

**Mirvac Fini: Burswood Lakes
High-Density Dwelling Design for Children**



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Working Paper 11:

***High-Density Dwelling
Design for Children***

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Burswood Lakes**

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1.0 Introduction

This *Working Paper* specifically outlines dwelling design requirements for children. A literature review of housing for children reveals repeated emphasises problems with space shortage in higher density housing: children are nagged, required to pick up in small spaces and unable to work cumulatively on the same activity where space is constrained.

Recommended spatial arrangements include: avoidance of formality, especially with regard to common interior space; attention to the relationships between spaces, as well as size, e.g., the need for a direct connection between living room and kitchen space; the need for a large kitchen and the need to locate the children's room next to and opening into the family space.

The needs of children in the outdoor environment are discussed in *Working Paper 6*.

2.0 Children and Interiors

Designing to meet the needs of children in higher density housing can make all spaces easier to furnish, occupy and manage all residents.

2.1 *Specific design considerations*

In developing design solutions for all dwelling types, it is important to see them as locations for activities that may spill over into a number of areas. In designing for particular high-density sites, the information in the following table should be gathered as a basis for design decisions. The table below can be used to supplement the guidelines elsewhere in this *Working Paper* (and the other *Working Papers*) by facilitating a more structured approach in the design process. Bearing in mind the following elements of a functional brief can help designers ensure that the needs of children and households with children are taken into account in explicit design decisions.

1. Space:

- ◆ Space name; and
- ◆ Description of proposed space.

2. Functions of the space:

- ◆ Typical activity or activities likely to occur in this space.

3. Activities to be supported

- ◆ Purpose of the space;
- ◆ Most typical and regular activities;
- ◆ Part-time, irregular or informal activities;
- ◆ Activities which should be encouraged/ supported/ fostered;
- ◆ Activities which should be avoided/controlled;
- ◆ Activities which relate to seasons, times of the day (e.g., children studying in bedrooms, doing homework on the kitchen table);
- ◆ Extended family needs; other cultural requirements; and
- ◆ Needs of visitors.

4. Users of the space

- ◆ Typical users/occupants;
- ◆ Regular occupants;
- ◆ Other regular users;
- ◆ Irregular users;
- ◆ Vulnerable users (e.g., children, older people, people with disabilities, women at home alone, guests); and
- ◆ Maintenance/delivery/cleaning personnel.

5. Relationships with other activities:

- ◆ **Affinity:** What activities/spaces is this space related to?
- ◆ **Proximity:** What does it need to be next to?
- ◆ **Separation:** What does it need to be separated from and how? (e.g., visually, acoustically, spatially?)
- ◆ **Communication:** Which other spaces must users of this space communicate with?
- ◆ **Surveillance:** What spaces should users of this space be able to watch over?

6. Messages that this space should convey

- ◆ Personal messages: What opportunities do users need to express individuality and identity, or generally to personalise the space?
- ◆ What other messages are to be communicated by this space? and
- ◆ What messages are not to be communicated by this space?

3.0 Guidelines for specific rooms/spaces

3.1 *Kitchen layout for child convenience and safety*

- ◆ Design kitchens to accommodate a variety of activities. Ideally, a kitchen should have only one entrance so that there is no need to pass through the kitchen to get to the yard or to other rooms in the dwelling;
- ◆ Ensure that the kitchen layout can accommodate several people preparing food and that traffic between the sink, refrigerator and stove is unimpeded by location of doors, especially laundry or back doors;
- ◆ Provide a direct connection between the living room and the kitchen space;
- ◆ Make provision for a child-proof barrier to be installed between the kitchen and the eat-in dining room, if required;
- ◆ Use a movable barrier to halt crawling children, or install a stable door, the bottom of which can be closed to restrain children while the top remains open for ventilation and communication;
- ◆ Ensure that kitchen and living room allows supervision of inside and outside play areas (see Figure 1);



Figure 1: Children playing can be easily supervised from dwelling windows

- ◆ Provide storage areas for food and equipment which are accessible to older children but inaccessible to younger ones. Install at least one child-proof cupboard to store injurious products or kitchenware;
- ◆ Provide enough space for an eat-in kitchen/dining/family area in all dwellings;
- ◆ Ensure adequate space for a high chair, allowing for general circulation so that the child does not necessarily get underfoot;
- ◆ Ensure that the heating elements of the stove are out of reach. Gas stoves with self-lighting burners and child-proof knobs should be used;
- ◆ Eliminate sharp edged and corners on all kitchen surfaces; and
- ◆ A non-slip surface is essential in the kitchen.

3.2 Dining, family and lounge rooms

Eating areas

Provide a dining room which is separate from the lounge room. Having two possible dining areas, an informal one in the family-room/kitchen area and a more formal area, can be especially useful in a household which entertains frequently.

- ◆ Select linoleum flooring, timber, cork, or tile rather than carpet for the eating area; and
- ◆ Design the informal dining area for children's homework and play, and able to be supervised from the kitchen.

Livingroom

- ◆ Livingroom design should minimise the possibility of cross-traffic impeding recreational space;
- ◆ Preferably do not locate seating areas near glass panels; and
- ◆ All heating units should have a safety screens and/or guard.

Halls

- ◆ Ensure that the formal entrance hall allows access to both frontstage and backstage areas of the dwelling: for example the living room and a circulation spine;

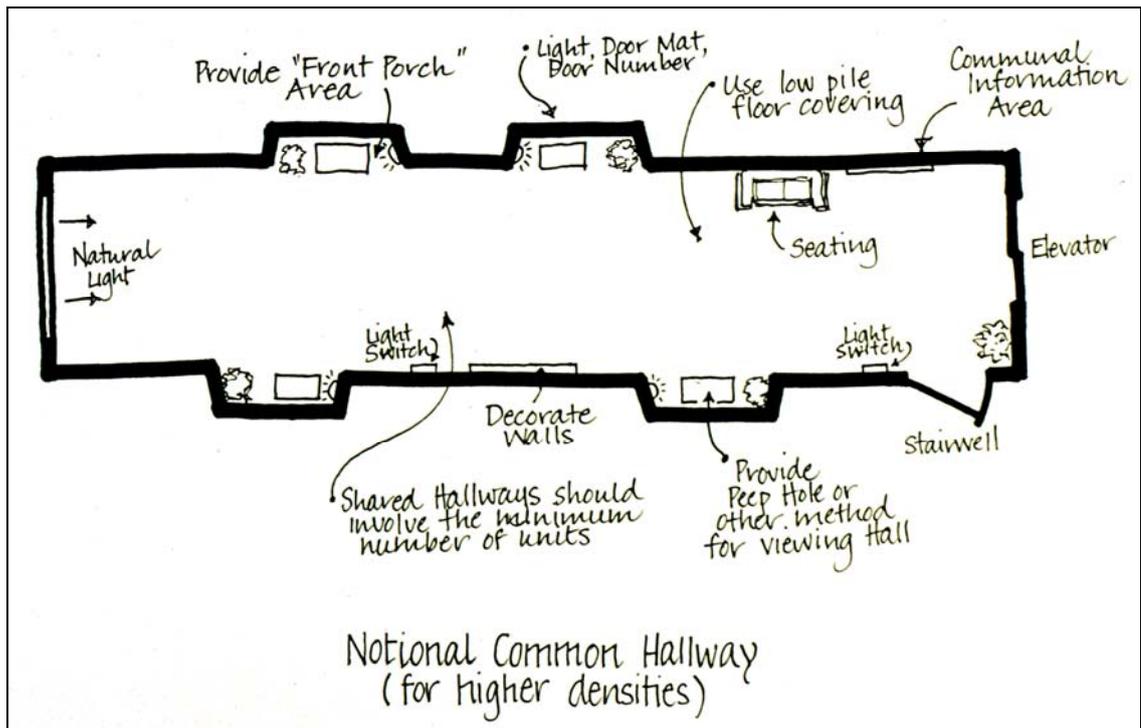


Figure 2: Natural common hallway

- ◆ An entrance hall providing access only to the living room (which then becomes a *de facto* hallway) is not acceptable. This causes privacy problems and is likely to lead to wear and tear by children going to and from outdoor play;
- ◆ Provide storage for wet or muddy clothing, for strollers, and for children's play equipment near either the front or back door; and
- ◆ Corridors 1.2 to 1.4 metres wide are ideal for play.

3.3 Other factors

Non-toxic substances

There is increasing consciousness, especially among parents and child-advocacy groups, about the dangers to health of pollutants in and around the dwelling environment. This matter is addressed in *Working Paper 12*.

Noise between and within dwellings

Privacy is a major concern of parents and lack of acoustic privacy can place burdens on children, as well.

- ◆ Ensure maximum acoustic privacy between the main (parents') bedroom, the children's bedroom(s), and other household activity areas. Pay particular attention to sound absorption and isolation. However, ensure that with open doors, it is possible for a parent to hear a young child at night.

Special technological and communication requirements

With advances in computer technology, it is essential that dwellings be designed to accommodate equipment likely to be used by household members, including children.

- ◆ Check computer cable ducting requirements for precise specifications;
- ◆ Consider surge/earth leakage protection, especially in locations with an unreliable power supply; and
- ◆ Provide opportunities for doorbells or buzzers to be heard in the gardens of ground-level units.

Children's issues in electrical and lighting

Pay particular attention to children's safety in specifying electrical and lighting fixtures and fittings.

- ◆ Ensure that all power points are safety shuttered, to minimise the danger of electrocution should a child poke a metal object into the socket holes;
- ◆ Locate hot water heaters in areas inaccessible to children;
- ◆ Consider providing dimmer controls in children's bedrooms. This allows light control for small children who may be afraid of the dark (consider the health implications, however.) See *Working Paper 12*;
- ◆ For older children, extra power points for computers and printers, and a telephone connection for a modem may be required in bedrooms; and
- ◆ Provide power points for radios and CD players, and games which may need a power supply, e.g., a train set.

3.4 Access and storage

Access to outdoor play areas requires that children can exit and enter through an area which is not the 'best room', i.e., a room with furnishings which might be harmed by the children.

- ◆ Ensure that storage areas are conveniently located throughout the house to minimise the distance objects must be moved;
- ◆ Ensure that there is adequate space for storage near where children play so that they can continue to work cumulatively on the same activity without having to pick up;
- ◆ Consider providing a room or hall space (separate from the kitchen) which can provide storage space for outer clothing and muddy or wet footwear;
- ◆ Locate the kitchen, carport, garage and/or verandah, garden, play space and toilet near safe playing and shelter against the wind; orient to and protect from sun; and
- ◆ Provide storage areas for outdoor toys in indoor and outdoor locations.

3.5 Separate play rooms

Separate play rooms are greatly appreciated by children.

- ◆ Treat the idea of separate play rooms with care; ensure surveillance from activity rooms, such as kitchen, to provide opportunities for adults to observe children, particularly younger children, at play;
- ◆ Provide opportunities (by means of spatial and acoustic separation) for older children and teenagers to make noise and entertain their friends without complaints from elders;
- ◆ Separate play rooms are greatly appreciated by children. If they cannot be provided ensure that the family room or other informal space can be used for play;
- ◆ Provide visual access from work areas to play areas; and
- ◆ Provide adequate storage space near where children play.

3.6 Bedrooms

Design bedrooms to accommodate a range of children's activities.

- ◆ Given the high number of blended families, design bedrooms (apart from main bedroom) to accommodate activities of one or two children. Ensure that the bedroom is large enough to accommodate: two single beds or bunks; clothes and personal storage; two chairs and a table;
- ◆ Provide two windows, or one wide window, in each room. Locate windows so that two study desks can be placed beneath them, if needed;
- ◆ Ensure that the bedroom is large enough to accommodate: 2 single beds, clothes storage, personal storage, 2 chairs and a table (bunks and built-in storage are ideal);

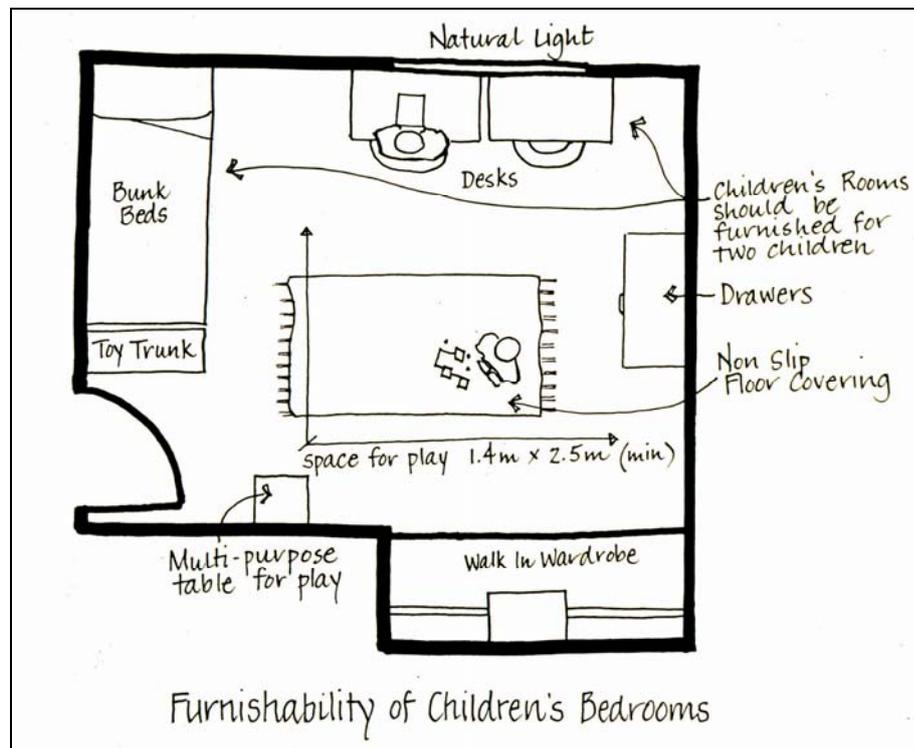


Figure 3: Furnishability of children's bedrooms

- ◆ Separate the children's bedrooms from the entrance hall where arrival noises may wake sleeping children;
- ◆ Provide a clear space of at least 1.4 x 2.5 metres for floor play;
- ◆ Ensure that every child's room is large enough for a small mattress for a friend to sleep (it can be parked under the bed);

- ◆ Locate the children's bedroom next to and opening into the family space;
- ◆ While acknowledging the need for adult and child privacy, locate the bedroom so that the parent or caregiver can hear a young child in the night;
- ◆ Pay attention to location of adult bedrooms *vis-a-vis* children's play areas so that parents needing to sleep at irregular hours (possibly because of shift work) are not interrupted by the noise of children's play;
- ◆ Avoid using blinds and curtains with cords;
- ◆ Separate the children's bedrooms from the entrance hall where arrival noises may wake sleeping children;
- ◆ As children love to climb up to their beds, consider higher than conventional ceilings for children's rooms to accommodate both bunk beds and ceiling fans; consider a mezzanine floor so that children can use the full floor area for play and sleep above;
- ◆ Ensure that every child's room is large enough for a small mattress for a friend to sleep (it can be parked under the bed); and
- ◆ Design adult caregivers' bedrooms so that there is room for a child's cot or bed as well as a double bed.

3.7 Bathrooms

The bathroom is the place where children congregate; their needs can be easily accommodated to enable social activity among children, as well as safety.

- ◆ Design medicine cabinets to be child-proof, with sloping tops to discourage people from leaving bottles on them; fixed high enough so that children cannot reach them;
- ◆ Locate light switches low enough so that a child can use the bathroom or toilet at night without adult assistance;
- ◆ Consider providing a power point for a photo-sensitive light, or a night light; and
- ◆ Consider the height and placement of mirrors, so that small children as well as adults can see in them. Where the only mirror is located behind the hand basin, presbyopic and visually impaired people may find they are unable to get close.

3.8 Balconies

The benefits of adequate balconies are addressed in detail in *Working Paper 10*. Balconies will be used and much appreciated if they are of adequate size, safe for children and psychologically secure for adults, located off living areas (and not off bedrooms), appropriately located with respect to sun and wind, and provide views out from a seated position. Ensure that balcony design conforms to standards for child safety (see Australian Standard 1926.1).

- ◆ Take care that balconies off living areas do not block the viewing of activity areas below;
- ◆ Provide for all-year use: protect from strong winds; orient so that the balcony receives sun for 30 percent of each day during spring, summer and autumn; provide adequate shade (30 percent in the shade is ideal);
- ◆ Orient balconies to protect from weather extremes: recess balconies or provide them with individual canopies for protection. Consider providing the option to enclose or screen-in balconies and porches;
- ◆ Do not provide balconies above the 12th floor. When the ground wind speed is 10-15km per hour, the wind speed at a height of 60 metres may be as much as 60km per hour; and
- ◆ The size and design should accommodate a pram, so that small babies can be put out in the fresh air without supervision.

Balcony detailing

- ◆ Provide a double, weatherproofed power point outside;
- ◆ Provide an outside tap;
- ◆ Provide all balconies with railings to protect children, increase feelings of security and privacy, and reduce visual intrusions;
- ◆ Ensure that the upper rail is secure in both function and appearance. Research on housing for older people recommends a balcony height of 1200mm. Australian Standard 1926.1 recommends the same height for swimming pool fences, and also specifies fence construction that prevents children climbing over. Accordingly, generally follow AS1926.1 when designing balcony railings; and
- ◆ See-through railings can be used where a balcony blocks the view from a window. This also reduces the problem of small children dropping things through railings.