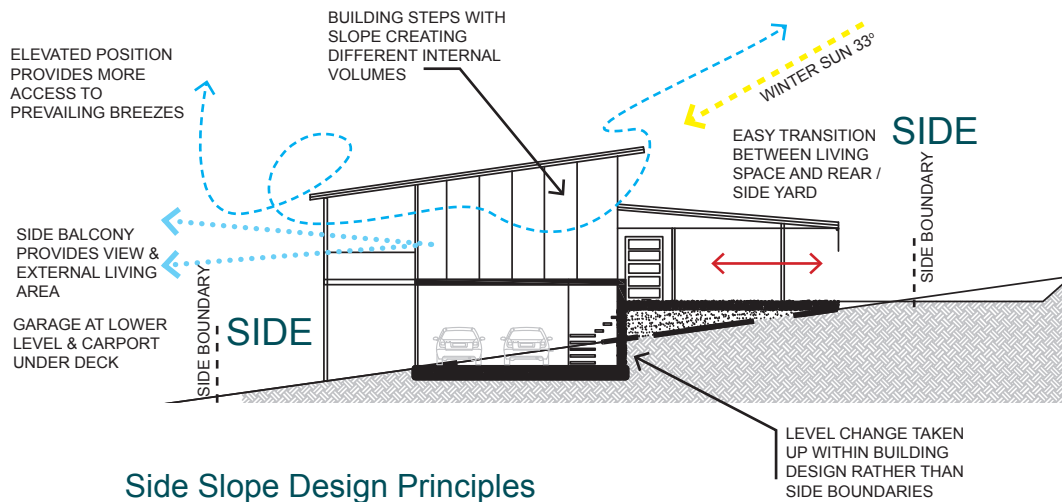
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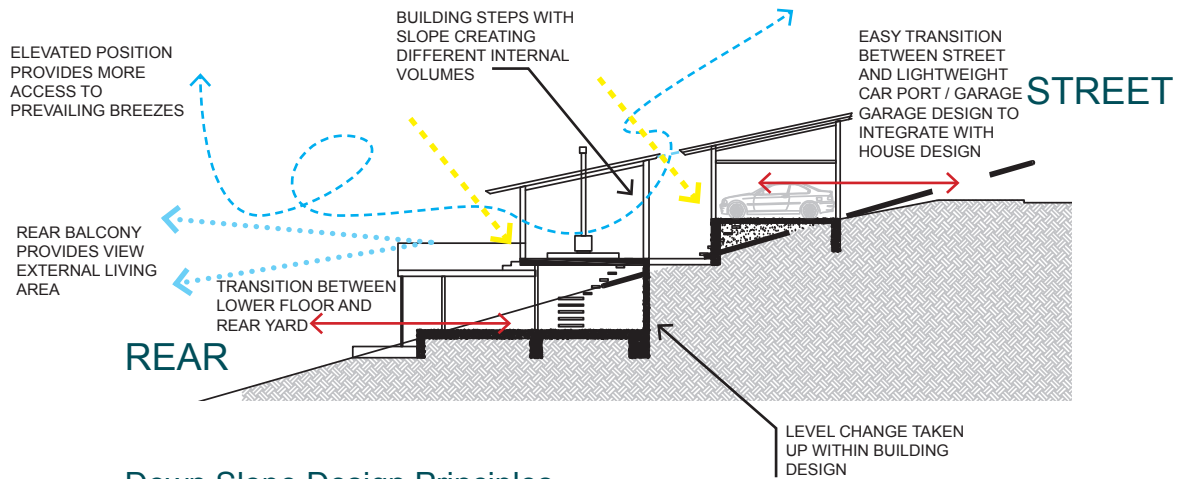
Casey Brown Architects



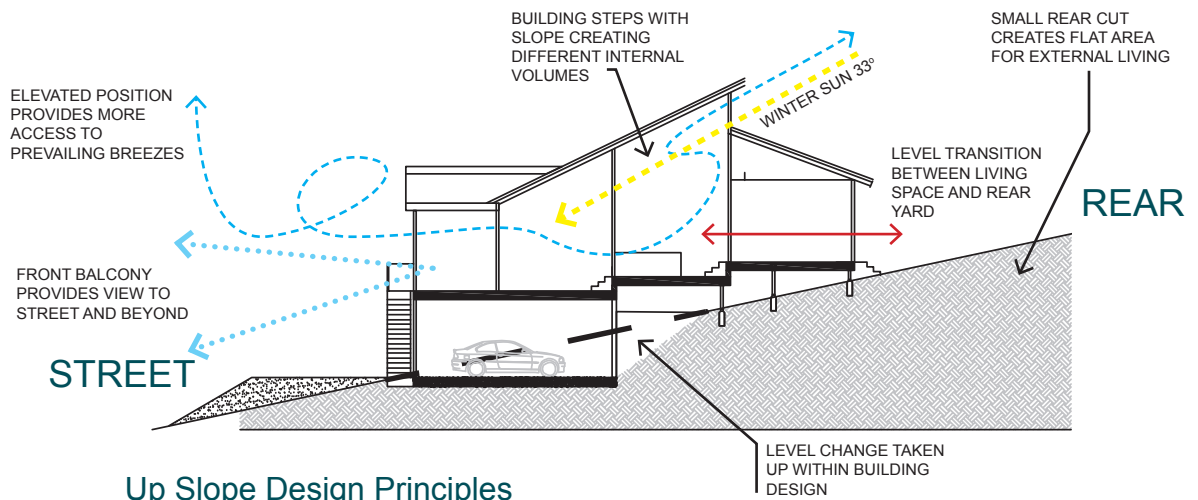
Casey Brown Architects



Side Slope Design Principles



Down Slope Design Principles



Up Slope Design Principles

Figure 4.5 - Building on Sloping Sites

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## 4.2 - Cut and Fill

### **Vision**

*Maintaining the integrity of the undulating landscape by reducing bulk earth works, site benching and large retaining walls is the primary objective of cut and fill within Area E. Future development over the site should pursue the underlying approach that residential development should be built to sloping site conditions rather than reconfiguring the sloping site to accommodate a building. The visual and landscape amenity is an important part the site and regions character. It is important to understand the relationship and potential cumulative impact that inappropriate individual site works can have on the visual amenity and character of the locality.*

### **Objectives**

- To limit modification of site levels at boundaries to maintain amenity to adjoining properties.
- To promote building design which is designed to sloping sites rather than modify sloping sites to suit building design.
- To promote building design which takes up of sloping site level change within the building envelope rather than at boundary edge to reduce amenity impacts and promote building design more conducive to sloping sites.
- To ensure site modifications, retaining walls and engineered elements do not adversely impact on the streetscape.
- Ensure that fencing on top of retaining walls does not adversely impact amenity of neighbouring properties or destabilise retaining walls.
- To ensure best practice design for sloping sites.

### **Development Controls**

*This part should be read in conjunction with the Tweed DCP Section A1 – Residential and Tourist Development Code and Section A5 - Subdivisions Manual*

1. All natural ground levels are to be maintained except where land reforming is necessary to allow the building and approved buildings or structures in which case excavation is limited to the width of the building footprint rather than the width of the site.
2. On sloping sites excavations must not be made for a contiguous slab on ground construction if the lot has a slope of greater than 6 degrees or 10%. Design on sloping sites should reference sloping design principles and the sloping sites matrix included within this plan.
3. Level change is to be taken up within building design, rather than at property boundaries.
4. All proposed site works including cut, fill, benching and retaining walls to be accurately represented and documented as part of a development application submission by way of a site works plans and sections.

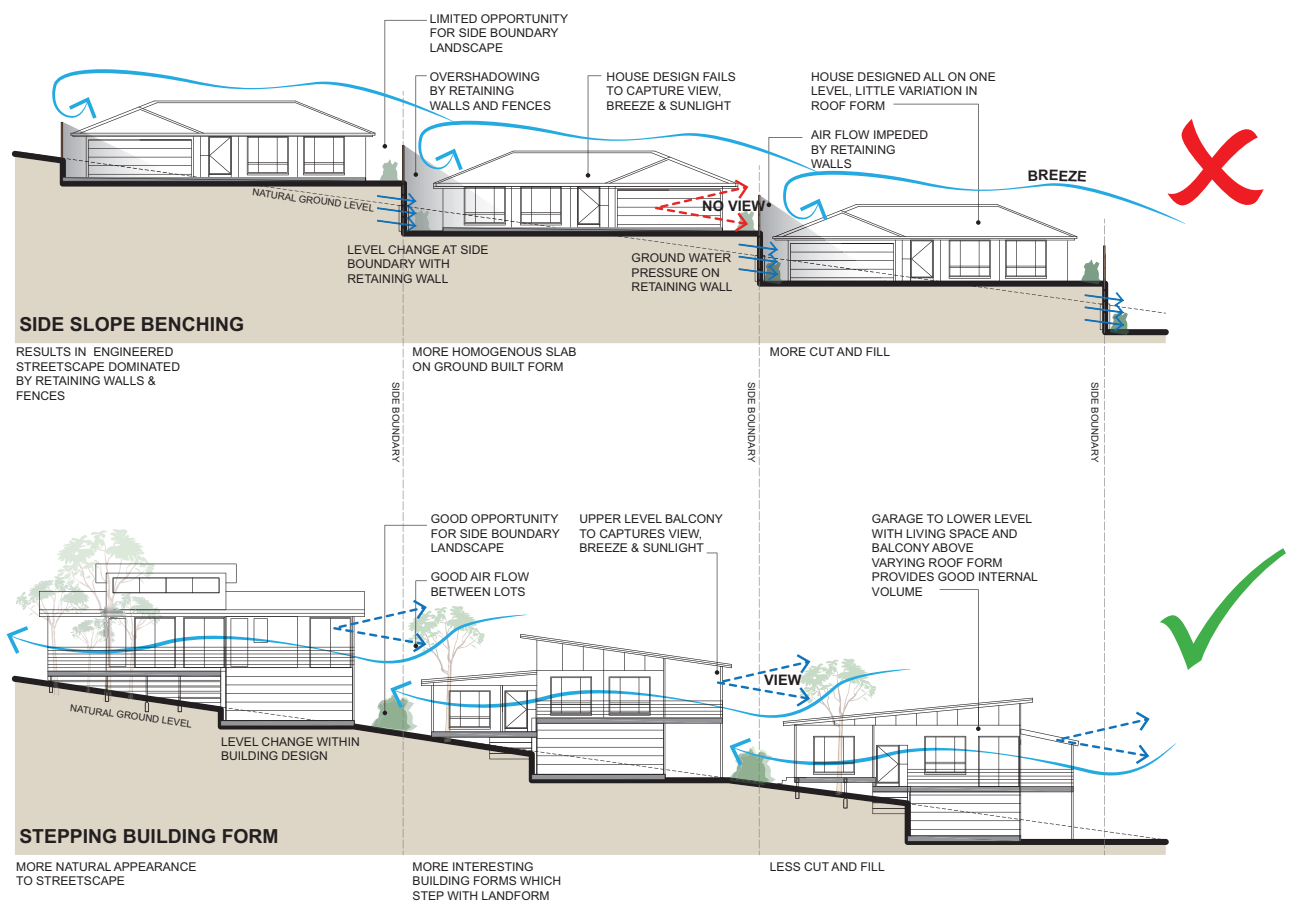


Figure 4.6 - Designing to sloping sites rather than modifying the slope and benching for terraced lots.

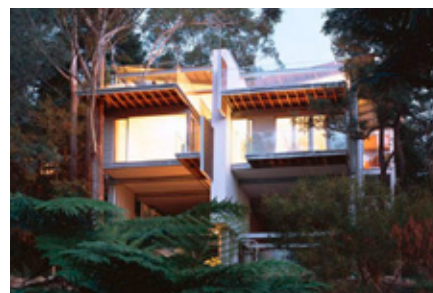


This house responds to its side slope by having its garage on the lower level with living space above. The visual impact of the double garage is reduced by a projecting balcony which provide the occupants with good outdoor living space, and access to views, breezes and light. Landscaping obscures excavation.



Site benching has resulted in significant side retaining walls with its overall height amplified by the dividing fence on top of the wall. This results in an overlooked and significantly overshadowed backyard. The use of a timber retaining wall could result in its structural integrity being undermined in the future which could lead to drainage issues and landslip.

5. All excavation, cut and fill is to comply with the provisions of the Tweed DCP Section A1 – Residential & Tourist Development Code. Cut allowances may be increased to a full level (2.7m) where design relates to the slope in terms of stepping slabs, drop edge beams, post and beam construction and is within the building envelope.
6. Where cuts exceed 1.0m they should be retained and backfilled to the wall of the dwelling with the retaining wall designed and constructed to the specification of a certified structural engineer. In addition any cut and fill outside of building envelope would be controlled by the +/-1.0m control.
7. Site cut and fill within building envelope should be obscured from view by way of cladding, screening and or landscaping.
8. Where possible, the use of the stone found on the site should be incorporated into the retaining walls, although it is understood that this stone would not be suitable for structural elements of retaining walls.



Promoting a variety of housing types which respond to the Sloping Conditions of is an important part of the Area E built form character.

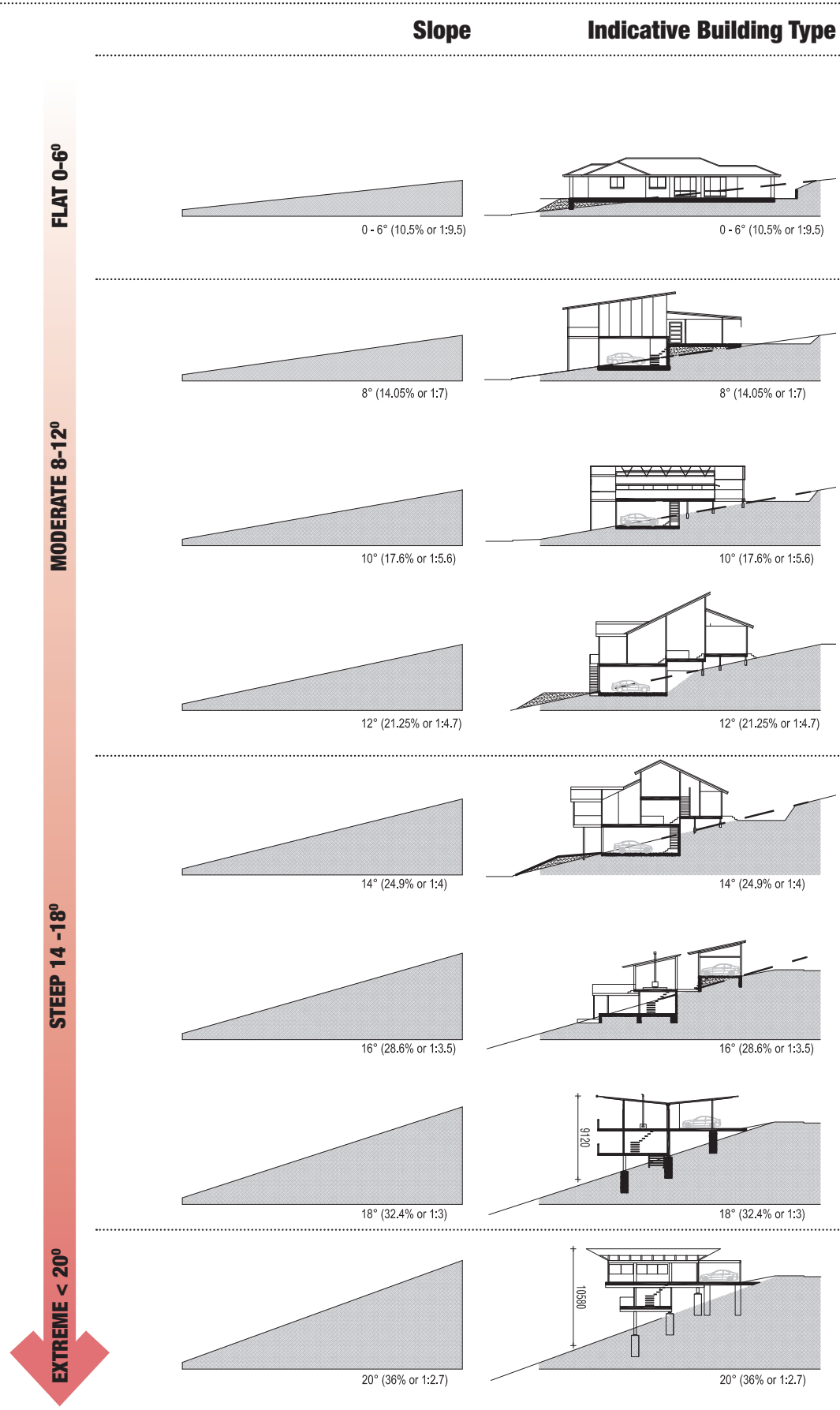


Figure 4.7 - Relationship between degree of slope and appropriate structure types

| Appropriate Structure Type   | Housing Example   | Cut and Fill implications   |
|--|---|---|
| <ul style="list-style-type: none"> <li>Broad residential housing type</li> <li>Single slab on ground</li> <li>No level changes required within building design</li> </ul>  |    | <p>0-2°</p> <ul style="list-style-type: none"> <li>Limited site disturbance and good access off street and limited cut and fill or retaining walls required, less than 1.0m</li> </ul> <p>4-6°</p> <ul style="list-style-type: none"> <li>Over an elevation length of 14m a single slab would exceed the 1.0m cut and fill maximum identified within DCP A1. Consider stepping slab, taking up level change within building design or limiting cut area within the building envelope.</li> </ul>  |
| <ul style="list-style-type: none"> <li>May be considered for all slope types</li> <li>No Single slab on ground</li> <li>Stepping slab system</li> <li>Split slab system</li> <li>Part slab part platform system</li> <li>Platform system (suspended post &amp; beam)</li> <li>Pole House</li> <li>Level changes within building design</li> <li>Garage set under protruding decks on up slope sites reduces visual impact</li> <li>On down slopes garage under house may result in steep driveway grades</li> <li>On down slopes a detached garage reduces bulk building form</li> </ul> |                                      | <p>8-12° (14-21%)</p> <ul style="list-style-type: none"> <li>Moderate fall of approximately 5m over a 30m site (on an 10° site)</li> <li>Moderate graded access of 1:5.6 up or down from street</li> <li>A single slab (approximately 14.0m width) would exceed the cut and fill requirements. Need to design building with a narrower width (building running along contours rather than perpendicular), or step slab / structure.</li> <li>Often results in half lower storey or undercroft.</li> <li>Often need for battered landscaped beds and/or small retaining walls</li> </ul> <p>12-14° (21-25%)</p> <ul style="list-style-type: none"> <li>Steep fall across site of approximately 7.4m over a 30m site (on a 14° site)</li> <li>Steep graded access up or down from street of approximately 1:4</li> <li>Take up level change within building design with stepping or largely suspended structure, and confine cut exceeding 1.0m within building footprint.</li> <li>May require full level change within building envelope</li> <li>Results in need for battered beds and/or retaining walls</li> </ul> |
| <ul style="list-style-type: none"> <li>May be considered for all slope types</li> <li>No single slab on ground</li> <li>Split level design</li> <li>Part slab part platform system</li> <li>Platform system</li> <li>Level changes within building design</li> <li>Garage set under protruding decks on up slope sites reduces visual impact</li> <li>On down slopes garage under house may result in steep driveway grades</li> <li>On down slopes a detached garage reduces bulk building form</li> </ul>  |   <p>Glen Petersen Architects</p> | <p>14-18° (1:3.5 - 1:3.0)</p> <ul style="list-style-type: none"> <li>Extremely steep fall across the site of approximately 8.6m over a 30m site</li> <li>Steep graded access up or down from the street of approximately 1:3.5</li> <li>Limited cut and fill appropriate given the resulting retaining walls and extremely limited 'level' areas which could be achieved.</li> <li>Take up level change within building design with stepping or largely suspended structure, and confine cut exceeding 1.0m within building footprint.</li> <li>Use balcony areas to supplement private open space areas.</li> <li>Results in battered landscaped beds and/or retaining walls</li> </ul>  |
| <ul style="list-style-type: none"> <li>Appropriate for down slope sites only</li> <li>Pole design</li> <li>Platform system</li> <li>Split level</li> </ul>   |    | <p>over 18°</p> <ul style="list-style-type: none"> <li>Extremely steep fall across the site of approximately 9.7m over 30m</li> <li>Steep graded access up or down from the street of approximately 1:2.7</li> <li>Not suited to cut and fill which would require large engineered retaining elements.</li> </ul>   |



Integrating built form with landscape contributes strongly to streetscape and locality character.



Extensive landscaping and greening of front and rear yards substantially improves streetscape character and the ability of a dwelling to nestle into the landscape. Landscaping can soften the landscape 'scarring' of excavation and conceal unsightly undercroft services resultant of building on sloping sites.



## 4.3 - Landscaping

Area E is unique in terms of containing and being surrounded by environmental protection zones and a significant SEPP 14 Wetland to the north of the site adjoining Terranorra Broadwater. The preservation and enriching of native habitats and vegetation is a key consideration. All buildings should integrate native vegetation landscaping with building and site design to assist in thermal comfort of building living spaces, contribute positively to the visual amenity of the area, providing habitat for native animals and plants whilst providing a degree of privacy.

### **Objectives**

- *To promote integration of landscape and building design.*
- *To conceal cut and fill earth works.*
- *To promote the use of native and endemic species.*
- *To protect Koala food trees.*

### **Development Controls**

1. A landscape plan (or site plan) demonstrating integration of landscape with building design for shade or screening to be submitted for new dwellings in accordance with provisions of the Tweed DCP Section A1 – Residential and Tourist Development Code;
2. No person shall remove, damage or in any way interfere with any Koala food trees, home range and primary browse trees located on the land or at any place in Area E;
3. All existing significant vegetation including, existing trees in road reserves, along paddock edges, important feature trees / stands of trees (not necessarily endemic natives) are to be identified as part of the precinct masterplan and where possible retained;
4. 80% of plant species utilised on site are to be native and endemic to the area.



A landscaped deep soil zone to this corner allotment provides both privacy for residents and improves the appearance from the street, without blocking traffic visibility. Pedestrian pathways are separated from the roadway behind low landscaping of the verge.



Topographically sensitive design over area E includes areas of significant slope often combined with significant vegetation. A sensitive and carefully design building within a landscape setting can result low impactful development despite these constraints. Photos: Viridian Noosa, John Mainwaring Architects

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## 4.4 - Topographically Sensitive Development Opportunities

### ***Vision***

*Consider exemplary residential development within steeply sloping areas based on a methodology of respecting the attributes of the site and designing to those, as opposed to amending the landform to enable development.*

The Area E Urban Footprint (Figure 2.1) methodology details sloping land at 18 degrees or greater as not suitable for development. This constraint broadly reflects the findings of the LES for Area E which nominated a threshold of 16 degrees for development and anecdotal evidence collected throughout the preparation of this Code. Numerous tracts and bands of land are found throughout Area E that are in excess of 18 degrees. This land is also predominately identified within bushland mapping.

Opportunities exist for various housing types to be included on some of the topographically constrained land where the use of a neighbourhood plan subdivision development form can be created utilising smaller private roads, innovative lot sizes and shapes, creation of vegetated communal green links and retention of the landform through a development that ‘treads lightly’ on highly constrained land. Any such development is only envisaged to be pursued for dwellings, attached dual occupancy, triplexes and row housing.

### ***Objectives***

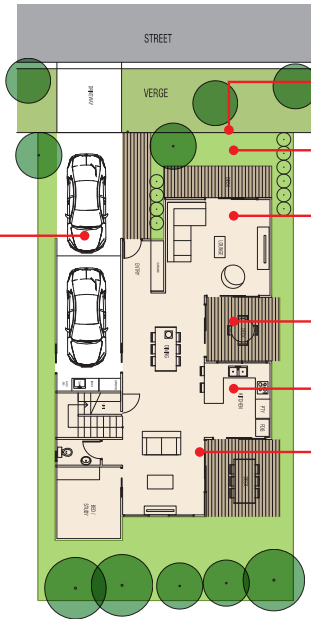
- Promote development that is considered holistically, including shared and coordinated deep soil zones, retention of natural systems, building position and material use that enables vegetation retention, or generous offset plantings, roads that minimise bulk earthworks, innovative communal services designs (i.e. garbage disposal etc).
- Promote an integrated design for the whole development, including designs of each of the proposed dwellings to enable a holistic architectural consideration of complex and structurally difficult sites.
- Promote development opportunities as a series of building envelopes which are sensitively sited with topographic constraints and avoid large expanses of elevations and large groupings of attached units.
- Encourage suspended structural systems to avoid avoiding extensive earthworks.
- Utilise lightweight materials which respond to the context and climate but also reduce structural loads.
- Encourage integrated landscape plans, combining whole of site ecological benefits with built form envelopes.
- Promote a high quality, topographically sensitive form.

### ***Development Control***

1. Demonstrate how the proposal addresses each of the abovementioned objectives

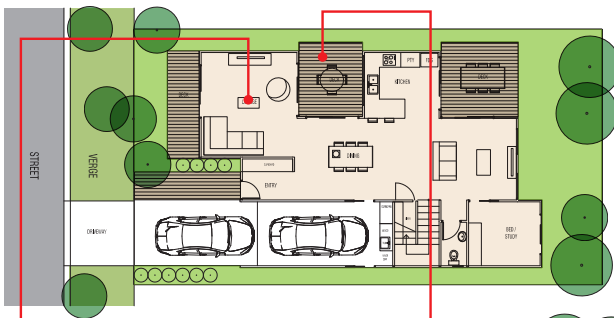
NORTH

Car spaces and services located along the western boundary to act as a buffer to the hot western sun



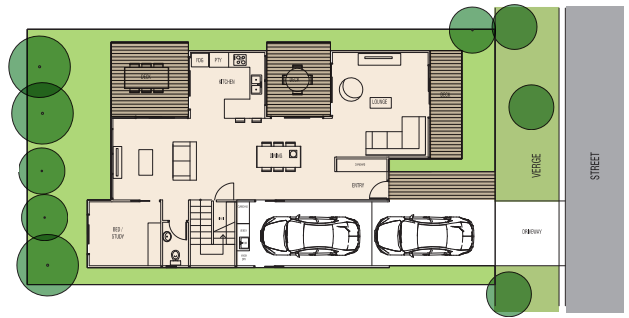
- Consider greater front setback to maximise northern sun to yard space.
- Front of building faces north to the street;
- Lounge room and key living spaces orientated towards north with a small deck accessed directly off this space;
- Series of smaller side courtyards provides for additional sunlight access across the floor plate;
- Kitchen located to the east to get the morning sun;
- Second family space and deck to get out of the sun during summer months;

WEST

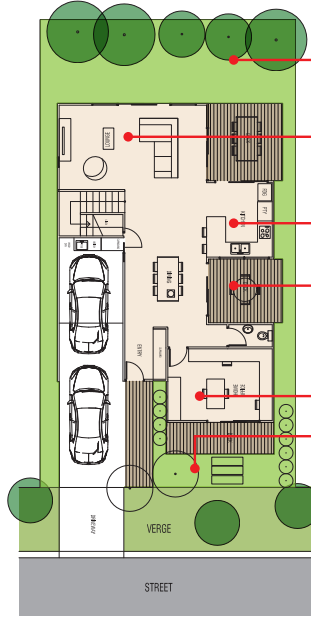


- Side elevation of allotment faces north, smaller side courtyards provides for north sunlight access across the floor plate and provides for internal landscaped areas;
- Lounge room and key living spaces orientated towards north with deck outdoor living accessed directly off this space;
- Cars and service areas (toilets, stairs) located to the south.

EAST



SOUTH



- Include a deeper backyard to take advantage of the northern aspect;
- Lounge room and key living spaces orientated towards north with deck outdoor living accessed directly off this space;
- Kitchen located to the east to get the morning sun;
- Smaller side courtyards provides for additional sunlight access across the floor plate;
- Inclusion of a home office fronts the street
- Consider less front setback to southern boundary



Indicative Solar Design Approaches - Designing for optimum solar orientation doesn't always have to include the ideal north facing block. Effective site planning locates internal spaces to take best advantage of sunlight access, cooling breezes, landscaped outlooks whilst achieving an attractive street presence for all orientations.

## 4.5 - Climatically Sensitive Design

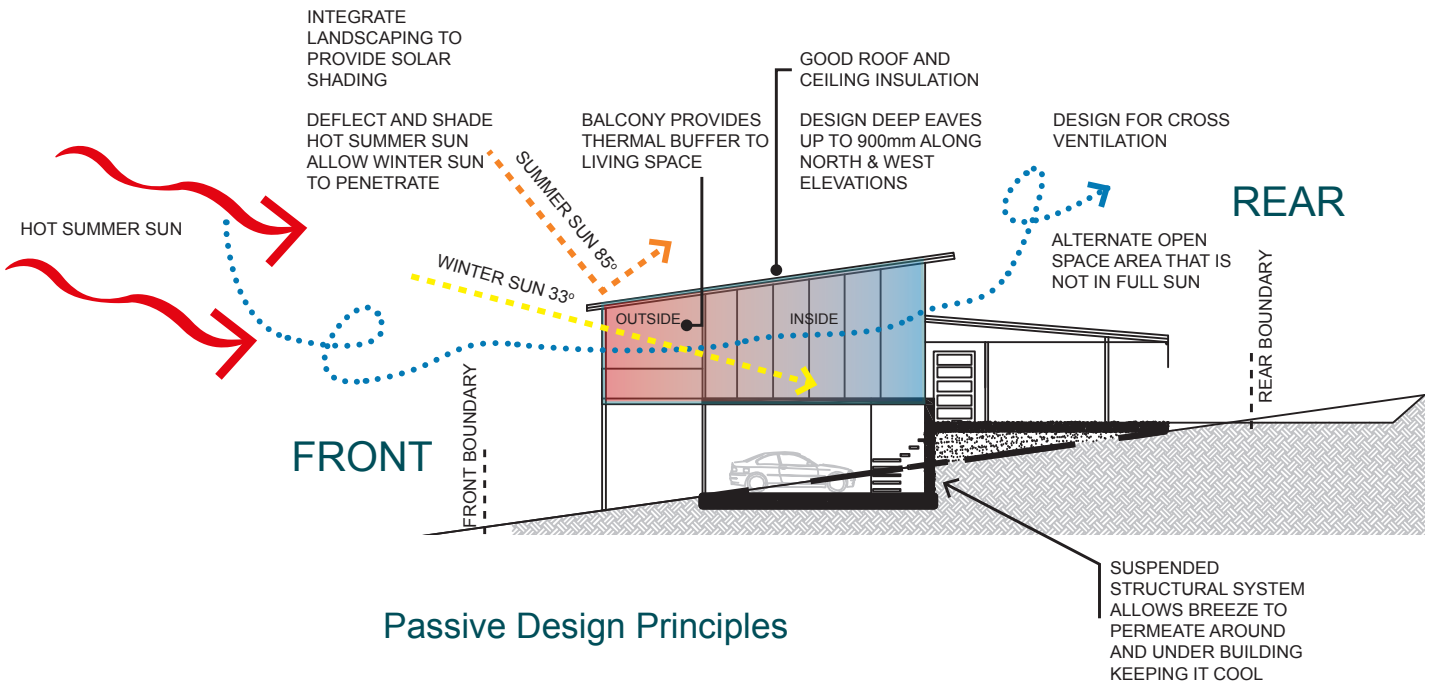
Buildings should be responsive to the climatic conditions of the site including solar path, solar exposure / shading, prevailing breezes, appropriate materials, internal and external living area configurations.

Many parts of Area E have significant north-to-western exposure. Building design addressing this orientation should include deep verandahs, balconies and deep eaves to the north and west supplemented by landscaping and street trees to provide shading and refuge from the sun. Building design should seek to reduce large expanses of west facing glazing which are not adequately shaded. The preparation of a climatically and topographically focussed site plan is instrumental in the preliminary stages of house design to ensure more comfortable and climatically appropriate house.

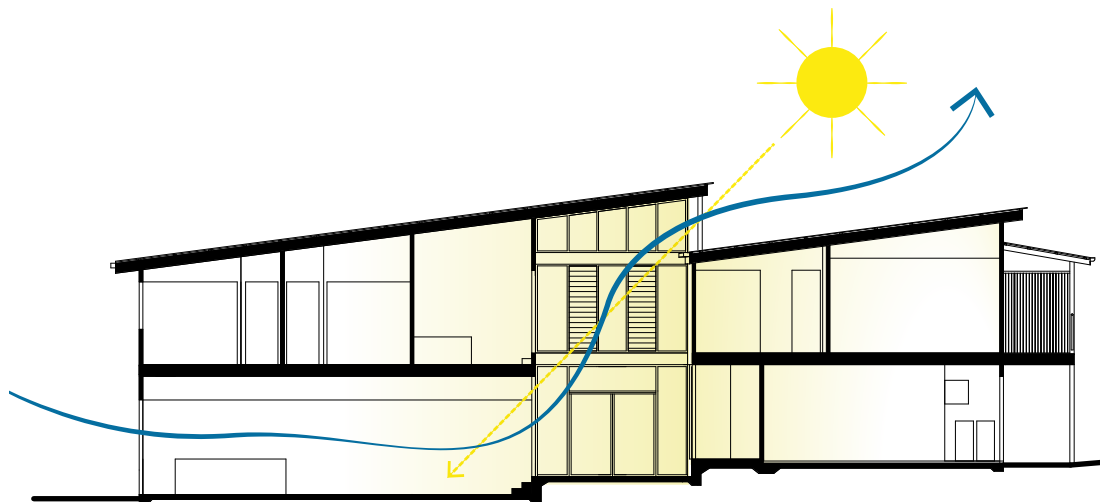
### ***Guiding Principles***

The diagram overleaf illustrates optimum design considerations on a range of street frontage orientations. To respond to the local features of hot humid summers, wet summers, drier winters, housing should incorporate the following features:

- Consider the best part of the allotment to position the house in terms of achieving a good aspect to outdoor living areas in terms of solar path, shade, prevailing breezes and view.
- Orient indoor and outdoor living spaces north to benefit from winter sun, but provide adequate shading to these areas during summer months.
- Elevate your house and have adequate spacing between your neighbours to capture cooling summer breezes.
- Provide generous and deep balconies and verandahs as outdoor living areas, but also to provide good shading and thermal buffers to interior spaces.
- Consider prevailing summer wind patterns (afternoon north east) and utilise these to obtain passive cooling outcomes through the positioning of windows and doors.
- Interconnect indoor and outdoor living spaces to facilitate an effective and interactive indoor-outdoor lifestyle.
- On upslope blocks elevate living space for views and breeze as well as achieving level transition to rear yard.
- On down slope blocks seek to utilise the front yard as integrated outdoor - indoor space.
- Locate bathrooms, laundry's and other service uses on the south or western side of the house.
- Buildings with a predominantly west orientation are to be adequately designed to the solar orientation and shall include deep eaves of no less than 600mm and window hoods or be appropriately shaded to all west and north-west facing glazed areas. Building designs should consider deep covered verandahs and balconies to the north, north-west and west orientations.



Designing to reduce the heat loads on the western slope is a key consideration for future dwellings.

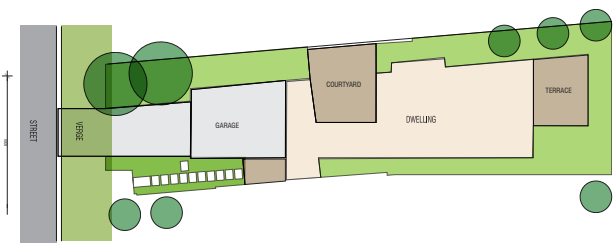


The use of internal voids and double volumes not only provides a better sense of space but substantially assists with natural ventilation and natural light access.  
Image: Arco Eco Architects.

- Consider roof colour in terms of balancing reflectivity and glare (resulting from white or lighter colours) with unwanted heat gain (from dark colours) Face brick and rendered concrete block is not to be used as the only material to a buildings elevations given the climatic context;
- A series of roof planes break up the roof mass and building mass, as well as providing greater opportunity for natural light penetration and stack effect ventilation. High volumes or raked ceilings over living spaces is encouraged in all new dwellings;
- Predominate use of light weight materials which have a low thermal mass beneficial to the low diurnal climatic range;
- Minimise solid masonry fencing and high retaining walls as this blocks cooling breezes to the ground floors and yard spaces;
- Incorporate insulation to ceilings and walls;
- Maximise external wall areas and use single room depths where possible;
- Incorporate ceiling fans;
- Incorporate suitable drainage appropriate for the slope;
- Incorporate covered clothes drying areas.



Design generous sized decks and outdoor areas to take advantage of views, and prevailing breezes as an extension of your indoor living space. Photo: Viridian Noosa, John Mainwaring Architects

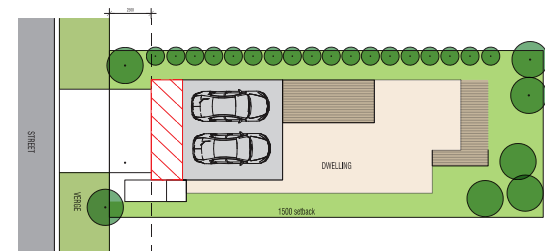


**2 storey Courtyard House**

Tandem Garage/Carport  
 Courtyard with living space  
 wrapping around  
 5000mm front setback  
 900mm to 1500mm side setback

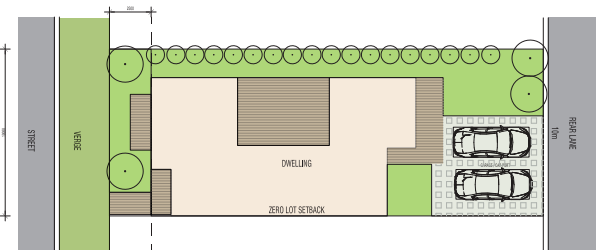


Image: Arco Eco Architects.



**2 storey Detached Villa / Town House**

Front access  
 Deck over recessed garage  
 1500mm side setback  
 2500mm front setback  
 North facing decks and nooks

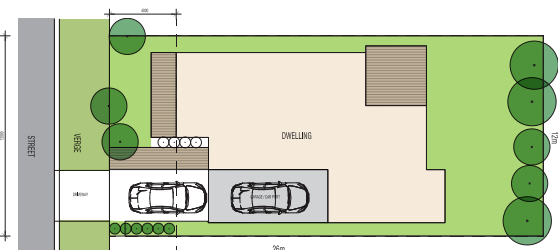


**2 storey Courtyard House**

Rear access  
 Garage/Carport extension of outdoor  
 amenity space  
 Zero side setback to south  
 2500mm front setback  
 North facing decks and nooks



Image: Mirvac



**Single storey Detached House**

2 bed plus home office to street  
 Stacked parking to south  
 900mm side setback to south  
 4000mm front setback  
 North facing decks and nooks



Image: Push

Small lot housing covers a broad range of housing typologies including courtyard houses, zero lot houses to modestly sized single detached dwelling houses. It is important that each small lot house has its own street address rather than amalgamated into larger homogenous integrated housing allotments.



## 4.6 - Small Lot Housing

Small lot housing, also known as garden homes, courtyard homes, zero lot homes and narrow lot homes, refers to single dwelling houses, specifically designed to be accommodated on smaller lots typically (there is no defined benchmark) ranging between 250-450m<sup>2</sup> with varying frontages of between 6 - 12m. This form of housing is generally provided on Torrens title and may or may not have a common or shared wall or walls, that is be joined with similar housing either to one or both side boundaries. A number of areas within Area E have been identified as being suitable for small lot development, particularly where allotments adjoin large tracts of open space. Small lot housing is not restricted to flat areas but can also be adapted to suit sloping sites.

### Guiding Principles

- Integrate small lot housing with other forms of housing and design in variation by way of form, roof type and material to each different small lot house to enrich and provide streetscape diversity.
- Locate small lot housing within 400m of large tracts of open space.
- Locate small lot housing within 400m of public transport and mixed use nodes.
- Each small lot housing allotment has a street frontage rather than a battleaxe arrangement.
- Zero lot and rear loaded small lot typologies are to incorporate an integrated building and subdivision design.
- Dwellings should be oriented with living areas facing north, whether that be to rear yards or to side lot courtyards.
- Courtyards and light wells should be used where possible. Rooms may have windows facing the courtyard/lightwell, rather than facing the side boundaries, increasing privacy, light access and ventilation.
- Reduce impact of garages by considering lightweight open carports with roof lines which integrate with the house forming an overall streetscape composition.
- Design in generous amounts of external living spaces which have a strong relationship to internal living spaces.
- Consider modest sized floor areas rather than trying to fit a large house on a small lot.
- Consider 2 storey forms to maximise the amount of outdoor area on the ground floor reducing the amount of building envelope and increasing deep soil and infiltration areas.
- Consider flexibility of use in dwelling design, for example a carport which can become an outdoor entertaining area.
- Include higher internal volumes over living spaces to assist in thermal performance, but to also to create a greater sense of space.

*Depending on the subdivision type, small lot housing may not be permitted within the Tweed LEP and a Planning Proposal required. Interested parties are encouraged to contact Council's Planning Reform Unit for further information.*

