SUBDIVISIONAL DESIGN
GUIDELINES
TOWARD A MORE SUSTAINABLE SUBDIVISION
(Incorporating the principles of ecologically sustainable development)

Link to other sections:
Cover
Introduction and Background
Climatic data and design process
Subdivisional design
Building and Landscape design
Materials
Appliances
References
Websites

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## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUBDIVISIONAL DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>Lot size and Orientation</td>
<td>3</td>
</tr>
<tr>
<td>Energy conservation</td>
<td>3</td>
</tr>
<tr>
<td>Lot size</td>
<td>3</td>
</tr>
<tr>
<td>Private outdoor space</td>
<td>3</td>
</tr>
<tr>
<td>Crime Prevention through Environmental Design (CPTED)</td>
<td>4</td>
</tr>
<tr>
<td>Crime Prevention through Environmental Design Strategies</td>
<td>4</td>
</tr>
<tr>
<td>Site Circulation (Use Hierarchy)</td>
<td>4</td>
</tr>
<tr>
<td>Site circulation system</td>
<td>4</td>
</tr>
<tr>
<td>Road hierarchy</td>
<td>4</td>
</tr>
<tr>
<td>Pedestrian and cycle paths</td>
<td>5</td>
</tr>
<tr>
<td>Street tree planting</td>
<td>7</td>
</tr>
<tr>
<td>Structural soils and trees</td>
<td>7</td>
</tr>
<tr>
<td>Drainage network</td>
<td>8</td>
</tr>
</tbody>
</table>

Link to other sections:
- Cover
- Introduction and Background
- Climatic data and design process
- Subdivisional design
- Building and Landscape design
- Materials
- Appliances
- References
- Websites

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The Guidelines: Towards a More Sustainable Subdivision (incorporating the principles of ecologically sustainable development) were written with a residential subdivision in mind, however the principles and practices identified are applicable to any land development involving buildings. The difference between residential buildings and other building forms are in its function, materials and specific design criteria.

**SUBDIVISIONAL DESIGN**

<table>
<thead>
<tr>
<th>Lot size and Orientation</th>
</tr>
</thead>
</table>

**Energy conservation**

Energy conservation requires that the lots are sited and designed to minimise energy consumption and to achieve the greatest possible thermal comfort with the minimum use of mechanical heating and cooling systems. A useful guide in trying to achieve a better subdivisional design is the use of ‘well-designed and sited lot targets’. As a guide a minimum target of 65% of all lots to have an appropriate solar orientation is a good start, exceptions being where there are significant constraints, which limit the achievement of such a target. The ideal orientation can be ensured by maximising the long axes of the lots to be within the range N20°W to N30°E or E20°N to E30°S.

**For more information** about ‘energy conservation in subdivisional design’ refer to:


**Lot size**

Dimensions and areas of lots are to be of an adequate size and configuration to enable a dwelling unit to be appropriately sited and constructed on the lot, which addresses the dwelling relationship with the street and adjacent neighbours.

**Private outdoor space**

Similarly, a reasonable and useable amount of private open space (POS) capable of receiving unobstructed sunlight for a minimum period of 3 hours on any lot between 9.00am and 3.00pm on 21 June is provided.

The POS must be designed for its intended use or multiple uses (e.g. clothes drying, children’s play, outdoor living, rubbish bin storage, garden).

Private outdoor space must be located and designed to maximise desirable effects of climatic conditions with direct access to POS from the living room or dining room.

Size of POS of each dwelling unit should preferably be a minimum of 20–25 square metres with a level area of not less than 12 square metres with a minimum dimension of 3 metres in any direction allowing for an additional planting area preferably 1.2 metres wide.
Ensure that privacy, personal safety and security using Crime Prevention through Environmental Design (CPTED) principles\textsuperscript{7} are maintained in any design solution.

Using CPTED principles, lots are to face open space areas and are not to back onto them.

**Crime Prevention through Environmental Design (CPTED)**

Design the space to meet its designated defined use with the specific objectives to design a safe and secure environment that allows for natural surveillance and egress.

**Crime Prevention through Environmental Design Strategies**

Some basic strategies that a designer should embrace are to:

- provide clear border definition of space;
- provide clearly marked transitions from public to private space;
- place gathering areas in locations with natural surveillance and access control;
- place safe activities in safe places;
- provide barriers to conflicting activities; and
- increase the perception of natural surveillance.

**Site Circulation (Use Hierarchy)**

**Site circulation system**

Design a site circulation system that minimises impact on residents and maximises safe travel.

**Road hierarchy**

Clearly identify a road hierarchy that creates slow movement of traffic through and within the site and ensures safety for the residents. The road network should be logical, legible and permeable which provides for attractive streetscapes and reinforces the functions of a street. The street reserve width needs to be adequate for its proposed paths, pavements, planting, drainage and services.

Simplicity in street layout is encouraged instead of engineering design devices of raised road platforms, funnelling, chicanes and the like. Coordinate with council on issues such as on-street parking, manoeuvring requirements for garbage truck/furniture vans and the like.

\textsuperscript{7} Designers should incorporate the principles of Crime Prevention through Environmental Design (CPTED) where possible (refer to Newman 1978, Crowe, 1991; Wekerle et al, 1995).
For more information about ‘subdivisional design’ refer to:
King, S., Rudder, D., Prasad, D., and Ballinger, J. (1996), Site Planning in Australia, Strategies for energy efficient residential planning, AGPS Canberra.

One of the many human pleasures in life is cycling. Consideration for a network of pedestrian and cycle paths into a land development is an absolute necessity. Photo: Department of Transport.

Pedestrian and cycle paths
A network of pedestrian and cycle paths is to be incorporated into the design that allows a safe passage through the site and takes opportunities to link open space networks and other community facilities.
For more information about ‘Transport Planning’, ‘Bicycle Transport Studies’ refer to:
Australian Bicycle Council, Austroads, Guide to Traffic Engineering Practice Part 14 –
Austroads, Australia Cycling - The National Strategy 1999-2004, refer to:
Commonwealth Department of Housing and Regional Development (1992), AMCORD
URBAN: Guidelines for Urban Housing.
Commonwealth Department of Housing and Regional Development (1995), AMCORD
(Australian Model Code of Residential Development)
East Queensland, Queensland Transport.
NSW: Australian Consumers’ Association.
Australian Greenhouse Office Sustainable Transport at
Griffith University, School of Environmental Planning, at
Queensland Transport Summary Report South East Regional Cycle Forum at
Queensland Transport's Cycling Interests in Planning Schemes (2001) at
Queensland Transport Planning and Infrastructure at www.transport.qld.gov.au/projects
Street tree planting
Street tree planting is an integral component of the design and is to be used as an expression of street character as well as their shade-providing function. Appropriate tree species will need further research to comply with soil types, climate, council requirements, thematic design and considerations for local botanical species, which are not mainstream nursery stock.

For more information about 'Street Tree Planting' refer to:
Brisbane City Council Street Tree Planting
Greening Australia Queensland Homepage

Structural soils and trees
Although street trees and carpark trees are important landscape elements for our urban environment, there is always a conflict with the need to provide a structurally sound pavement design with a good drainage system that prevents localised flooding and supports plant life. This challenge of providing these engineering requirements and the need to provide a nutrient rich growing media that will sustain plant life for a number of years have resulted in what is known as 'structural soils'.

'Structural soils' are specially designed nutrient rich soil (loam to clay-loam mix without the fine sand particles) and aggregate mixes that provide the horticultural requirements for selected plant species together with the uniform structural strength of the load-bearing aggregate lattice to support the pavement design. The compacted aggregate matrix with its frictional 'stone to stone contact' provides a stable lattice for the pavement design but with a high porosity allowing air and water infiltration necessary to sustain plant life.

Organic materials are avoided in modifying the soil due to their decay and subsequent shrinkage properties. The loam clay materials are used in place of the organic materials for their nutrient-holding and water-holding capacity.

A lot has been written on the technical engineering requirements of structural soils and sometimes without the further consideration of the horticultural requirements of the plant life to occupy the space. The following web site although it is an American context has been found to be a sound and
informative document explaining the principles and practices on ‘structural soils’.


LATIS is produced by ASLA as an education service to the Profession of Landscape Architecture.

Australian Institute of Landscape Architects: http://www.aila.org.au/
American Society of Landscape Architects (ASLA): http://www.asla.org/

Drainage network
The drainage network should provide a stormwater system, which uses open space for infiltration of runoff and stormwater retention in a manner that does not detract from its principal function. The application of the techniques such as ‘hydro-zoning’, swales and gravel-filled infiltration trenches is encouraged to make use of stormwater runoff on site and to lessen the degree of polluted water passing downstream. Investigate the suitability of these techniques and others with regard to soil types and utility services.

For more information about ‘Urban Stormwater Management’ refer to:
The BDP Environment Design Guide provides building design professionals with accurate, accessible, professional literature on how to reduce the environmental impact of the built environment at http://www.architecture.com.au/edg
Commonwealth Department of Housing and Regional Development (1992), AMCORD URBAN: Guidelines for Urban Housing.
Commonwealth Department of Housing and Regional Development (1995), AMCORD (Australian Model Code of Residential Development)

Case Studies: Victoria, Association of Bayside Municipalities, The Coastal and Marine Planning Program (CMPP) is a Commonwealth Government initiative developed through Environment Australia’s Coast and Clean Seas Program and funded under the Natural Heritage Trust. Refer to ABM website: http://www.abmonline.asn.au/cmpp/