Mirvac Fini: Burswood Lakes

Accessibility for People with a Disability in Residential Open Space

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Working Paper 9:

Accessibility for People with a Disability in Residential Open Space

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Burswood Lakes

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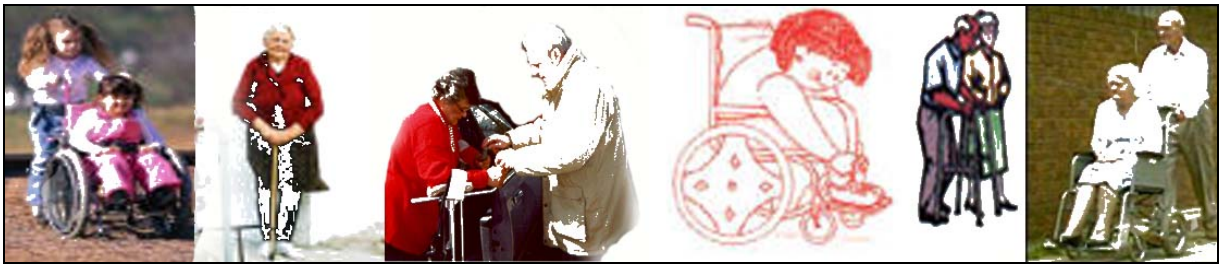

Figure 1: Images of people with a disability

1.0 Introduction

> *Striving to increase ease of use and convenience for the largest possible range of individuals will expand the potential pool of users, multiply marketability, and decrease expenditures for assistive technology. Profitability is enhanced, and cost is contained.*[1]

Demographics and population trends indicate that to exceed the requirements of the intended residents and potential visitors of a development, "design for disability and aging is to merge with, and become a continuum of, the normal design process" (Vanderheiden, 1990). Aside from the significant benefits to the community of such an inclusive and accessible site, the process also supports the developer to engender a corporate culture of innovation, inclusion, accessibility and excellence, leading to new directions, insights and professional accolade that translate as economic success.

The idea of disability is replete with social misconceptions. For many people, disability refers to something that affects only 'the unfortunate few', see **Figure 1: Images of people with a disability**. Given this prevalent worldview, marketing decisions often do not reflect the growing numbers of people with disabilities, or associate the unique needs and issues of this growing segment of the population with a potential source of considerable business and revenue. Curiously, many companies are missing key opportunities to extend their marketing influence to a significant and growing constituency.

1.1 This Working Paper

This *Working Paper* informs planning and designing accessibility for people with a disability or impairment in the private and public open spaces in the outdoor residential environment (please see Section 4.2 of ***Working Paper 5: Illustrated Crime Prevention through Environmental Design (CPTED) Guidelines*** for safety considerations of open space and ***Working Paper 7: Planning and Design of Public Open Space in Burswood Lakes*** for general information and guidelines on public open space). It is designed to focus on the public spaces of Burswood Lakes, and specifically to assist in the preparation of the Landscape Master Plan. A number of the recommendations and

[1] http://www.trace.wisc.edu/docs/pacbell_ud/RTFToC35 accessed 24/2/2003

guidelines are shared with those provided in ***Working Paper 8*** and for convenience are noted herein.

Open spaces and the outdoor environment present significant challenges to all potential users, but especially those with a physical, sensory or learning disability. For many, these challenges are seen as a major obstruction to equitable access and amenity.

1.2 A corporate precedent

According to Pacific Bell's Advisory Group for People with Disabilities *Universal Design Policy*[2], architects have begun to show the way forward on the subject best practice designing of accessibility for people with a disability:

> *Instead of responding only to the minimum demands of laws which require a few special features for disabled people, it is possible to design most manufactured items and building elements to be usable by a broader range of human beings, including children, elderly people, people with disabilities, and people of different size* (Wilkes and Packard, 1989: 754).

'Universal design' (see Section 2.2 for a working definition) is a concept that may be used in making built and designed environments accessible to as many people as possible, including people with a disability. It is founded on two key tenets:

- It is considerably more cost-effective to design access at the outset and throughout the process, rather than to add access on later, through retrofits and reconstructions; and
- The quality of accessibility is increased when incorporated at the outset and throughout the design process.

In our professional opinion, universal design is a way for Mirvac Fini to engender an ideology of best practice (see Section 1.7) and to exceed the requirements of future residents and visitors of Burswood Lakes more effectively than is likely from established design processes.

1.3 Defining disability

Ronald Mace, in a 1998 presentation at *Designing for the 21st Century: An International Conference on Universal Design,* outlined that:

> *…everybody has a disability….We all become disabled as we age and lose ability, whether we want to admit it or not. It is negative in our society to say 'I am disabled' or 'I am old.' We tend to discount people who are less than what we popularly consider to be 'normal.' To be 'normal' is to be perfect, capable,*

[2] http://www.trace.wisc.edu/docs/pacbell_ud/agpd.htm#RTFToC35 accessed 18/2/2003

> *competent, and independent. Unfortunately, designers in our society also mistakenly assume that everyone fits this definition of 'normal.' This just is not the case.*[3]

This is not to say, however, that certain serious disability and impairment is not more 'disabling' than others. Moreover, there is no clear distinction between people who are categorised as 'disabled' and those who are not. Disability is neither easily nor precisely defined nor easily quantified. Charting a performance or ability distribution for a given skill or ability generally displays a continuous function rather than distinctive 'disabled' and 'able' groups. This distribution includes a small number of individuals who have exceptional ability, a larger number of individuals with mid-range ability, and another segment representing individuals with little or no ability in that particular area.

Therefore, it is important to realise, with respect to the design of the urban spaces for Burswood Lakes, that drawing a line sharply separating 'able-bodied' from 'disabled' persons is problematic. Importantly, each aspect or ability has a separate distribution: a person who is impaired along an ability distribution in one dimension (e.g., hearing) may be at the other end of the distribution (i.e., excellent) with regard to another dimension (e.g., vision).[4] Thus, we may all be less able than another person in a given skill or ability and furthermore, our propensity may change throughout time. Understanding this concept can aide in providing an outdoor environment that is truly accessible, see **Figure 2: Universal sign for people with a disability**.

Figure 2: Universal sign for people with a disability

1.4 Disability and life expectancy

Until recently, people with a disability rarely enjoyed a similar life expectancy as their peers without a disability. As the following reminds us:

> *"Secondary medical conditions such as respiratory illness, renal failure, accidents, infections, and depression, coupled with a general lack of adequate primary medical care, prevented most persons from experiencing their true life expectancy."*[5]

[3] http://www.adaptenv.org/examples/ronmaceplenary98.php?f=4 accessed on 18/2/2003

[4] http://www.trace.wisc.edu/docs/30_some/30_some.htm accessed 18/2/2003

[5] http://www.jik.com/awdrtcawd.html accessed on 18/2/2003

Therefore, advances in medicine, rehabilitation and quality of life have translated into increased life expectancy for most of the population, even for those with a significant disability. Worthy of note for this development, ageing with a disability has been described as "one of the most important new developments in rehabilitation."[6]

This points to an emergence of a new group within the older part of the population - people who have spent all, or greater parts, of their life living with a disability. It is of particular importance for the planning and design of open spaces and the outdoor residential environment, that people with a disability can expect to live a similar duration as the rest of the population.

1.5 Aging with a disability

It is expected that a significant component of the residents of Burswood Lakes will be aging Baby Boomers, as indicated in Section 1.0 of ***Working Paper 8: Public Open Space and the Needs of Older People in the Residential Environment***, see **Figure 3: Silhouette of ageing with a disability**. Research on aging with a disability as a discipline is quite a recent phenomenon; arguably, focused for only the last 15-20 years. One significant finding of this research is that 'chronic disability' is not static over a lifetime.

> *Many, if not most, persons who live 20+ years with a disability or who are 40 years of age or older encounter substantial new medical, functional, and psycho-social problems that were neither expected nor planned for at an earlier age. Many of these changes are well underway by middle age; some are even underway by age 30 or as soon as 10 years after one acquires a disability. While the exact causes of this 'premature aging' are unknown…persons with [a] disability do not age in a typical matter.*[7]

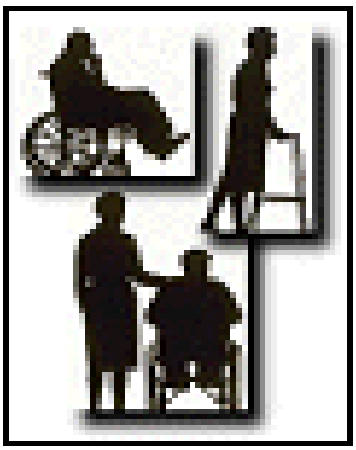

Figure 3: Ageing with a disability

[6] http://www.jik.com/awdrtcawd.html accessed on 18/2/2003

[7] http://www.jik.com/awdrtcawd.html accessed on 18/2/2003

According to the *Rehabilitation Research and Training Center on Aging with a Disability* in USA:

> *Recent research has revealed that the majority of persons aging with a disability will experience a multitude of premature medical, functional and psychosocial problems as they age. These problems result in the average 50 year-old person with a long-term disability being similar to a typical 70 year-old person.*[8]

Therefore, it is important to view the issues of the disabled population in relation to the problems of older people in the future. The chance of having some sort of disability increases with age, while disabled persons often face the problems of early aging, as previously outlined. Therefore, the groups have important common issues, and would mutually profit by pooling knowledge and experience.[9] The implications for the Burswood Lakes site are that people with a disability and older people as communities, will converge, as do their needs and requirements for accessibility. Therefore, the *Working Papers* about open spaces, older people, children (see the following Section 1.6) and those about people with a disability should be read as a mutually informing suite (***Working Paper 7: Planning and Design of Public Open Space in Burswood Lakes***, ***Working Paper 8: Public Open Space and the Needs of Older People in the Residential Environment***, ***Working Paper 6: Guidelines for Children in the Outdoor Residential Environment*** and this ***Working Paper***, respectively).

1.6 Young people and disability

Figure 4: A young person with a disability

It is important to acknowledge that children with a disability are children first and foremost, see **Figure 4: Cartoon of a young person with a disability**. Please refer to ***Working Paper 6: Guidelines for Children in the Outdoor Residential Environment***. Much of the advisory material on designing for children with a disability focuses on the needs of children with mobility impairments. While this is a critical consideration in ensuring that residential environments are fully accessible to these children, there is more to the story. Some children experience a disability related to hearing, reduced visual acuity, lack of sensory awareness, including sense of smell. Therefore, the sensory spectrum should be considered in the application of inclusive design.

[8] http://www.disabilityresources.org/AGING.html accessed on 18/2/2003

[9] http://www.jik.com/awdnor.html accessed 18/2/2003

While a clear and legible environment increases the independent mobility of children with a mobility impairment, a rich and complex residential environment can stimulate the senses of children with other disabilities, enhance their learning and cognitive development and help to promote independence.

For children with a disability, accessibility to residential open space is imperative if they are to be afforded developmental equity along with their able-bodied peers. Accessibility is a key to outdoor play and play for children with a disability follows the same pattern as that of able-bodied children, serving the function of expanding their experience and introducing them to an understanding of the world.

Children with a disability are likely to have a great amount of enforced free time but are often denied the right to participate in play through isolation, thus compounding their disability and often leading to social exclusion, resulting in potential social and developmental retardation. As 80 percent of a child's learning occurs before they are eight, the accessibility to the outdoor environment for play and exploration is of vital significance.

In designing outdoor areas to accommodate the needs of children (and adults) with a disability, the key requirements to consider are the following:

Ramps:

- Design ramps with a gradient not greater than 1:12 or an 8.3 per cent maximum slope (recommended slope 1:20 or 5%). Ramp runs should not be greater than 10 metres in length, with intermediate platforms not shorter than one metre and stopping and turning platforms not smaller than 1.6 metres on each side;
- Pay particular attention to the design of handrails, ensuring that they extend approximately 300 mm beyond the top and bottom of the ramp support and parallel to the floor, with 20 mm free space between handrail and wall if rail is to be grasped. On steps, provide two handrails. The lower handrail can be used by children; and
- Equip open structured free-standing ramps, where falls from ramps to the ground are possible, with a double set of continuous handrails with an extension of 0.5 metres at both ends and a wheel guard at the end of the ramp (see AS1428).

Walkways:

- Design walkways to be stable, firm, and relatively smooth, with a non-slip hard surface;
- Ensure that gratings located on walks have spaces no larger than 12.5 mm in width in one direction and should be aligned counter to path direction so that

wheelchair wheels will not slip into them. Use expansion and contraction joints (if required), which do not exceed 12.5 mm in width; and
- Avoid right angles in the path system to facilitate unimpaired forward motion.

Safety:

- Avoid projecting signs and meter boxes along pedestrian routes which could be hazardous to children and others (particularly people with vision impairments);
- Take care to provide protection from direct sun and prevailing winds. Many children with a disability can become dehydrated quickly and may perspire freely because of additional exertion required for mobility or side effects of medication. Areas providing shade and all-weather shelter should be an integral part of the outdoor environment;
- Connect the neighbourhood or community pedestrian circulation system with a designated play space, ensuring this is separated from vehicular traffic and parking areas; and
- Children with a disability are particularly vulnerable to accidents, therefore, vigilance in maintenance and repairs of hard surfaces is required;
- Specify materials that do not require constant replacement or repair.

Circulation:

- Design long walkways with a lesser grade or level areas where a child may stop and rest (level, well drained rest areas: 700 mm x 1100 mm minimum);
- Provide flat rest areas at several points along the path system;
- Use a hierarchy of path sizes and construction materials to delineate the importance and use of different areas to children (eg. play areas); and
- Avoid steep sites unless the slope can be specifically integrated into designs for children with a disability.

It is critical to remember that not all impairments that affect children are ***mobility*** impairments. Other sensory disability and impairments ability can limit children's appreciation of, and accessibility to, the outdoor residential environment.

Therefore, to aid design for people with an disability or impairment other than mobility:

- Ensure that it is easy to hold a mental map of the residential open space environment. Some children (and others) with a disability will have impairments that may cause them to easily lose their way. Simple and legible arrangements need not conflict with the need for complexity in the play opportunities provided;
- Provide shading as often as possible, as it is essential for most groups;
- Provide frequent and readily accessible drinking fountains;

- Plan for activities at multiple physical levels. Children will, crawl, sit at varied wheelchair levels, ambulate at varied wheelchair levels, stand and run; and
- Provide a variety of activities where able-bodied children are required to do things like crawl or scoot along, so that children who are not able to walk, skip or climb have opportunities to play at the same level as others.

1.7 Disability, legislation and Australian Standards

There is now Australian legislation addressing disability. As the Australian Standard 1428.1 notes:

> *"The Commonwealth Disability Discrimination Act, which has been in effect since March 1993, makes it unlawful to discriminate against people with disabilities in various areas, including access to premises, education, employment and services. The way in which buildings are constructed can result in discrimination in places of employment, tourist or other accommodation, offices, or places of entertainment. The intention of the legislation is that people with disabilities should be able to enter and use any public building, facility or service in an equitable manner."*

Important for Mirvac Fini and Burswood Lakes, Australian Standard 1428.1, has the following objective, "To embrace the standards of ***best practice***, exterior spaces in private developments should also endeavour to be informed by the principles of access equity" (our emphasis).

1.8 Accessibility and the best practice model

In designing outdoor spaces at Burswood Lakes, we are aiming to provide universal access. This is a form of 'best practice' in accessibility. Best practice is a journey rather than a destination and it is more about striving than arriving. The best practice model is developmental or motivated towards continuous improvement and is focused on searching for new and better ways of doing things. Best practice seeks to embrace a comprehensive, integrated and cooperative approach and is about celebrating progress rather than perfection. As leading organisations, such as Mirvac-Fini, continue to improve, the yardstick of best practice benchmarks continue to develop and refine. *("What is Best Practice - Australian Best Practice Demonstration Program 1994)"*[10].

A best practice tends to spread throughout a field or industry after a success has been demonstrated and a precedent established. However, it is often noted that demonstrated best practices can be quite slow to spread, even within an organization. According to the *American Productivity & Quality Center*[11], the three main barriers to incorporation of best practice are a lack of:

[10] http://www.otfe.vic.gov.au/publications/bestprac/best99/partnership/bpramod0.htm accessed on 19/2/2003

[11] http://www.apqc.org/portal/apqc/site?path=root accessed 24/2/2003

- ***knowledge*** about current best practices;
- ***motivation*** to make changes involved in their adoption; and
- ***skills*** and knowledge required to do so.

As Newel and Cairns point out, best practice is commercially viable and the benefits are measurable:

> *"Disability design can increase the functionality for able-bodied users: It is very common for accessible designs also to prove beneficial for individuals who do not have limitations* (Newell & Cairns, 1987)."[12]

We strongly recommend the adoption of principles of Universal Design, current industry best practice and an environment of social inclusion (see ***Working Paper 3: Preliminary Social Planning and Social Design Study***) to inform the development of open spaces at the Burswood Lakes site and allow Mirvac Fini to continue their leading edge influence in the development field.

1.9 Organisation of this Working Paper

Section 1.0 opens with an introduction to this ***Working Paper***, outlining the expected impact of growing demographic trends of people with a disability and establishing links with the marketing and profitability of the Burswood Lakes development. Section 1.1 frames the focus and parameters of this ***Working Paper***. Section 1.2 establishes a corporate precedent for accessibility and Universal Design principles. Section 1.3 outlines the problematic nature of defining 'disability'. Section 1.4 discusses the changing nature of the relationship between disability and life expectancy. Section 1.5 points to the expected convergence of the requirements and needs of older people and people with a disability. Section 1.6 includes the generic and specific needs and requirements of young people with a disability. Section 1.7 is a cursory framing of disability legislation and Australian Standards. Section 1.8 explores accessibility and the best practice model for Mirvac Fini. This section, Section 1.9, provides a brief statement on the organisation of this ***Working Paper***.

Section 2.0 outlines general principles in relation to accessibility for the outdoor residential environment in the Burswood Lakes development. Section 2.1 answers the question: What is Universal Design? Section 2.2 provides a working definition for Universal Design. Section 2.3 provides a condensed summary of the Principles of Universal Design. Section 2.4 reinforces Section 1.0 and links the benefits of Universal Design, marketing equity and accessibility. Section 2.5 begins to explore both the costs of Universal Design and the costs of not implementing Universal Design principles.

Section 3.0 provides a valuable list of a range of different abilities to which the Principles of Universal Design may be applied. Section 3.1 is specifically about

[12] http://www.trace.wisc.edu/docs/30_some/30_some.htm accessed on 18/2/2003

accessibility and path width. Section 3.2 informs accessibility and path slope. Section 3.3 explores accessibility, paving and walking surfaces. Section 3.4 explicitly states paving materials to avoid to maximize accessibility. Section 3.5 considers visibility and lighting in relation to accessibility. Section 3.6 provides a reprise on legibility, explored in the prior ***Working Paper 8***. Section 3.7 concludes the body of this ***Working Paper*** with shade and rest areas.

Section 4.0 provides a comprehensive resource list of print materials. Section 4.1 provides closure for this ***Working Paper*** and lists electronic resources and date accessed.

2.0 General principles

Different types of disability or impairment will lead to different implications for planning and design of open spaces in the outdoor residential environment of Burswood Lakes. Some general principles and associated information are set out below.

2.1 What is Universal Design?[13]

> *"Universal design asks from the outset how to make the design work beautifully and seamlessly for as many people as possible. It seeks to consider the breadth of human diversity across the lifespan to create design solutions that work for all users."* [14]

As Vanderheiden (1990) notes, "Universal design['s]…focus is not specifically on people with disabilities, but all people. It actually assumes the idea that everybody has a disability…."[15] or impairment or reduced ability, skill or propensity of some sort.

Universal design has as its ethos 'accessible' or 'inclusive' design. Hence, it is also known as: 'design for all', 'inclusive design' and 'lifespan design'. The primary focus is to design for the "fullest range of human function - taking into account the physical, sensory, cognitive, and language needs or abilities of the broadest spectrum" [16] of potential users during planning and design. To foster this, design concepts must be adopted with an understanding of how diverse individuals tend to function when using open spaces and the outdoor environment.

[13] http://www.design.ncsu.edu/cud/univ_design/princ_overview.htm accessed 18/2/2003

[14] http://www.trace.wisc.edu/docs/pacbell_ud/agpd.htm#RTFToC35 accessed 18/2/2003

[15] http://www.adaptenv.org/examples/ronmaceplenary98.php?f=4 accessed on 18/2/2003

[16] http://www.trace.wisc.edu/docs/pacbell_ud/agpd.htm#RTFToC35 accessed 18/2/2003

2.2 Universal Design – a working definition

The concept of Universal Design is a worldwide movement which envisions that all products, environments and communications be designed to consider the needs of the widest possible array of users.

Universal design is a way of engaging design, based on the following premises:[17]

- Varying ability is not a special condition of the few but a common characteristic of being human and physiological and intellectual change is a constant throughout life;
- If a design works well for people with a disability, it works better for those without;
- At any point in our lives, personal self-esteem, identity, and well-being are deeply affected by our ability to function in our physical surroundings with a sense of comfort, independence and control (Weisman, 1992); and
- Function, usability and aesthetics are mutually compatible.

These premises lead to an appropriate working definition of Universal Design for this ***Working Paper***: *that environments be designed to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.*

2.3 Principles of Universal Design[18]

These principles offer planners and designers guidance to better integrate features that meet the needs of as many potential users as possible. They may be applied to evaluate existing designs, guide the design and planning process and educate designers, planners and potential users about Universal Design and to inform the design of outdoor open spaces for residential environments. In the case of Burswood Lakes, the aim is to assist in the preparation of the Landscape Master Plan to ensure that issues of accessibility are taken into account in all planning and design decisions.

The following condensed version of the principles were compiled by advocates of Universal Design[19]:

- ***Equitable Use:*** The design does not disadvantage or stigmatize any group of users;

[17] http://www.trace.wisc.edu/docs/pacbell_ud/agpd.htm#RTFToC35 accessed 18/2/2003

[18] © Center for Universal Design, School of Design, North Carolina State University; Principles of Universal Design source: http://www.adaptenv.org/universal/index.php accessed 18/2/2003

[19] In alphabetical order: Bettye Rose Connell, Mike Jones, Ron Mace, Jim Mueller, Abir Mullick, Elaine Ostroff, Jon Sanford, Ed Steinfeld, Molly Story, Gregg Vanderheiden

- ***Flexibility in Use:*** The design accommodates a wide range of individual preferences and abilities;
- ***Simple, Intuitive Use:*** Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level;
- ***Perceptible Information:*** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities;
- ***Tolerance for Error:*** The design minimizes hazards and the adverse consequences of accidental or unintended actions;
- ***Low Physical Effort:*** The design can be used efficiently and comfortably, and with a minimum of fatigue; and
- ***Size and Space for Approach & Use:*** Appropriate size and space is provided for approach, reach, manipulation, and use, regardless of the user's body size, posture, or mobility.

While the Principles of Universal Design address universal usability in planning and design, the practice and discipline of planning and design involves more than consideration for usability. To create a truly inclusive design, designers should also endeavour to incorporate other factors such as: economic, engineering, cultural, gender and environmental concerns in planning and design processes. Information on gender and cultural inclusion has been provided in previous working papers. Information on a healthy home environment and working from home will be provided in forthcoming working papers (***Working Paper 12: Healthy housing*** and ***Working Paper 13: Design for working from home***, respectively).

2.4 What are the benefits of universal design?

> *"Accessibility features provide a market edge as we know that the quality of the outdoor environment is an important selling point, it could be argued that there are tremendous potential economic benefits from making it easier for individuals with functional limitations to live more independently..."* (Vanderheiden, 1990).

Ensuring that those with functional limitations are considered in the overall residential open spaces planning and design process benefits the overall design process. Design that is more accessible to persons with a disability often benefits able-bodied users as well. This mutual benefit is felt in reducing fatigue, increasing speed, orientation and environmental and spatial legibility. Interestingly, consideration of disability issues can also result in perceiving design issues more clearly. This increased clarity may lead to new insights and better overall design. Moreover, creating accessible and inclusive designs can also increase both the potential market and user satisfaction. With increasing awareness of accessibility issues, people are beginning to look for more accessible designs.

2.5 What are the costs of universal design?

> *"The most significant cost involved in considering functional limitations in mainstream design is that of building the necessary knowledge and skills in our …researchers, educators, and practitioners. Before we can include the disability aspects in mainstream research and teaching, we must considerably expand our knowledge base and experience in these areas. This is difficult for most professionals, who already have difficulty keeping up with the literature"* (Vanderheiden, 1990).

The cost of **not incorporating** the principles of universal design into the whole planning and design process is environments and products that:

- Are unsuitable for potential users and communities;
- May trigger social exclusion;
- May require expensive retrofitting and adaptation;
- Are unlawful at worst;
- Are below current industry best-practice standards at best;
- May pose potential hazard and risk; and
- Do not encourage independence and sociability for those with a disability or functional impairment.

3.0 General guidelines

The guidelines below demonstrate the range of different abilities, to which the Principles of Universal Design may be applied, see **Figure 5: Visual representation of some general guidelines**:

- People with a seeing impairment often feel vulnerable about tripping on uneven ground or colliding with obstacles in their path and have difficulty orienting themselves and finding their way in unfamiliar environments. For people with low vision, colour contrast and good signage will be helpful, while tactile information may assist those with no vision;
- People with poor balance or coordination may find it difficult to walk and are at risk of falling. Handrails and larger controls may assist;
- People with respiratory problems or poor stamina may not be able to walk long distances or up steep slopes or steps and may need to rest often;
- Some people may have difficulty using their hands or fingers. Therefore, they will need controls, handles, taps and/or knobs that are easy to operate;
- Other people may have trouble reaching, turning around or bending which impacts upon amenity and object location;
- People who use mobility aids will require extra circulation space, even ground surfaces and ramps or lifts rather than steps; and

- People with a cognitive impairment may be assisted by signage, buildings and paths that are clear, legible and distinct (see ***orientation***, ***wayfinding*** and Section 7.0 and 8.0 in ***Working Paper 8: Public Open Space and the Needs of Older People in the Residential Environment***).

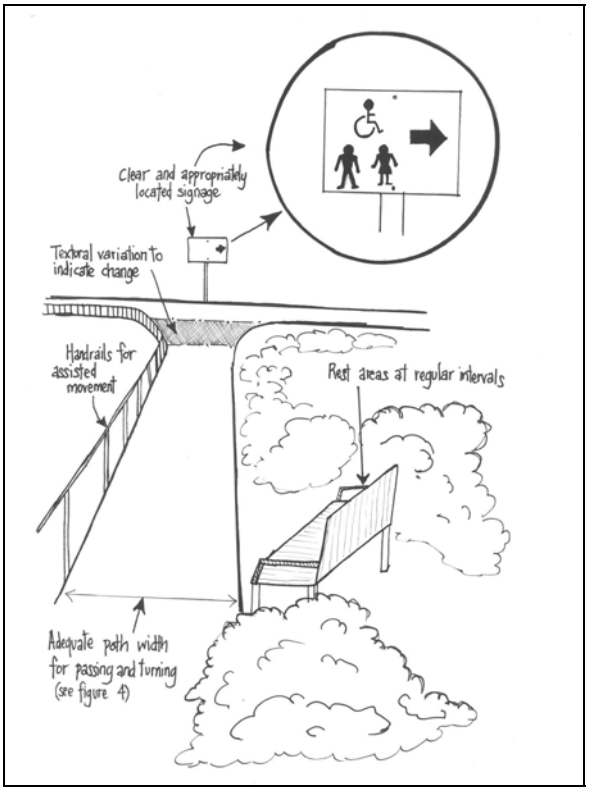

Figure 5: Visual representation of some general guidelines

3.1 Path width

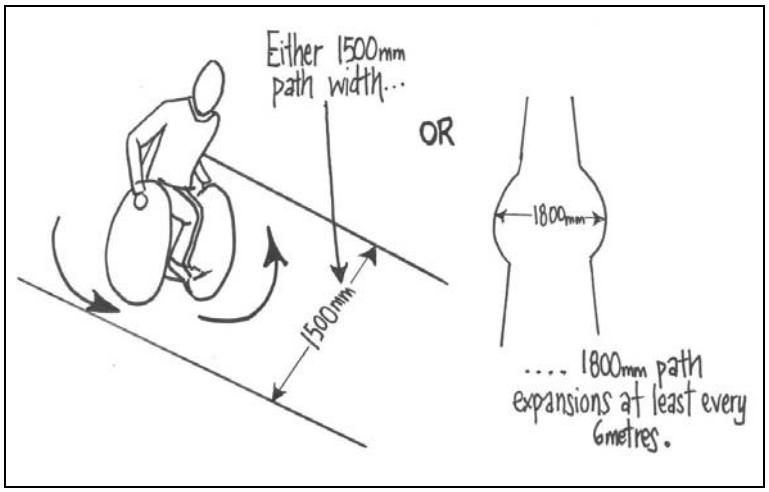

Figure 6: Path width and turning circle

The following guidelines focus on paths in outdoor areas (see section 4.4 of ***Working Paper 5: Illustrated Crime Prevention through Environmental Design (CPTED) Guidelines*** and section 8.0 of ***Working Paper 8: Public Open Space and the Needs of***

Older People in the Residential Environment). They are intended to assist in ensuring that paths, as well as being safe, are also accessible for all members of the community. It is important that, as a minimum, all major paths comply with the Australian Standard 1428 suite of standards, including amendments.

Walkway widths vary according to the amount and type of traffic using them. They should be wide enough to accommodate two walking people side-by-side or a person in a wheelchair and a person using a walker (to give support or just for sociability).

In summary of Section 6.5 of AS1428.2, in order:

- to allow two wheelchairs to pass comfortably a clear path width of 1800mm is needed, see **Figure 7: A Path of equity**;
- to allow a wheelchair and a pram to pass a clear path width of 1500 mm is required, see **Figure 7: A Path of equity**;
- to allow a person who uses a wheelchair easy passage a clear path width of 1200 mm is required, see **Figure 7: A Path of equity**;
- to allow appropriate space for wheelchairs to make a complete turning circle, provision of 1500 mm^2 is needed, see **Figure 6: Path width and turning circle**;
- to provide thoroughfare where a path is less than 1800mm, passing spaces at intervals of not more than six metres should be provided, see **Figure 6: Path width and turning circle**; and
- to ensure suitable provision for moderate two-way pedestrian traffic, a path width of 1830mm is preferable, while minor routes can be 1525mm wide.

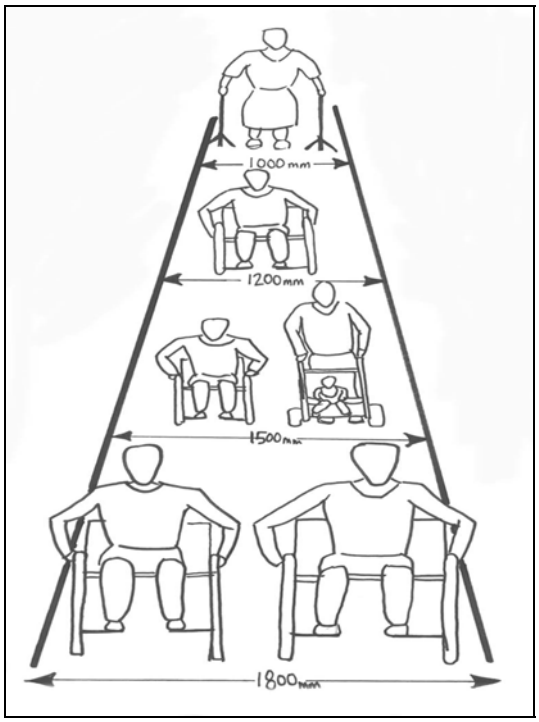

Figure 7: A Path of equity

3.2 Path slope

Major on-side pedestrian access routes should not involve a slope of greater than 5 per cent (1:20). These are considered to be paths (or walkways); those with steeper gradients are considered to be ramps.

Both slopes greater than 3 percent (1 in 33) without frequent rest areas and slopes greater than 5 percent (1 in 20) – with or without rest areas – are difficult to negotiate. Where walkways have gradients of 1 in 33, a landing (level and 1.2m long) should be provided at least every 25 metres and at least every 14 metres for walkways with a gradient of 1 in 20 (AS1428.1), see **Figure 8: Sloped paths with rest areas**.

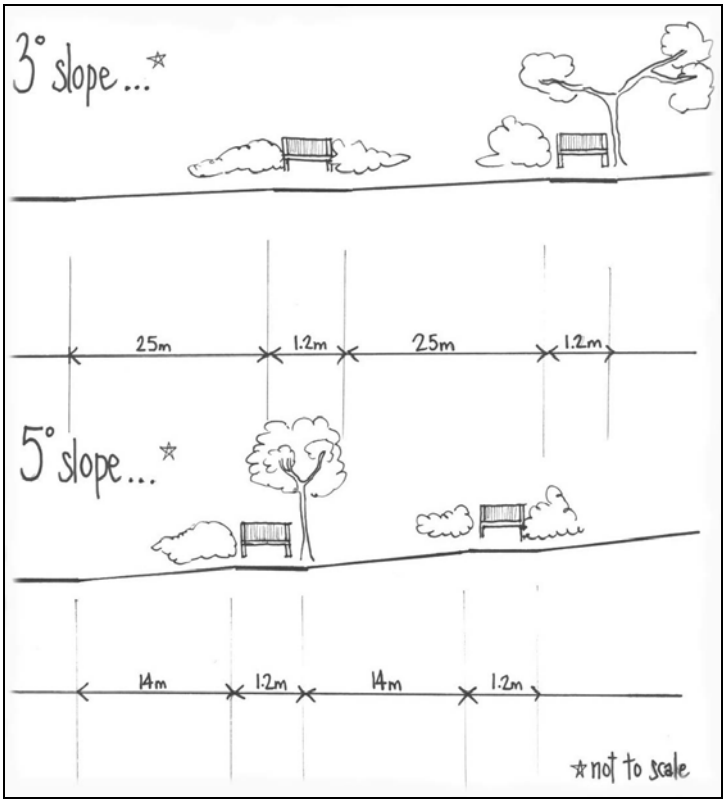

Figure 8: Sloped paths with rest areas

People with ambulatory difficulties may prefer indirect access routes that are level rather than shorter routes that have maximum grades. Options for safe, level access need to be considered as part of the overall planning process. The following features need to be considered:

- Major on-site paths at building entries should not exceed a 2.4 percent slope (1 in 40);
- No ramps, steps or kerbs located in arrival court areas;
- If possible, gradients below 3 percent (1:33); and

- Frequent level rest areas with benches (see Section 8.0 of ***Working Paper 8: Public Open Space and the Needs of Older People in the Residential Environment***).

3.3 Paving and walking surfaces

To encourage maximum resident use of outdoor areas, walking surfaces should be predictable, stable and firm. They should be non-slip, relatively smooth in texture and made of non-glare substances. Smooth, non-porous surfaces provide inadequate traction for people in wheelchairs or users of canes and walkers. Generally, hard-surfaced pedestrian paths meet most requirements (see Sections 3.9 and 4.4 of ***Working Paper 5: Illustrated Crime Prevention through Environmental Design (CPTED) Guidelines*** and 6.0, 8.0 and 9.0 of ***Working Paper 8: Public Open Space and the Needs of Older People in the Residential Environment***).

Other factors to be considered include:

- Minimising use of expansion and contraction joints (less than 12.5mm in width);
- Avoiding soft or loose surface materials; and
- Ensuring spaces between timber decking and planks are less than 12.5mm.

Clear edge definition between paths and planting is critical. Where edging or paving does not meet at grade, falls can occur. On the other hand, if planted areas do not have edges, plant materials can fall onto paths, making them slippery, especially when wet, see **Figure 9: Landscaping and accessibility**.

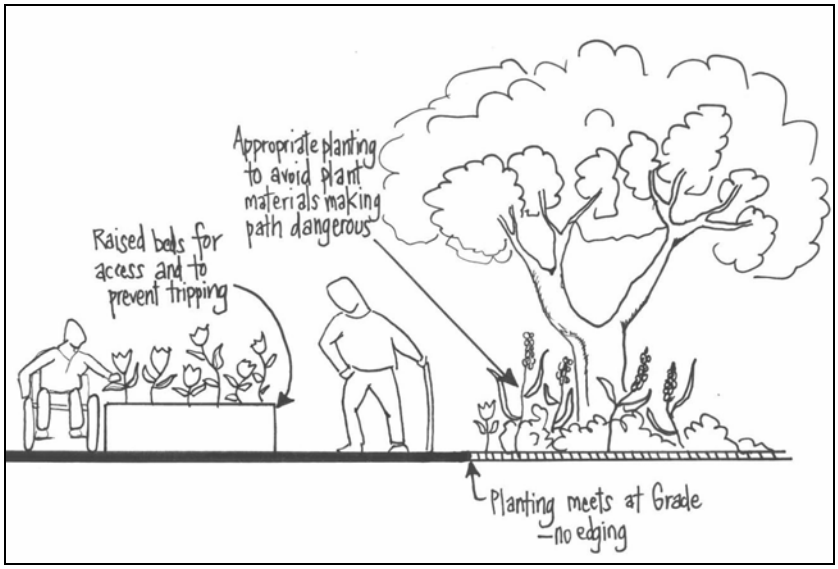

Figure 9: Landscaping and accessibility

Use a combination of features to avoid this hazard:

- Different coloured edging for paths to clearly mark edges;
- Good lighting along paths;
- Good path drainage;
- Plant materials which will not be slippery if they fall on paths (large leaves are safer than small ones);
- Planter beds set back as far from paths as possible;
- High edging (such as garden walls) which can be used as seating to define edges of paths and planter beds; and
- Stained broom-finished concrete.

3.4 Paving materials to avoid

Many attractive looking paving materials are totally impractical for many users, including older people and people with a disability (see Sections 3.9 of ***Working Paper 5: Illustrated Crime Prevention through Environmental Design (CPTED) Guidelines*** and 6.0, 8.0 and 9.0 of ***Working Paper 8: Public Open Space and the Needs of Older People in the Residential Environment***).

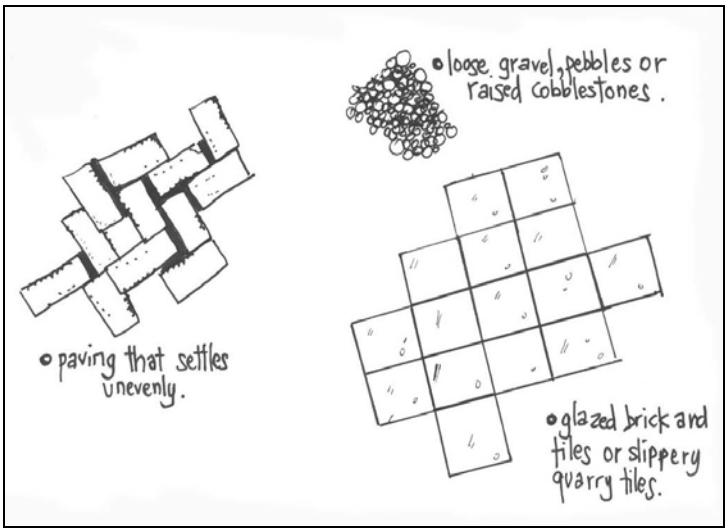

Figure 10: Paving and path materials to avoid

Therefore, avoid:

- Loose gravel, pebbles, raised cobblestones set in cement (exhausting to walk on);
- Glazed brick and tiles, even quarry tiles (dangerously slippery when wet);
- 'Crazy paving' which settles unevenly and may cause tripping or jamming of wheelchair wheels; and
- See **Figure 10: Paving and path materials to avoid.**

3.5 Visibility and lighting

Some people with a considerable disability may feel particularly vulnerable physically, socially and psychologically, though this is definitely not always the case. Appropriate lighting also increases psychological confidence and therefore, wellbeing. Lighting is important for amenity and to foster a safe and hazard free environment for all people and particular those with a seeing impairment. Lighting also provides potential directional cues aiding wayfaring and orientation at night. Importantly, people with a disability provide an easy target for crimes against person and property and the crime deterrence of appropriate lighting and visibility standards as encouraged in CPTED guidelines is important for providing equitable security for people with a disability. Lighting on a site such as Burswood Lakes raises contradictory, almost paradoxical issues. Please see Section 3.8 of ***Working Paper 5: Illustrated Crime Prevention through Environmental Design (CPTED) Guidelines***) for further information on lighting.

3.6 Legibility

The outdoor residential environment should also provide diverse and discoverable objects, textures, experiences and sensations with an abundance of choice and possibility. This sensory plethora contributes to the communication of spatial meaning and purpose and aids direction and orientation, as well as contributing to memory retention and recall and importantly, contributes to the aesthetics and textural variety of open space.

As outlined in section 2.0 of ***Working Paper 8: Public Open Space and the Needs of Older People in the Residential Environment***, one of the six principal qualities of the physical environment, particularly open spaces, is that it should make sense. This legibility of the environment is important so people do not get confused. As some children with disability will have a cognitive impairment and/or sensory disability, it is imperative that the residential open space environment is legible and designed with clarity. This requirement benefits all, including older people.

Legibility is fostered and confusion reduced by a number of factors:

- ***visual cues***: landmarks, landscaping, motifs and thematic spaces, signage (see **Figure 11: Legible signage and orientation)**;
- ***tactile cues***: handrails, wall and path texture changes;
- ***orientation and wayfairing markers*** around the site (see Section 3.4 of ***Working Paper 5: Illustrated Crime Prevention through Environmental Design (CPTED) Guidelines***) and (see **Figure 11: Legible signage and orientation)**;
- ***define and differentiate*** spaces by using visual cues, tactile cues, signage, landscaping, themes and motifs, landmarks etc.;
- ***predictability*** of place and function, path direction and

- ***linking pathway***, provide one major hard-surfaced pathway connecting most dwellings with major on- and off-site amenity.

Factors that foster legibility provide information about location and pathways so that people with a disability can orient themselves and navigate with ease.

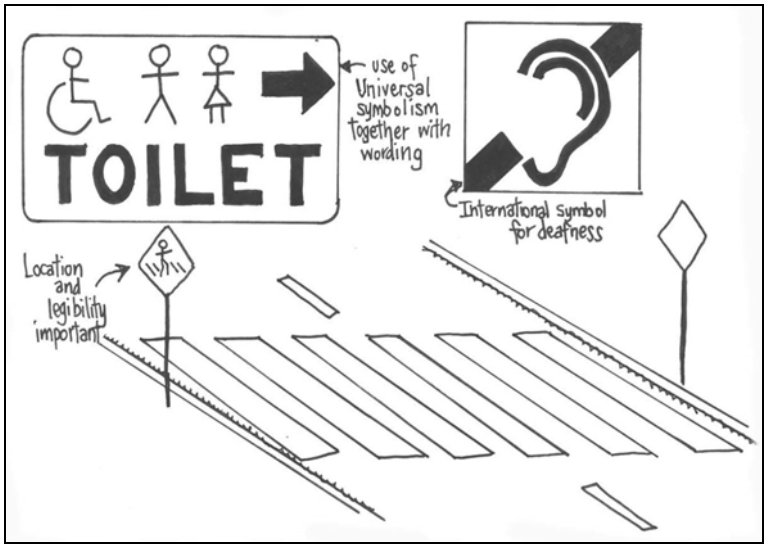

Figure 11: Legible signage and orientation

3.7 Shade and rest areas

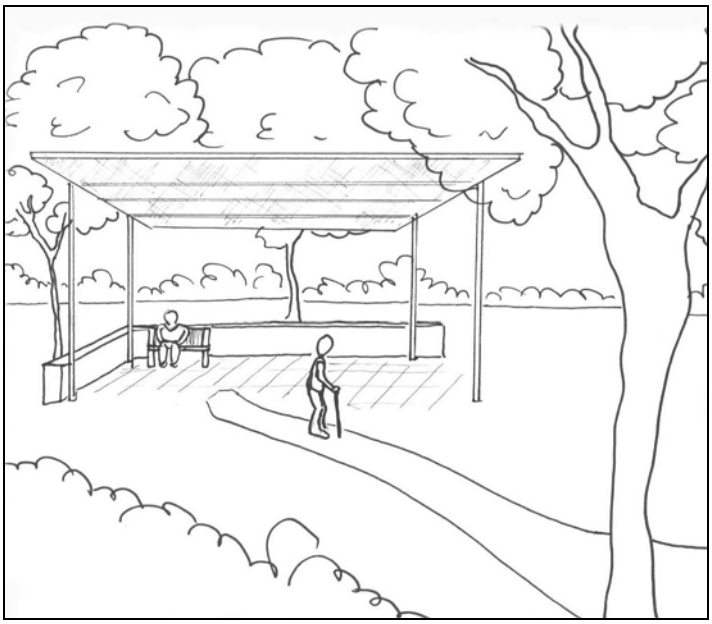

Figure 12: Shade and rest area

A person with a disability tends to consistently use more energy performing certain tasks than their non-disabled peers. Some people with a disability consistently work on maximum energy, just like a sports-athlete running a marathon. In time, this is expected

to result in decreasing capacity. [20] Furthermore, people with a disability, particularly those with a mobility impairment, may take longer to walk a comparable distance to that of their able-bodied peers.

Plan paths and sitting viewing and resting places with appropriate microclimates, maximising or minimising such environmental and weather factors as required: solar access, glare and wind (see Section 8.0 of ***Working Paper 8: Public Open Space and the Needs of Older People in the Residential Environment***).

Locate intimate seating and rest areas within 7m of the path and at appropriate intervals so that people with a disability can rest if needed. Ensure that these areas do not interfere with flow of thoroughfare (see **Figure 12: Shade and rest area**).

[20] http://www.jik.com/awdnor.html accessed 18/2/2003

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