

Design for Open Space

Fact Sheet by Steve Thompson posted 16 Sep 2008

New residential estates need an integrated and connected open space network that meets the needs of residents and surrounding habitats and to provide a variety of recreational opportunities whilst addressing local catchment and stormwater management needs. Within an estate, open space provides opportunities to preserve and enhance natural elements of a site, facilitate social interactions and encourage a healthy lifestyle.

•Categorised under:

- Greenfield Development, Greyfield Development, Brownfield Development,
- Site Ecology, Place Making and Social Sustainability, Estate Design,
- Developer,

Introduction

Open space can take different forms, from local parks to community wide or regional facilities that attract and serve a greater catchment. Local planning authorities often require local or neighbourhood parks where larger subdivisions are proposed. For smaller subdivisions, these requirements may be in the form of cash contributions to enable Councils to build up funds to purchase and develop open space facilities in pre-determined areas or to improve existing areas of public open space.

The public open space system can also include natural areas consisting of coastal foreshores, waterways, wetlands, areas of escarpment and bushland. These areas are typically less suitable for recreation, but serve other public or environmental purposes, such as stormwater management, asset protection and other buffer zones, road reserves, habitat protection and lands used for community facilities and other infrastructure purposes.

Together, the different types of public open space should provide a range of recreational opportunities. The Recreational Opportunity Spectrum (ROS) (Clark & Stankey 1979) provides a model for categorising recreation and open space based on different characteristics of the space and user needs.

Private open space is another important element of open space system, the design of which is particularly important for residents of higher density areas where outdoor spaces may be scarce. Private open space is often

within a private allotment or as part of common property and its quality is dependant on the house or unit design and orientation. Private open spaces should aim to extend internal living areas and should have good solar orientation.

In an overall residential estate, open space is an important aspect that often co-ordinates the subdivision layout with the physical attributes of the site. Open space is also an important marketing tool that addresses and appeals to the needs of future residents.

Types of Open Space

Open space can have many forms and functions, and can be categorised into a hierarchy of open space including local (neighbourhood), district, regional and icon open spaces. Within the suburban setting, open space is often found in the form of local or neighbourhood parks that provide for regular local use with infrastructure such as children's play equipment, informal ball kicking spaces and picnic tables and benches. These spaces are commonly provided by developers when residential subdivisions are constructed and are generally maintained by local Councils, funded through rates and other levies.

Other types of open space may include district or regional open space in the form of sporting facilities, significant tracts of sensitive ecosystems or highly developed icon spaces such as Hyde Park in Sydney. These spaces are often provided by local government or by developers of large, masterplanned new communities, through regional or strategic planning where particular areas are identified for such larger scale spaces.

Types of open space can also differ greatly in their end use, ranging from highly organised sporting areas, to local parks for picnics and highly sensitive areas where access may be restricted or used only for low impact activities such as bushwalking. Using the Recreational Opportunity Spectrum (ROS) is a good way to ensure a variety of open space and recreational opportunities are provided within proposed open space areas. The ROS also ensures that surrounding public open space areas are considered and that an over or under-supply of particular open space types does not occur.

Active and passive open space and natural areas

Active and passive are terms used to describe the types of activities that are undertaken in open space areas. Active open space is often recognised as areas that provide for organised sporting and recreational functions such as sports fields, ovals, netball and tennis courts, showgrounds and other outdoor sports.

Passive open space provides for all other recreational needs, including scenic purposes, landscape amenity and where users can relax and enjoy the space without a specifically organised sporting activity. Passive open space may comprise picnic areas or other areas where infrastructure is maintained for a specific use, such as playgrounds, bird watching, boating, fishing and other such passive or informal activities.

The third form of open space is natural areas. These areas may hold little or no recreational value but may serve other purposes, such as the protection of sensitive ecosystems, scenic values or as part of stormwater management devices including retention basins and wetlands. These areas may provide some limited bushwalking or similar

recreational opportunities, but will often be restricted or have no access at all.

The amount of active and passive open space provided has traditionally been determined by the number of people expected to use the space. Unwin (1929) was first to develop an agreed amount of open space required for a given population, finding that $\hat{\sim}2.83\hat{\sim}^{\text{TM}}$ hectares per 1000 persons was a reasonable figure. This historical figure has been, ill is, widely used by some though not all local planning authorities in Australia. The figure is often further broken down to identify active and passive uses, often as a 50:50 split or as other proportions which reflect the requirements of a particular locality or in accordance with an open Space Strategy prepared by the local authority.

Generally, passive open space should always be provided in new estates in the form of local or neighbourhood parks which include spaces for children $\hat{\sim}^{\text{TM}}$ s play including playground equipment, informal sports or ball kicking spaces and exercise.

Open space design principles

There are a number of guiding principles that can be used to assist in considering how open spaces can be designed and located within estates. $\hat{\sim}$ Generally open spaces within an estate should consider the following:
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Balance	Provide a variety of open spaces to serve a range of different active and passive recreational roles to meet the diversity of community needs.
Access	Provide for safe and convenient access to open spaces within and between communities, and where possible co-locate open spaces with shops, schools and other community facilities to reduce parking and minimise walking distances.
Preservation	Use open space to $\hat{\sim}$ protect and enhance the environmental, cultural and heritage values of an area
Place Making	Locate open spaces to build on the special attributes of an area for long-term public amenity and sense of place; for example an open-space network may include hill tops, river frontage, mature trees, places with panoramic views, rocky outcrops and remnant vegetation.
Integration	Connect open space as part of a municipal network and link into the regional open space system where possible.
Safety	Design and maintain open spaces to ensure that public safety is commensurate to the level of use and targeted user groups.
Sustainability	Design, development and management of open space should respond to environmental values and conditions, community aspirations and economic considerations and must remain viable in the long term.
Equity	Provide equitable access to parks and open spaces to ensure that the type, location and quality of the infrastructure are evenly spread.
Waterwise	Provide areas within the open-space network sufficient to detain and cleanse stormwater runoff and avoid impacting sensitive areas.

(Based on EDAW/Sykes Humphries Consulting 2007 and Coastal Council 2003)

Of particular importance to the application of these principles is to provide simple and safe open spaces.Â While parks and open spaces should be attractive, well landscaped and maintained, they do not need to be radical blends of modern equipment, bright colours and new ideas.Â Many of our fondest childhood memories are likely to contain simple swings, rolling down grassed hills or climbing trees in our local parks.Â

A simple and clear approach to the open space area will ensure that the area also remains safe and easy to maintain for Councils, who are usually the eventual open space owners and/or managers.Â Excessive vegetation, particularly shrubs and smaller trees, can create blind areas or entrapment by poor design and layout.Â Safer by Design principles, including good access to street frontages, appropriate lighting and good drainage, should be used to ensure that open spaces are well used and have a safe feel.Â Good lighting, shade structures and interactive public art can also create meeting spaces and talking points where local residents and workers can meet and interact.

This park provides simple areas that have been broken up by garden beds, walkways and play equipment.

Location, size and setting

The location of open spaces should consider accessibility and equitable distribution.Â When providing new parks in an estate, local parks should be no further than 400 metres or five minutes walk from any new dwelling.Â These parks may be linear when connecting two destinations, or stand alone spaces, but should always be of a reasonable size and shape to easily allow the desired use.Â Most importantly, local parks should not be areas that are regularly inundated or unusable due to slope or other constraints.Â Open space should not be the left-over or un-developable land (although steeper slopes may inevitably form part of a reserve system).

Open space in medium and high density settings can often be smaller than new suburban local parks, but should also be well equipped to cater for intensive use.Â Such parks may provide BBQs, picnic shelters, play areas and potential for dog off-leash areas.Â Conversely, open spaces in more remote areas should be cognisant of their surroundings with rural style parks that have less onus on high maintenance activities and infrastructure.Â

Clustering of open space provides benefits in terms of effective infrastructure provision and maintenance.Â This is particularly applicable to sporting facilities where fields can be used for multiple uses and over various seasons, sharing car parking facilities, clubhouses, toilet blocks, rubbish collection/bins and signage.Â Clustering of uses also provides for a variety of times of use throughout the day, meaning that spaces are safer and more widely utilised.

Safer by design

Another important aspect of open space design is the inclusion of Safer by Design elements, otherwise known as Crime Prevention Through Environmental Design (CPTED).Â There are four primary principles to Safer by De

sign:

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- Surveillance
- Access control
- Territorial reinforcement
- Management and maintenance.

(Source: Redland Shire Council, 2007)

Surveillance - Good surveillance is controlled by ensuring that good sight lines are provided throughout areas of open space and between adjoining uses.Â The sketch below provides a good example of how trees and ground cover type plants can be used without restricting these views.Â Clear sightlines should generally be provided between 0.5m and 2m above natural ground level.Â Ideally, the majority of public open space areas should be flanked by public roads with houses opposite to allow for natural surveillance opportunities by passing motorists as well as residents.Â

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Lighting of public open spaces should also be undertaken in association with the proposed use of the area.Â That is, where areas are expected to be used at night, then appropriate lighting should be provided.Â Generally lighting should allow the identification of a human face from 15m.Â Lighting should also be in accordance with *Australian Standard 1158 Public Lighting Code*.

Access control - Movement and access around and to open spaces should also be clear and logical.Â Where open spaces are not fully exposed to public roads, multiple entry and exit points should be provided to ensure entrapment does not occur (that is, where a person is not able to escape danger because only one common entry and exit point exists). Directional signage should also be incorporated to enable a clear understanding of how the open space works.

Territorial reinforcement - A clear definition of the boundary between the park and any adjoining private areas should be made to delineate where activities within the public open space should occur.Â Whilst it is important to ensure passive surveillance from surrounding properties occurs, it is also important that the ownership of spaces is clear through permeable fencing, hedging or other means.Â The sketch below provides an example of this.

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Maintenance and management - Once open spaces are located and constructed, the management controls should seek to provide a range of activities and encourage high usage patterns - thus ensuring a high level of passive surveillance and safety.Â Open spaces should also be well maintained to ensure that landscaped areas do not become overgrown and unsafe or that play equipment does not become faulty.

The Recreational Opportunity Spectrum (ROS) System

Under the ROS system, types of open space are further broken down to take account of the type of environment, activities undertaken and experiences. The spectrum ranges from primitive and isolated experiences “ such as back country skiing ” to highly urbanised experiences that are shared with many others “ for example Federation Square bourne.

A range of opportunities throughout the ROS system would be likely to gain the widest appeal to various sectors of the community, however it is important to recognise that no environment will be suited to all types of recreation. For example in rural or remote areas, urban playgrounds or high maintenance sports fields are unlikely to be appropriate, nor would highly vegetated walking trails in an urban setting. Appropriate uses and activities should be matched to the setting and environment of the area.

Private and public open space

Private open space is an often overlooked consideration in provision of open space. The “great Australian dream” of a detached dwelling on a quarter acre block with room to kick a ball is fast becoming a thing of the past with public open space becoming an increasingly important as social and recreational asset within communities.

However private open space will continue to play an important role despite a trend towards smaller allotments and larger houses. Siting of dwellings within the allotment can provide opportunity to make the most of solar access and smaller courtyard and backyard spaces. Where designing dwelling houses on an allotment, buildings should be located around private outdoor open spaces which capture northern sunlight and extend living areas to the outdoor area.

While the size of these spaces can reduce the extent of activities that can be undertaken, all spaces no matter how large or small do still provide for some opportunities and should be appropriately located. Close attention should also be paid to the location of spaces to ensure that they suit your locality. The local authority or a local architect or planner would be able to assist with such site planning and maximise the environment effectiveness.

The following sketches provide some typical site plans that demonstrate the relationship between living areas in a dwelling, outdoor spaces and solar orientation.

Private open spaces on the northern areas of the lot are often preferred, but should be confirmed with your local authority or your architect or planner.

Environmental protection and sustainability

Where estates are developed in greenfield areas, certain locations may include sensitive and remnant bushland which may need or wish to be preserved. Open space allocations will often include these areas which can provide valuable additions to biodiversity, habitat retention and scenic value.

Mature vegetation should always be retained where possible in public open spaces, for example in special areas that can be highlighted for their environmental attributes. However if the removal of mature vegetation is being considered, for say active areas, an ecological assessment should always be undertaken to ensure that endangered or

sensitive ecosystems are recognised and appropriately considered in the open space proposal.Â

Where water bodies are created within public open space, either as part of a stormwater management system or as ornamental ponds, safer by design and water sensitive urban design (WSUD) principles should be applied.Â By utilising principles of WSUD, environmental benefits can be incorporated to allow the treatment of pollution through the use of detention ponds, swales and the restoration of natural drainage corridors to filter stormwater and urban runoff.Â Stored water can also be used for irrigation to reduce the extent of potable water use. Read more in the factsheet about landscaping public space.

Design, planning and management considerations must be well thought-out to ensure the dual-use areas remains safe to use for recreational and leisure purposes, including:

- The use of appropriate signage to make open space users aware of dual-purpose uses of the open space “ such as being drainage corridors as well as sporting fields;
- Providing fencing or restrictions to access for deep water bodies where supervision of small children may be required;
- Ensuring areas for playgrounds are appropriately sited away from drainage corridors or flood zones; and
- Planning and providing adequate funding to enable areas to be maintained including ensuring drains are not blocked and detention basins are properly functional.

Case Study “ Voyager Park, Huskisson NSW

Voyager Park adjoins the retail and tourist hub in Huskisson on the NSW South Coast and provides a high quality example of innovation and quality of open space, whilst maintaining simple and highly accessible areas.Â The area provides a variety of opportunities including passive recreation, play equipment, BBQ and picnic facilities as well as providing an important role in protecting the Jervis Bay foreshore.

The images provide a sample of various areas within the park and demonstrate the diversity that can be provided in well designed and maintained parks.

Case Study “ Hammock Hill Nature Reserve, East Bowral NSW

Hammock Hill Nature Reserve in the Wingecaribee Shire of NSW Southern Highlands provides a simple and original park setting that provides an educational experience as well as being unique to the locality.

The park is within a primarily rural setting, and the design reflects this setting by creating simple play structures (in this case over-sized wombats) that are easily maintained by Council.Â The educational signage discusses local wildlife and their habitat, thus creating environmental awareness as well as fun play areas.Â Painted concrete paths and low garden beds provide necessary access and amenity requirements whilst maintaining a safe and easily accessed area.

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Images:

Original sketch of proposal

Finished climbable sculptures

Interpretive signage in an open natural setting

Key Issues

Benefits

In a broader sense, open spaces encourage healthy lifestyles and improved opportunities for social interaction.Â Open space is often the creative space within a modern subdivision, a place where people come together to play, interact and to escape the home.Â These attributes are particularly beneficial for people living on smaller lots or within medium density housing.

"There are numerous health benefits associated with access to public open space and parks.Â Access to vegetated areas such as parks, open spaces, and playgrounds has been associated with better perceived general health (de Vries, 2003; Maas, 2006), reduced stress levels (Grahn, 2003; Nielsen, 2007), with reduced depression (Morita, 2007) and more walking (Li, 2005; Giles-Corti, 2005)."

Another benefit of open space is where sensitive, remnant or scenic natural areas are protected.Â These benefits can provide for an attractive backdrop to the development, and will often appeal to clientele who are attracted to nature and a lower level of recreational activity.Â

And finally, the marketing and the added sales value of convenient and high quality local parks is often underestimated.Â Greater benefits result when parks are developed up front and visitors to an estate can see the quality of the open space that they will benefit from.

Risks

There are several risks that need to be considered in the design and implementation of open space areas.Â Areas need to be safe and to be designed for a range of weather conditions, such as heavy rainfall and conversely drought.

Urban parks particularly need to carefully consider uses and how the demographics of predominant user groups may change over time.Â The ability to design and maintain an open space area for multiple user groups will assist with reducing the risk of a park becoming redundant.Â From the outset, using flexible and robust design principles will also assist in ensuring ongoing useability over time.Â

Open spaces being handed over to Council need to be of a suitable standard, usually spelt out by Council in

planning approvals. Poor maintenance or construction techniques may result in an open space area being rejected by Council, creating additional costs to the developer to bring the area up to an appropriate level. It is important that the costs of compulsory maintenance periods are factored into the overall development cost.

Savings

Reductions or savings in the extent of land lost to unsaleable products can be made through the co-location of open space and other uses, such as drainage reserves or by incorporating open spaces with community facilities or other non-residential uses. Time savings can be made through early discussions with Council and by careful examination and consideration of the design and layout of spaces.

Ecological savings, through ecosystem and biodiversity protection, are also commonly encapsulated through open space areas. Whilst these savings are difficult to quantify in dollar terms, the social and environmental benefits can be captured by educational signage and other mechanisms.

By using the statutory requirements of planning authorities in a considered way, outgoing costs of the development (through unutilised land) can be recouped by returning a perceived benefit to the purchaser (and ultimately higher purchase prices for saleable lots).

Costs

The financial cost of providing open space can be high both in terms of land take and the costs of establishing the spaces themselves. However, as previously discussed the return benefit of well designed and utilised open space can be reflected in the increased value of land and development sales.

The costs associated with provision of open space are threefold:

- the cost of implementing and constructing the open space and landscaping;
- the forgone cost of utilising otherwise saleable and developable land; and
- the cost of maintaining the open space.

Ensuring that open spaces are well designed, use high quality materials, and contain local root stock for landscaping will minimise ongoing maintenance costs, which are usually borne by Councils.

It is also important to note that open spaces are often required through the planning or development approval process, or by way of cash contributions through development conditions. The requirements of the planning authority should be carefully considered early in the design process as this may alter final design and lot yields.

Barriers

If open space areas are not appropriately designed and implemented, the developer may find that barriers are created between themselves and the local planning authority due to hold-ups in the planning process, or during handover of spaces following a required maintenance period. Upfront meetings regarding the type and design of open space and close attention to the required standards are simple ways to avoid these barriers, and the associated costs of the project being held up.

Barriers with the community can be avoided at later stages of the development by the use of close consultation with community and indigenous groups, particularly in areas likely to be of significance to Aboriginal people.

Benchmarks

The application of standards to the provision of open space is gradually being replaced by a needs-based approach by many local planning authorities. Key limitations to the use of a standards based approach include its emphasis on quantity rather than quality, the lack of responsiveness to the needs of individual communities, and the failure to recognise changing recreational trends due to demographics, cultural differences or new recreational activities.

Despite these limitations, standards do provide a general guide or starting point for what constitutes a reasonable amount of public open space. A standard of 2.83ha of open space per 1000 population comprising of 1.62ha of active and 1.21ha of passive areas was first proposed by Unwin (1929). To further break this standard down, the following table identifies some common benchmarks for local/neighbourhood and district parks.

Type of Open Space	Catchment Area	Size
Local/Neighbourhood Park	~ 250 people	0.2 hectares
District Park	~ 3000 people	1.0 hectares

The above benchmark areas would need to be free of encumbrances, such as flood prone areas, steep slopes or inappropriately shaped land which does not suit the purpose for which the park is provided.

These standards have been revised and interpreted by many local planning authorities and may vary significantly from Council to Council. Developers should confirm that appropriate areas are being considered during the planning and design process. Other open spaces outside these typically provided by greenfield subdivision, such as regional, icon and natural areas, would generally be set by the local authority and be determined as required, taking into account the locality, need for areas to be protected or specific recreational requirements of the regional population.

Development phase actions

Feasibility

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For many subdivisions open space will often be mandatory under planning authority requirements. The extent and level of embellishments that are provided in parks are factors that need to be considered, and should reflect the likely use and future management and maintenance regimes that are likely to occur. Thus the feasibility of implementing appropriate open spaces that meet the requirements of local planning authorities will need to be included in overall feasibility considerations.

The feasibility of providing additional open space or embellishments that are over and above statutory

requirements can then be considered on the basis of marketing and sales value. Larger developers commonly include additional high quality spaces in their developments with feasibility being balanced with the perceived advantages and potentially higher returns.

On the other hand, in some cases a local authority will want less (or no) open space and will instead seek a monetary contribution. This is often less costly for a developer than providing land and may have a positive affect on the project feasibility.

Planning

The planning for open spaces within the estate development is a critical aspect of the overall design. Open spaces need to consider many planning aspects, not least:

- Integration to surrounding and other open spaces within the estate;
- Accessibility to open space and distribution throughout the estate; and
- The type of open space to be provided and how it relates to the resident population.

By determining the constraints of the development site, the open space requirements of local planning authorities and layout of that open space, the arrangement of roads and lots throughout the estate will then often fall into place. Refinement of the open spaces to ensure that appropriate sizes, spaces and distribution have been achieved can then be undertaken through consultation with the local authority.

Design

Consider the design of open space, particularly in reference to any local planning authority requirements. Some design elements that are common include:

- That at least 50% of the open space frontage is to a public road;
- Where linear parks are proposed, that their minimum width is not less than 30m;
- That the slope of the open space is less than 20%;
- The majority of the land is not subject to inundation greater than 10% Annual Probability of Exceedance (AEP); and
- That the open space has adequate maintenance and emergency vehicle access.

Safer by Design principles, as previously discussed, should also be integrated into the design of open spaces.

Construction

The quality of construction in open space areas is very important to ensure the ongoing maintenance and use of the space is not compromised by poor finishing. Materials used within open space areas should be durable and robust, with design and materials being cognisant of issues such as graffiti and other vandalism, as well as principles of ecologically sustainable development (eg. recycled or recyclable, low embodied energy, renewable

source materials etc).

Construction of sub-base materials should be well controlled to ensure landscaping and grassed areas are suitably prepared for ease of maintenance and are drought tolerant. Any areas of contamination should be identified and appropriately treated before being exposed to the public.

Requirements for maintenance periods of up to 12 months are typically imposed during planning approval processes, with longer times sometimes imposed for areas with longer establishment periods. These requirements give added weight to ensuring that construction is of a high quality and that maintenance is considered during the design stage. Poor construction methods could lead to issues such as erosion, poor success of new plantings or damage to new equipment – all of which may result in delays to the hand-over of open space to the eventual owner.

Lot Creation

Issues of lot creation are limited in respect to open space provision. However, some important elements of lot creation around open spaces should be considered (many of which would be addressed in the planning and design stages). Of particular importance is ensuring that the interactions between open space and private allotments are well considered. For example, while it is always preferable to have road frontage to all sides of public open spaces, where this is not possible, fencing between lots and open spaces should assist in delineating private and public spaces, but should not block passive surveillance. Use of a semi-transparent style of fence (for example pool style fencing) may be more appropriate than high brick or block fencing.

Where allotments adjoin natural areas, bushfire precautions should also be considered and designed within the layout. Creation of bushfire trails at the rear of private properties can provide a buffer for fire, as well as accessibility for maintenance purposes.

Completion

Completion of the open space elements of the estate are important to ensure that areas can be safely used and maintained for their desired purpose. Establishment of trees and landscaping elements, including grassed areas, takes significant time and care, and can be permanently damaged if used before being properly established.

Before open space areas can be handed over to councils or the authority that will own and maintain the areas, certain standards will need to be met. These ‘handover’ standards need to be considered within the management and maintenance plans that accompany the open space.

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