# WAYFINDING IN THE BUILT ENVIRONMENT

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The Sebel & Citigate King George Square
Brisbane

# WAYFINDING







Supported by

# DISCLAIMER

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# WAYFINDING

## BACKGROUND

In an effort to make buildings and the built environment more accessible to visually impaired people, a research project was undertaken by the Cooperative Research Centre for Construction Innovation (CRC-CI) – a national research and development centre headquartered at Queensland University of Technology under the Australian Government's Cooperative Research program.

# WAYFINDING

## BACKGROUND (continued)

The project was conducted through two separate trials over three years and with the assistance of the:

- Victorian Building Commission,
- Queensland Government, Department of Public Works, Disability Services Queensland (sponsor)
- Queensland University of Technology (QUT),
- Australian Building Codes Board (ABCB) and the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

# WAYFINDING

- On **20 July 2008** at 22:35:00 (Canberra time), the resident population of Australia is projected to be: **21,369,180**
- By **2051** Australia's population is expected to increase to between **25 and 33 million people, with around 44% to 48% being older than 50 years.**
- In **2004** Australia's population was **20 million people,** with almost **33% being older than 50 years.**

- **Australian Bureau of Statistics, Population Clock, (2008)**
- http://www.abs.gov.au/ausstats/abs%40.nsf/94713ad445ff1425ca25682000192af2/1647509ef7e25faaca2568a900154b63?OpenDocument accessed 20 July 2008.

# WAYFINDING

- **Almost 4 million Australians have a disability.** About **50% of people aged over 55 have difficulty with their mobility, hearing or vision.**
- **By 2050 more than 25% of the population will be over 65.** If we add their families, friends and colleagues the number of people affected by disability is larger still.


- Australian Government, Department of Human Services, (2007), Access to buildings and services Guidelines and Information, Human Rights and Equal Opportunity Commission (HREOC). (updated April 2008)
- http://www.hreoc.gov.au/disability_rights/buildings/guidelines.htm accessed 20 July 2008.

# WAYFINDING

- Each of these people is a potential customer, client and employee.
- Good access to the buildings from which you operate and the services you provide makes good business sense.
- Good access also benefits others including parents of young children in prams; people with temporary illness of injury; older Australians; delivery people and shoppers with heavy bags or trolleys.
- Improving access also helps businesses and service providers to meet existing legal responsibilities under discrimination law.


- Australian Government, Department of Human Services, (2007), Access to buildings and services Guidelines and Information, Human Rights and Equal Opportunity Commission (HREOC). (updated April 2008)
- http://www.hreoc.gov.au/disability_rights/buildings/guidelines.htm accessed 20 July 2008.

# LEGISLATION GOVERNING DISABILITY ISSUES

- *Human Rights and Equal Opportunity Commission Act 1986 (Cth)*
- *Disability Discrimination Act 1992 (Cth)*
- *Anti-Discrimination Act (Qld)1991*
- *Disability Services Act (Qld) 2006*

# LEGISLATION GOVERNING DISABILITY ISSUES

***Disability Discrimination Act 1992 (Cth)*** addresses **access to premises used by the public** e.g. using libraries, places of worship, government offices, hospitals, restaurants, shops or other premises used by the public.

# LEGISLATION GOVERNING DISABILITY ISSUES

The *Diability Discrimination Act 1992 (Cth)* has as its major objectives to:

- eliminate discrimination against people with disabilities
- promote community acceptance of the principle that people with disabilities have the same fundamental rights as all members of the community, and
- ensure as far as practicable that people with disabilities have the same rights to equality before the law as other people in the community.

# COMMON LAW CASE

It was held that 'failure to provide access to the front entrance of the Brisbane Convention Centre for persons with a mobility impairment was unlawful discrimination under the Queensland *Anti-Discrimination Act* 1991.

It was held to be 'indirect discrimination on the grounds of impairment in the provision of services and in the administration of State laws and programs…'


***Cocks v State of Queensland* (1994) QADT 3**

Inquiry into the Brisbane Convention and Exhibition Centre, Parliamentary Committee of Public Works Report No. 18

**Refer paragraphs 123-129; 155 and 156 of the Report**

# COMMON LAW CASE

The Queensland Government spent in excess of $300,000 on redesign and rectification work for a 25 person glass lift.

The Building Code of Australia (BCA) was subsequently amended. This was a landmark case highlighting the inadequacies of the BCA.

Legislators and building surveyors realised the need for buildings to accommodate both anti-discrimination requirements and building controls to avoid costly rectification work as well as possible compensation payments to injured parties.

***Cocks v State of Queensland* (1994) QADT 3**

# WAYFINDING

What is Wayfinding?

# WAYFINDING

Simply, *'Wayfinding'* is the ability to find your way through a built or natural environment.

It is the skill that we have learnt as small children and the experiences learnt over time. Piaget and Inhelder, (1967); Johnson (1987)

# WAYFINDING

So, why is the concept of Wayfinding so poorly understood or is it?

# WAYFINDING

Cognitive research, conducted mostly in the 1970s and early 1980s, explored map typology and proposed the existence of two types of cognitive maps:

- a sequential egocentric map in which space is structured as a function of a person's movement through the setting (sequential space); and
- a coordinate or survey map in which space is structured (spatial space) according to an identified organization principle, Arthur and Passini (1992).

# WAYFINDING

Cognitive mapping's most widely accepted definition is as a process composed of a series of psychological transformations by which an individual acquires, stores, recalls, and decodes information about the relative locations and attributes of the phenomena in his everyday spatial environment  Downs & Sea (1973, p. 7).

# WAYFINDING

In its broadest sense cognitive map knowledge can be thought of as an internal model of the world in which we live Golledge & Stimpson (1997).

This consists of a union of spatial cognition and environment cognition Kitchin (1994).

# WAYFINDING

In *'1-2-3 Evaluation and Design Guide to Wayfinding'*, Arthur and Passini (1990, page A-1) introduced the term **'environmental communication'**

i.e. ***'transfer of orientation, wayfinding (direction) and other information within the built environment by means of signs and other communications devices or architectural features to enable people to reach destinations'.***

# WAYFINDING

The Center for Inclusive Design and Environmental Access, (CIDEA) New York (2001) states: *'Wayfinding is the organization and communication of our dynamic relationship to space and the environment'.*

# WAYFINDING

## Lynch (1960) the Image of the City

**Regarded as the foundation for human ‘way-finding’ research (term: *‘wayfinding’* coined in 1970’s)**

**Lynch (1960) p3, defines wayfinding as based on ‘*a consistent use and organization of definite sensory cues from the external environment’.***

# WAYFINDING

Lynch (1960) in *The Image of the City*, referred to maps, street numbers, directional signs and other elements as ‘wayfinding devices’.

The terminology has developed into five main architectural wayfinding elements:

1. paths and circulation
2. landmarks or markers
3. nodes
4. edges
5. zones or districts.

# WAYFINDING

Wayfinding is about effective ***'environmental communication'*** and relies on a succession of communication clues delivered through our sensory system of visual, audible, tactile and olfactory elements.

# WAYFINDING

Any visual wayfinding system is more than just signs — it encompasses architecture, landscape architecture, lighting, and landmarks and orientation points. The design of spaces should assist users with spatial problem-solving by providing consistent clues.

# WAYFINDING

**Spatial problem solving involves:**

1. Decision making – formulating an action plan.
2. Decision executing – implementing the plan.

**These decisions require information processing** which are comprised of environmental perception and cognition. This action provides the person with the information necessary for the two decision related processes, Passini (1992).

# WAYFINDING

Four major criteria in Wayfinding Design are:

1. Architectural Clues
2. Graphic Communication
3. Audible Communication
4. Tactile Communication (After Muhlhausen 2000)

**Not to forget olfactory elements and clues e.g. culinary aromas (coffee shops) and aromatic plants.**

# WAYFINDING

**Four main categories of graphic wayfinding elements are:**

1. Identification
2. Reinforcement
3. Orientation
4. Destination

**These categories follow Downs (1973) proposal that there are discrete stages in the wayfinding process, which include orientation, route decision, route monitoring (reinforcement) and destination recognition.**

# WAYFINDING

A successful wayfinding system should provide information for users to:

1. confirm they are at the correct start or finish point of an individual journey
2. identify their location within a building or an external space
3. reinforce they are travelling in the right direction
4. orient themselves within a building or an external space
5. understand the location and any potential hazards
6. identify their destination on arrival
7. escape safely in an emergency.

# WAYFINDING

**Why has wayfinding been neglected or ignored for so long?**

Two of the basic issues preventing wayfinding solutions from being properly implemented are:

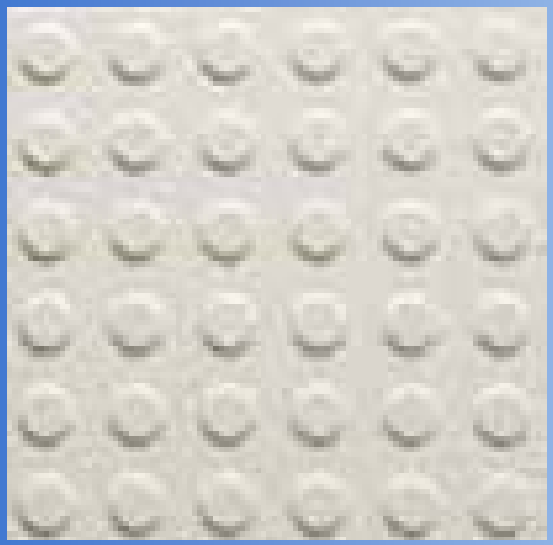
1. **that our society does not yet care enough**, and
2. that architects/designers have been too intent on **the niceties of architectural design** while graphic designers have been too intent on those of typography and on not offending the architects to care either . Arthur and Passini (1992).

# WAYFINDING

The following slides should be read in association with AS/NZS 1428.4:2002,

Design for access and mobility Part 4: Tactile indicators Appendix B Information on Design and Installation (Informative).

# TACTILE CLUES



**TACTILE GROUND SURFACE INDICATORS (TGSIs)**

# TACTILE CLUES

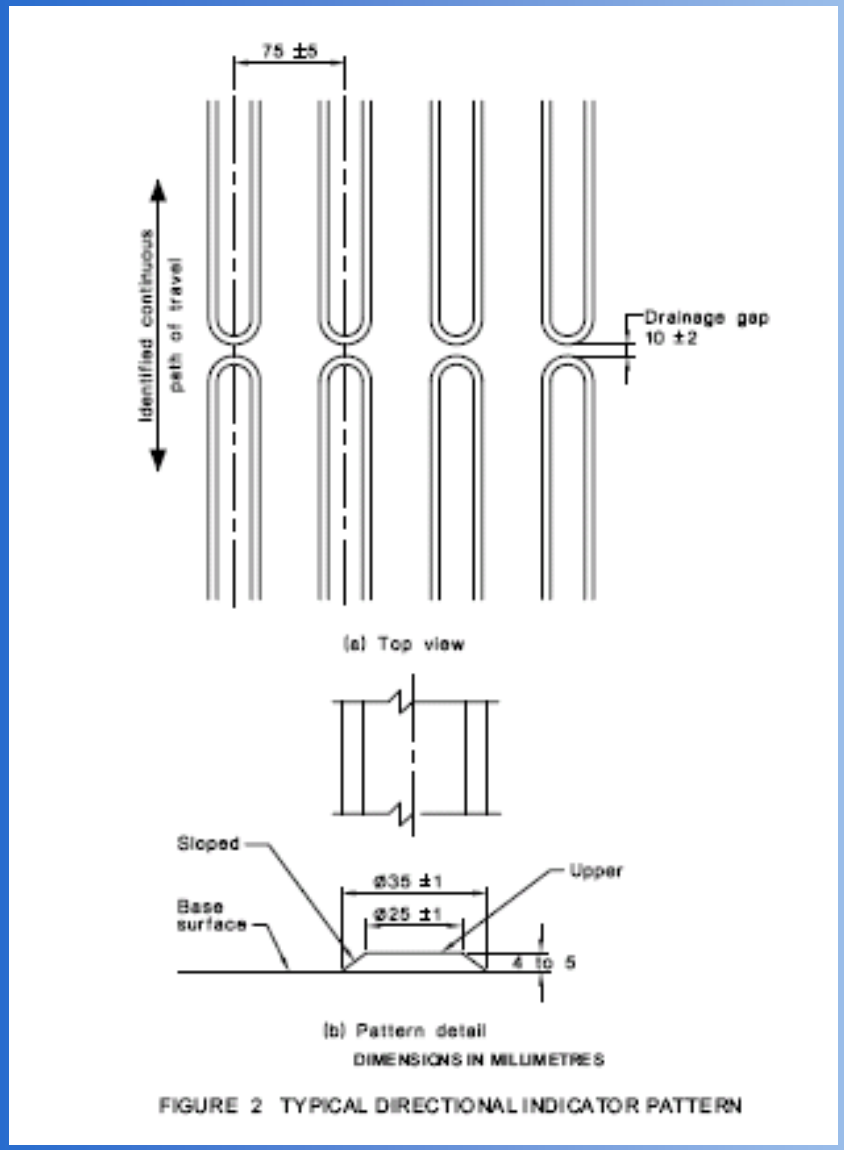


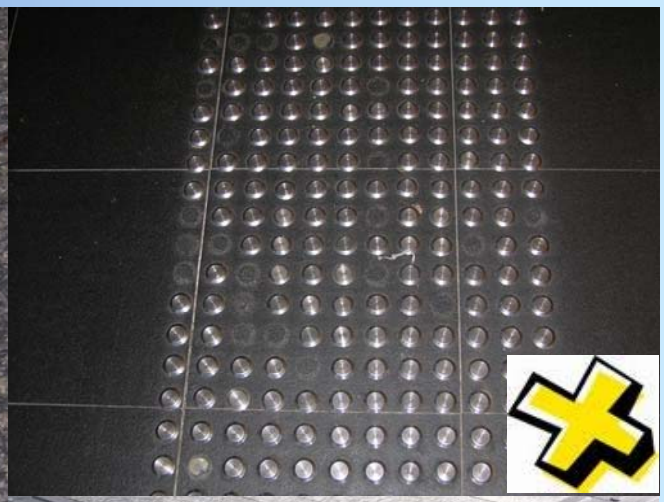

FIGURE 2 TYPICAL DIRECTIONAL INDICATOR PATTERN

**TACTILE GROUND SURFACE INDICATORS (TGSIs) General**

TGSIs shall be installed to alert people who are blind or vision impaired to pending obstacles or hazards on, or changes in direction and location points of, the continuous accessible path of travel, where those hazards or changes could not reasonably be expected or anticipated using existing tactile and environmental cues (including auditory, olfactory and other sensory cues).

**Directional Indicators AS NZS 1428.4:2002**

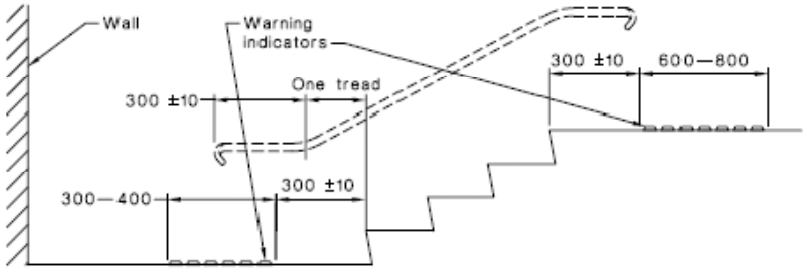
# TACTILE CLUES



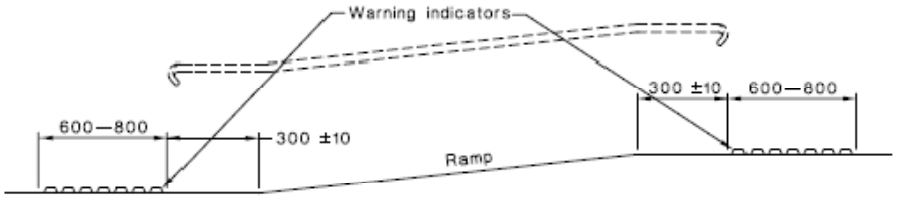
# TACTILE CLUES



Stairways Ramps
AS NZS 1428.4:2002




(d) Side elevation where top of stairway or escalator leads to an open area and bottom of stairway is enclosed



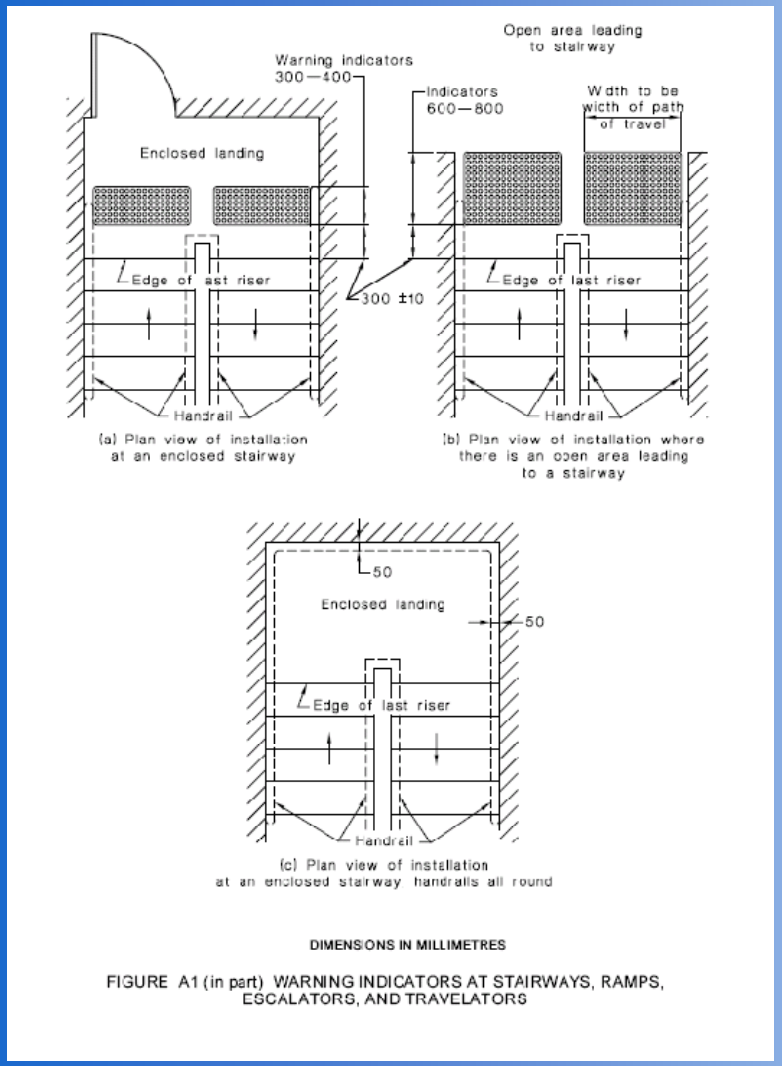

(e) Side elevation of installation at a ramp

DIMENSIONS IN MILLIMETRES

FIGURE A1 (in part) WARNING INDICATORS AT STAIRWAYS, RAMPS, ESCALATORS, AND TRAVELATORS

**Where required, warning indicators shall be located at both the top and bottom of stairways, escalators, travelators and ramps.**

# Stairways AS NZS 1428.4:2002

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# TACTILE CLUES

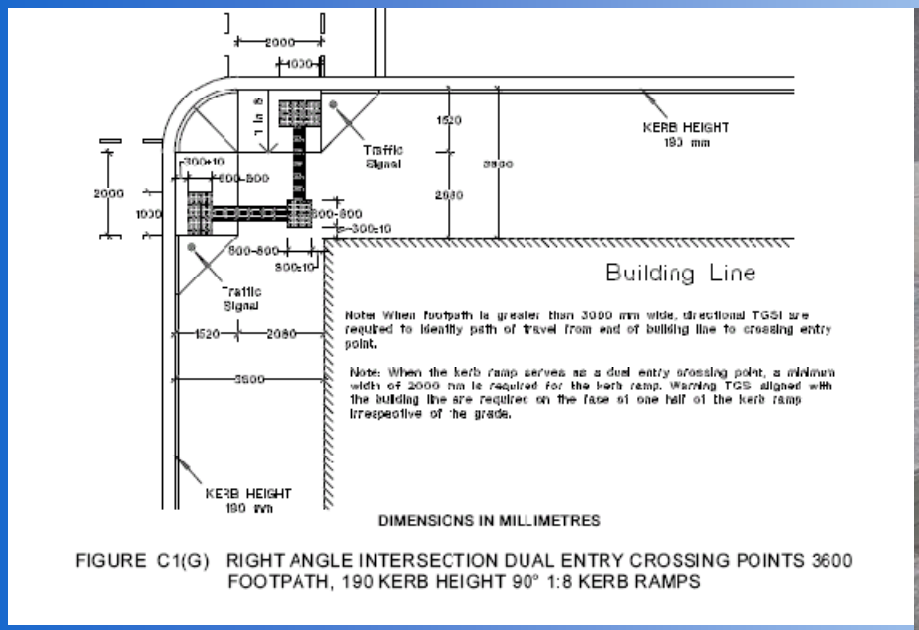
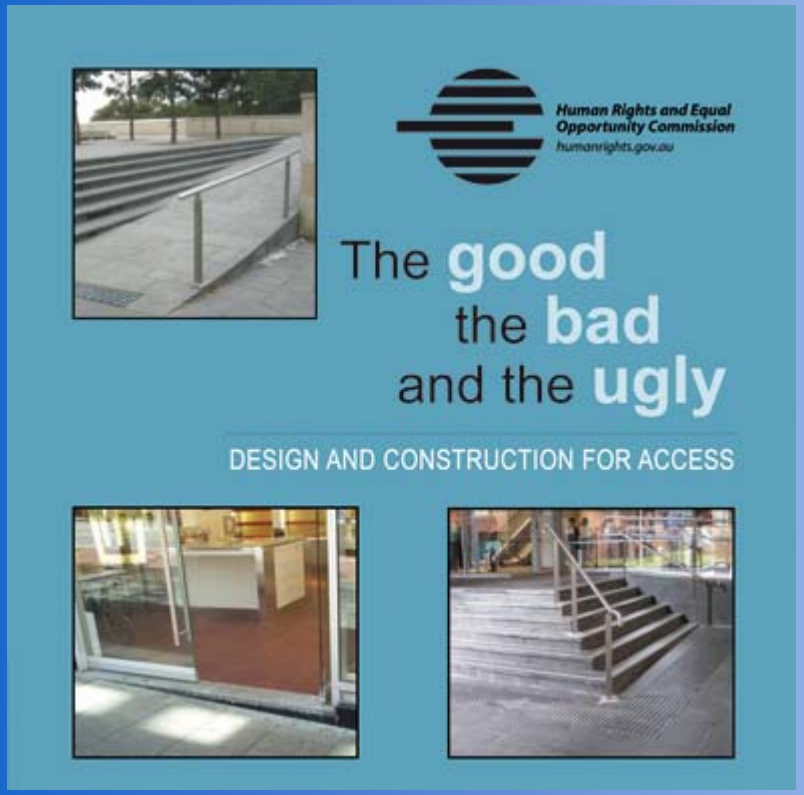



FIGURE C1(G) RIGHT ANGLE INTERSECTION DUAL ENTRY CROSSING POINTS 3600 FOOTPATH, 190 KERB HEIGHT 90° 1:8 KERB RAMPS

**Kerb Ramps Medians and Multiple Entry Points (Informative) AS NZS 1428.4:2002**

# EXAMPLES OF GOOD AND BAD ACCESS




HREOC has a free resource titled, *'The good, the bad and the ugly'* (2008) which includes photographs of good and bad examples of the design of features such as TGSI, ramps, signage, accessible toilets and doorways. This can be found at http://www.humanrights.gov.au/disability_rights/buildings/good.htm

Australian Government, Department of Human Services, (2007), Access to buildings and services Guidelines and Information, Human Rights and Equal Opportunity Commission (HREOC) (updated April 2008) http://www.hreoc.gov.au/disability_rights/buildings/guidelines.htm

# LUMINANCE CONTRAST

**Luminance contrast** is seen when two adjacent areas differ in the intensity of light contrast reflected or emitted from them.

There is a difference between the light energy reaching the observer's eyes from the two areas and a boundary is perceived between the brighter and darker areas.

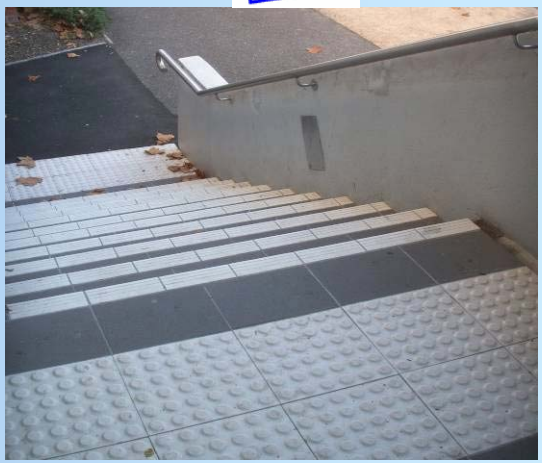
The **luminance contrast** is obtained by measuring the luminance factor of the surfaces and comparing them under natural and artificial lighting conditions and all weather conditions.

# LUMINANCE CONTRAST

**Luminance contrast is preferred to colour contrast alone.**

The use of luminance contrast is very helpful to assist people who are vision impaired locate important aspects of a building such as doorways, signs, handrails, shorelines, hazards and objects of interest.

HREOC (2008),The good, the bad and the ugly



# LUMINANCE CONTRAST

Bowman, R., (1999), Inadequate Colour Contrasts and Other Illuminating Considerations, Tile Today, Issue 23; May 1999 pages 48, 49, 52, 54 and 56

http://www.construction-innovation.info/images/pdfs/Publications/hosted_paper/Inadequate-colour-contrasts_bowman.pdf

# LUMINANCE CONTRAST

**Luminance factor**

Luminance factor is the ratio of the luminance of a surface to that of an ideal white diffusing surface when illuminated and viewed under the same conditions and viewing geometry.

**Luminance factor is expressed as a decimal in the range of 0 to 1. The unit measure for *luminance* is candelas/m2 (cs/m2).**

**Note: Lux is the unit measure of *illuminance*** and is the key measure of lighting and visibility.

**Illuminance** of an object or surface is the amount of light that is incident or falling onto a surface. The optical perception is actually what is reflected or emitted from that surface.

In other words it is the optical brightness or luminance.

# LUMINANCE CONTRAST

**AS1428.1, part 1: General requirements for access — New building work, Appendix D — Luminance Contrast states:**

*The luminance contrast is obtained by measuring the luminance factor of the surfaces and comparing them under natural and artificial lighting conditions and all weather conditions.*

*For the purpose of this Standard, the **luminance contrast differential is 0.3 or 30%.** The following equation is used:*

**C (Luminance Contrast) = (L2 − L1) / 0.5 (L1 + L2)**
(Where L1 and L2 are the luminance values).

# LUMINANCE CONTRAST

**Luminance Contrast and Signage**

With signs, contrast is the measured relationship between the luminance of the area of interest and that of its immediate background.

The luminance contrast in signs is normally calculated as the difference between the two luminance factors divided by the luminance of the background. Thus the following equation applies:

**C (Luminance Contrast) = (L2 − L1) / L1**

(where L1 and L2 are luminance values).

**Equally:**

**If L2 > L1, then C = (L2 − L1) L2**

**or**

**If L1 > L2 then C = (L1 − L2) / L1**

# WAYFINDING SIGNAGE

**Types of signs wayfinding (signage) system**

There are four (4) basic types of signs:

1. identification
2. information
3. directional
4. safety, regulatory, prohibition and advisory (ADAS, 1999).

# WAYFINDING SIGNAGE

**Graphic wayfinding (signage) system**

provides four (4) important functions:

1. orientation
2. direction
3. identification
4. information

# WAYFINDING SIGNAGE

Many signs are not legible or readable when viewed from a distance, due to:

1. Poor placement or inconsistency in sign placements & graphics layouts.
2. Poor choice of colours for people with a colour deficiency.
3. Poor luminance contrast between the letters and background.
4. Lack of Braille.
5. Illegible font style used.
6. Reflective surfaces, which hinder comprehension.
7. Poor illumination.

# SIGNAGE



**Placement of Signage**

Sign placement, legibility of text and direction arrows are essential for wayfinding, particularly for disable access. Ensure informative content of signage provides unambiguous directions.

# SIGNAGE



**Placement of Room Signage on swing or sliding doors.**
When doors are left open, the signage is not visible or easily located by a wayfinder. Consider the placement, naming protocol and Braille and Tactile signage when designing and planning a signage system.

# DIRECTORY BOARDS



Directory Boards provide a number of functions, identity, directional information and current position within the building or facility. Therefore, readability, legibility and placement are critical to any wayfinding system.

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# DIRECTIONAL SIGNS




**Important Criteria for Signage**

1. Positioned at decision points and actual placement
2. Noticeable and unobstructed
3. Legibility (i.e. Luminance contrast, Colour contrast, text at a legible size and readable: Font type, Braille, tactile or other language).
4. Orientated so they relate to the actual environment
5. Located in well-lit places.

# INFORMATION SIGNS



Information panel signs
(These signs are referred to as upright 'monoliths')

# INFORMATION SIGNS


**Location: Brisbane Square, Reddacliff Place, George and Adelaide Streets, North Quay**

## Landmark (marker) and Tactile Wayfinding Trail

This sign element acts as a recognised landmark (marker) within the streetscape identifying one of the entries to Brisbane Square and the community asset, the library and Brisbane City Council Customer Service Centre. The marker provides important information for visitors to the square.

The Map Design utilises raised tactile lettering and Braille, 'You are here' graphic in identifying the visitor's location and direction of the major building attractions. Note the use of the tactile ground surface indicators (TGSIs) at the base on the sign.

These tactile ground surface indicators form part of a designed tactile wayfinding trail (also referred to as a 'Tactile Guide Pathway/s'). It is important to assist in safe wayfinding; however the design industry should not over-use or over-prescribe the installation of tactile ground surface indicators. Designers should make full use of the range of environmental guidance features available so as to minimize inconvenience to other members of the community.

# INFORMATION SIGNS




**Important Criteria for Signage**

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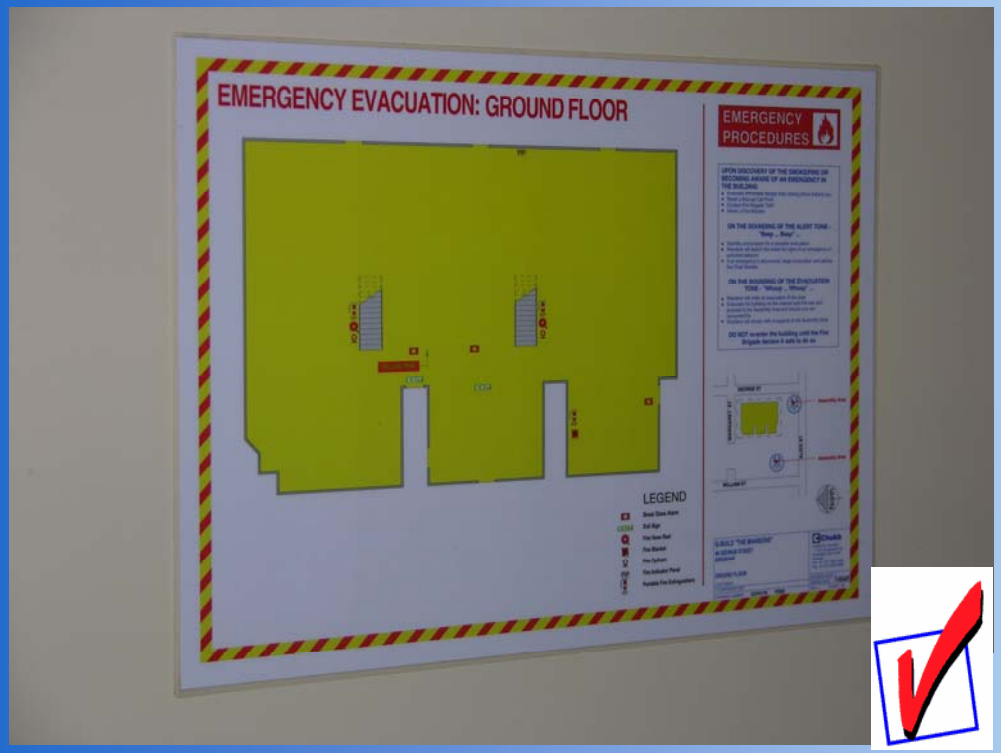
# SAFETY, REGULATORY, PROHIBITION AND ADVISORY



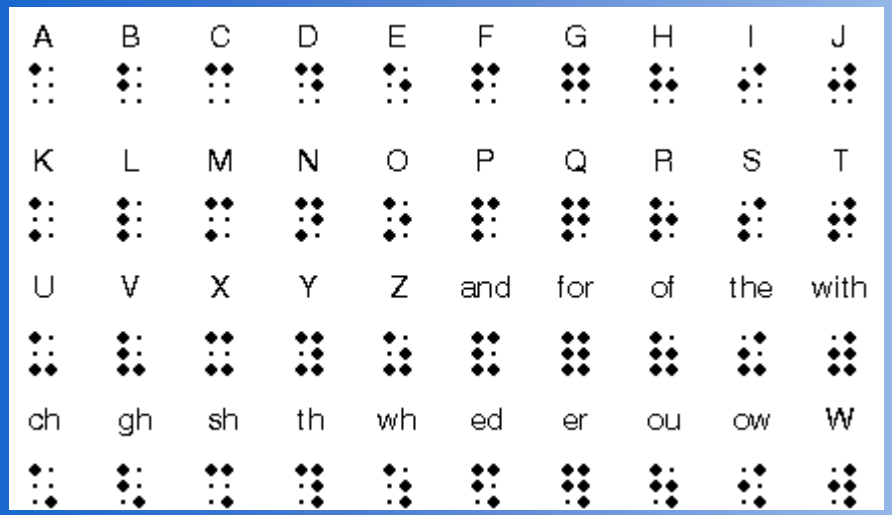

**Emergency, Evacuations and Fire Exits**

Develop legible, appropriately and prominently located Maps, Signage that are kept current, complying with the Building Code of Australia (BCA).

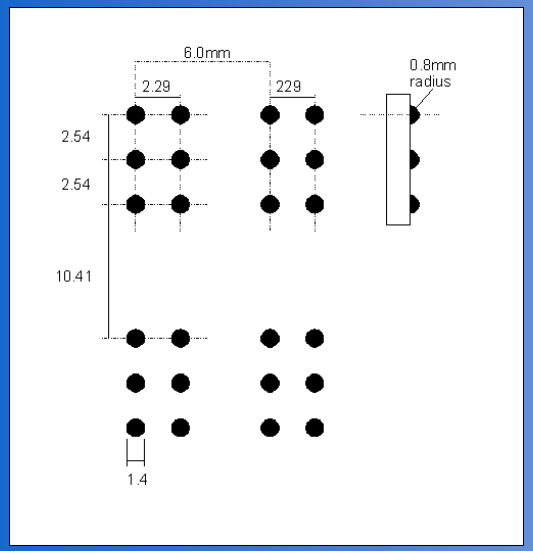
# WAYFINDING


**Olfactory elements and clues e.g. culinary aromas (coffee shops) provide cognitive reference points along the wayfinding journey, particularly for people who are sight impaired.**

# WHAT IS BRAILLE?

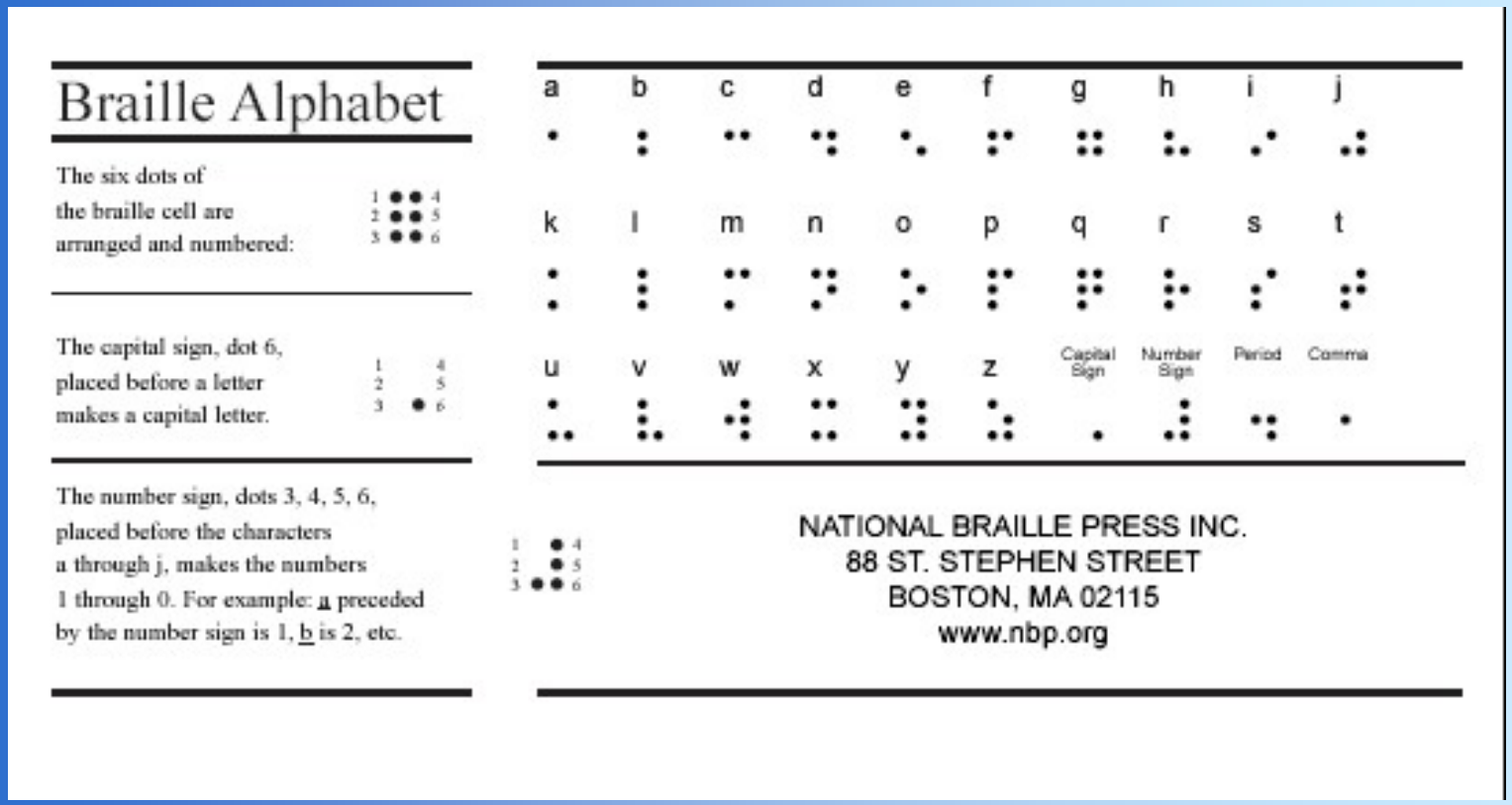



Braille is a medium which allows a non-sighted person to read text by touch. The Braille code is physically presented as raised dots, usually arranged in cells of up to 6 dots. This is why Braille writing devices have six main keys each key controls a dot in the Braille cell.

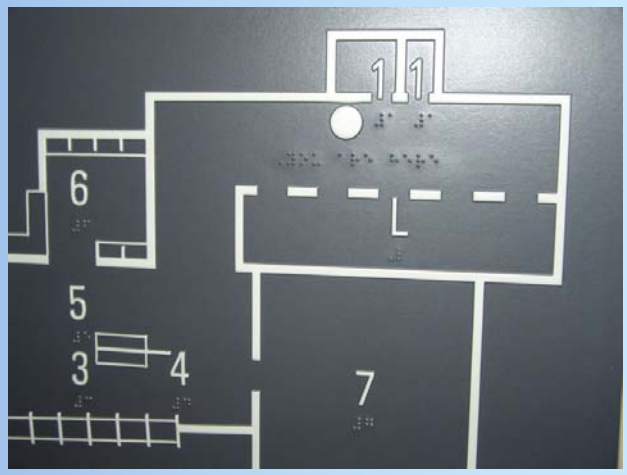



Unified English Braille Code (UEBC) Grade 1 Braille consists of only the letters of the alphabet, numbers, and a few punctuation marks.

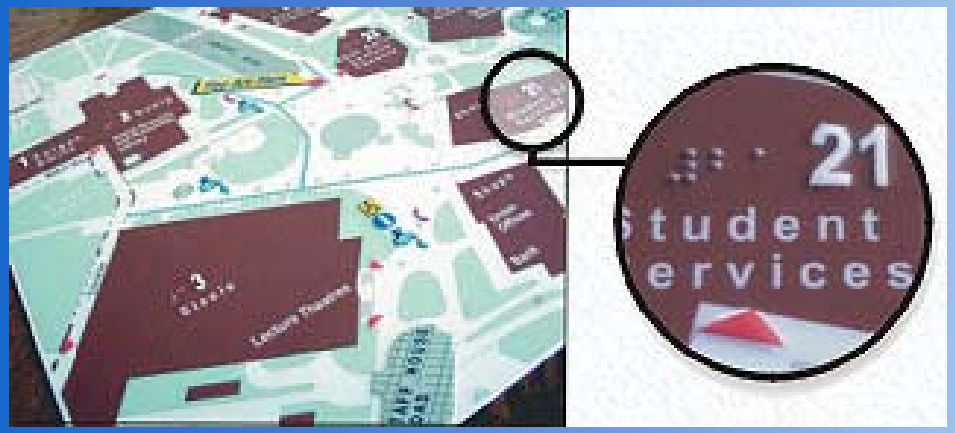
# UNIFIED ENGLISH BRAILLE CODE (UEBC) GRADE 1

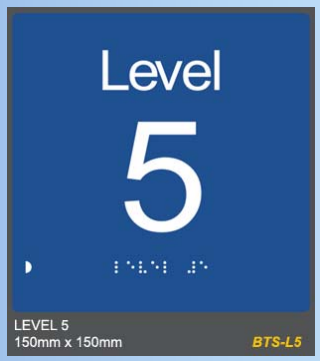


# BRAILLE & TACTILE SIGNAGE


# BRAILLE & TACTILE SIGNAGE



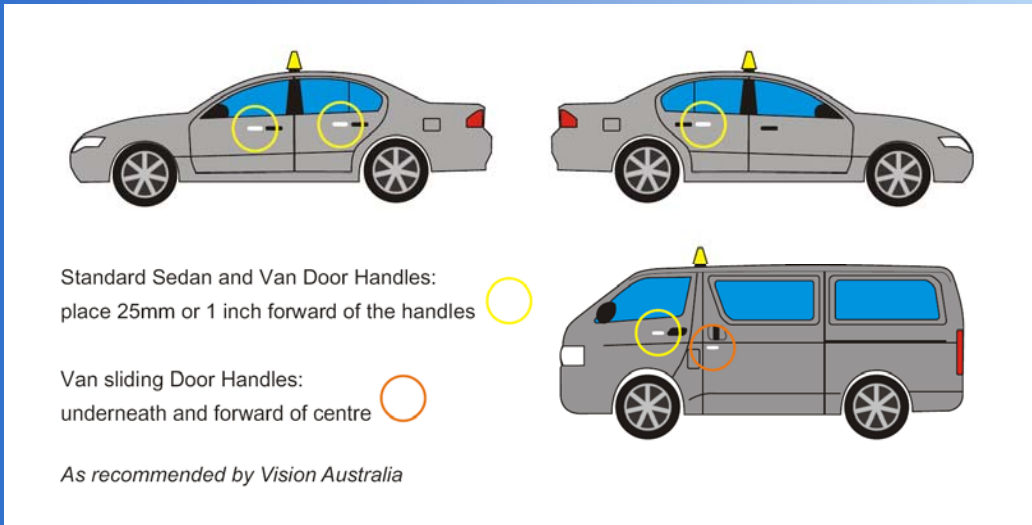





Acknowledgement: These images have been extracted from the internet at various times during the development of the ‘wayfinding booklets’; an apology is provide for not referencing the individual companies due to the fact that limited space is available. These images are good examples of Braille and Tactile signage.

# BRAILLE AND TACTILE TAXI SIGNS

***Disability Standards for Accessible Public Transport 2002 (Cth)***




http://www.tactiletaxi.com.au/fitting_instructions.pdf

**s17.6 Raised lettering or symbols or use of Braille**

(1) If a sign incorporates raised lettering or symbols, they must be at least 0.8mm above the surface of the sign.

(2) If an operator or provider supplements a notice with Braille characters, they must be placed to the left of the raised characters.

**s17.7 Taxi registration numbers**

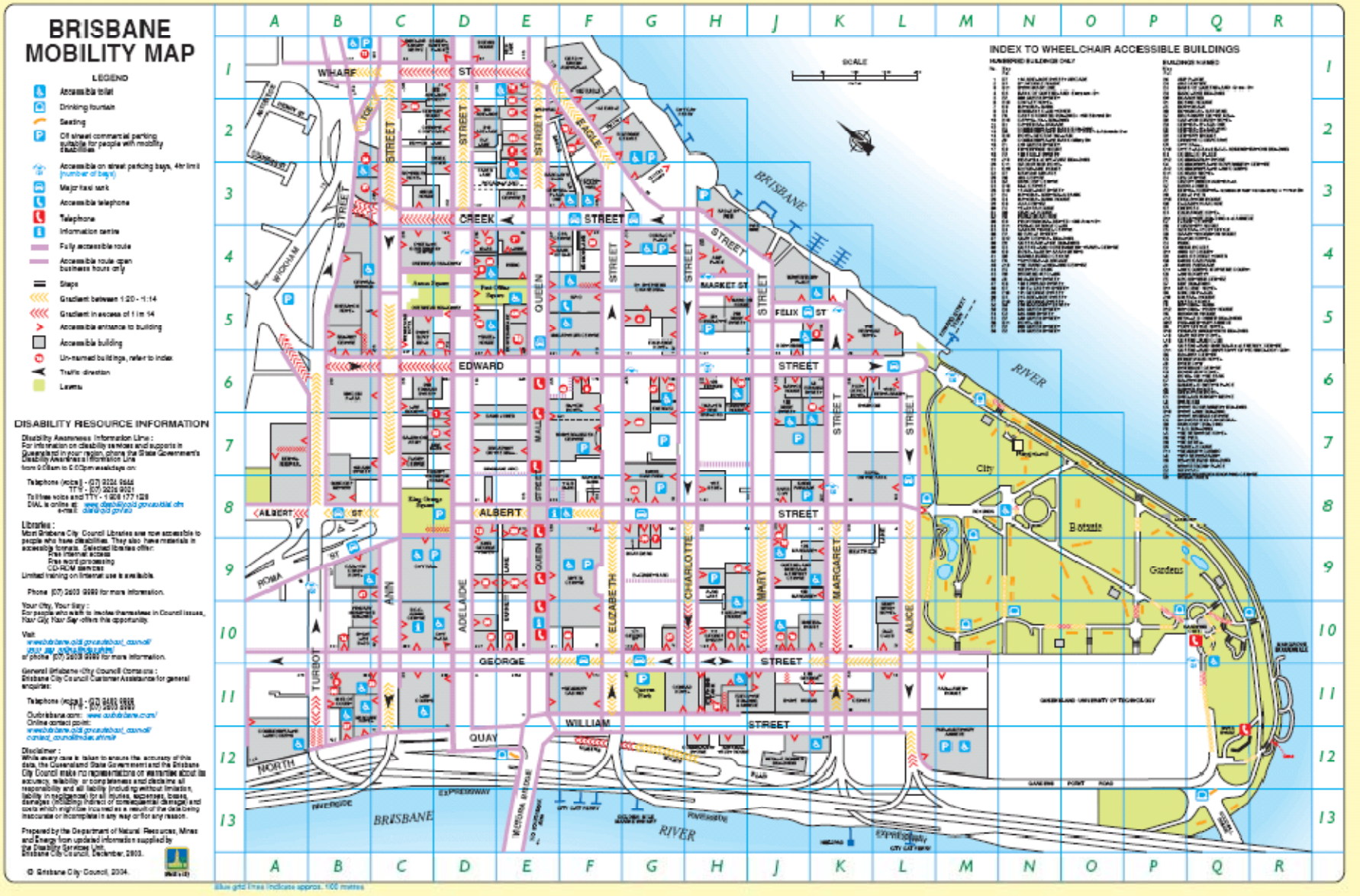
Raised taxi registration numbers must be placed on the exterior of passenger doors forward of the handle.

# WAYFINDING

Wayfinding starts with some basic planning from a departure place. Unless the destination is familiar the wayfinder will need to establish a desired route of travel to the destination . The internet and telephone directories or a friend who has been to the destination previously are the most likely sources of reference.

Based on this assumption, the opportunity exists for a business is to provide reference material in the form of maps, location of vehicular parking, public transport and current images of their business on their website.

This community service can also address the issues of venue use for people who are vision or mobility impaired.

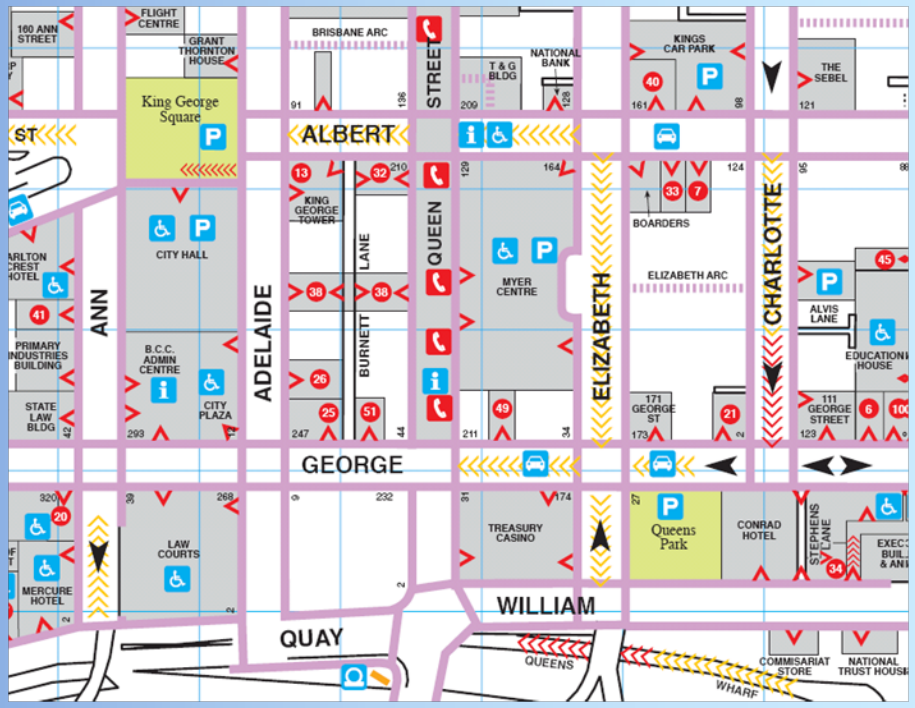



http://www.brisbane-stories.webcentral.com.au/access/_dbase_upl/Mobility_Map_Brisbane_City.pdf

# BRISBANE MOBILITY MAP

## LEGEND

- Accessible toilet
- Drinking fountain
- Seating
- Off street commercial parking suitable for people with mobility disabilities
- Accessible on street parking bays, 4hr limit (number of bays)
- Major taxi rank
- Accessible telephone
- Telephone
- Information centre
- Fully accessible route
- Accessible route open business hours only
- Steps
- Gradient between 1:20 - 1:14
- Gradient in excess of 1 in 14
- Accessible entrance to building
- Accessible building
- Un-named buildings, refer to index
- Traffic direction
- Lawns




Prepared by the Department of Natural Resources, Mines and Energy from updated information supplied by the Disability Services Unit, Brisbane City Council, December, 2003.

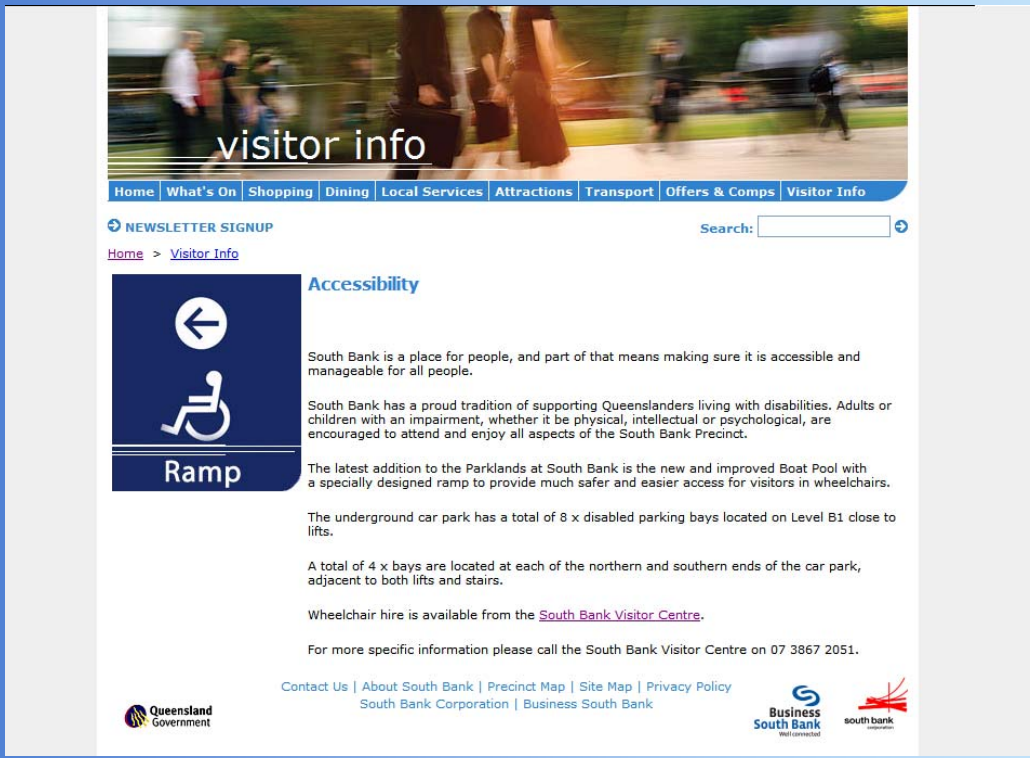


Brisbane City

**Brisbane Mobility Map Source:** http://www.brisbane-stories.webcentral.com.au/access/_dbase_upl/Mobility_Map_Brisbane_City.pdf

# WAYFINDING

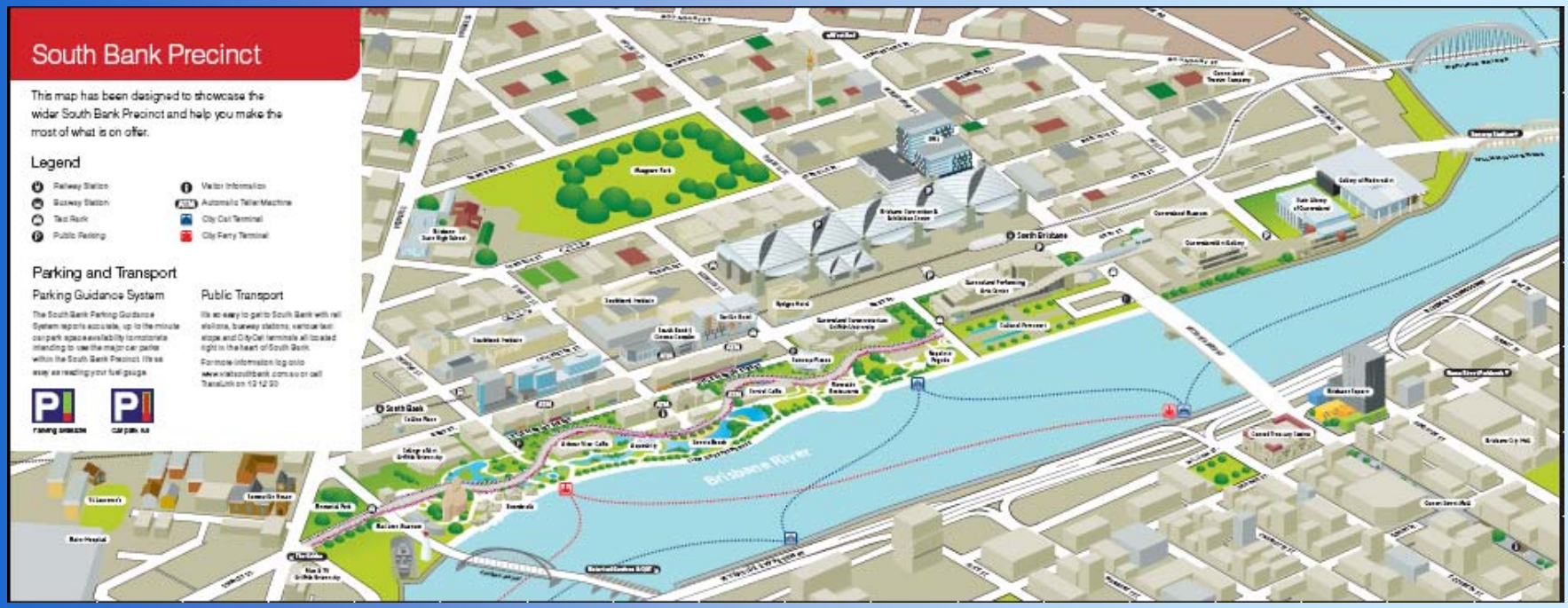
## South Bank Precinct




South Bank Accessibility **S**ource:
http://www.visitsouthbank.com.au/visitor_information2/accessibilityhttp://www.visitsouthbank.com.au/visitor_information2/maps

# WAYFINDING

## South Bank Precinct Map

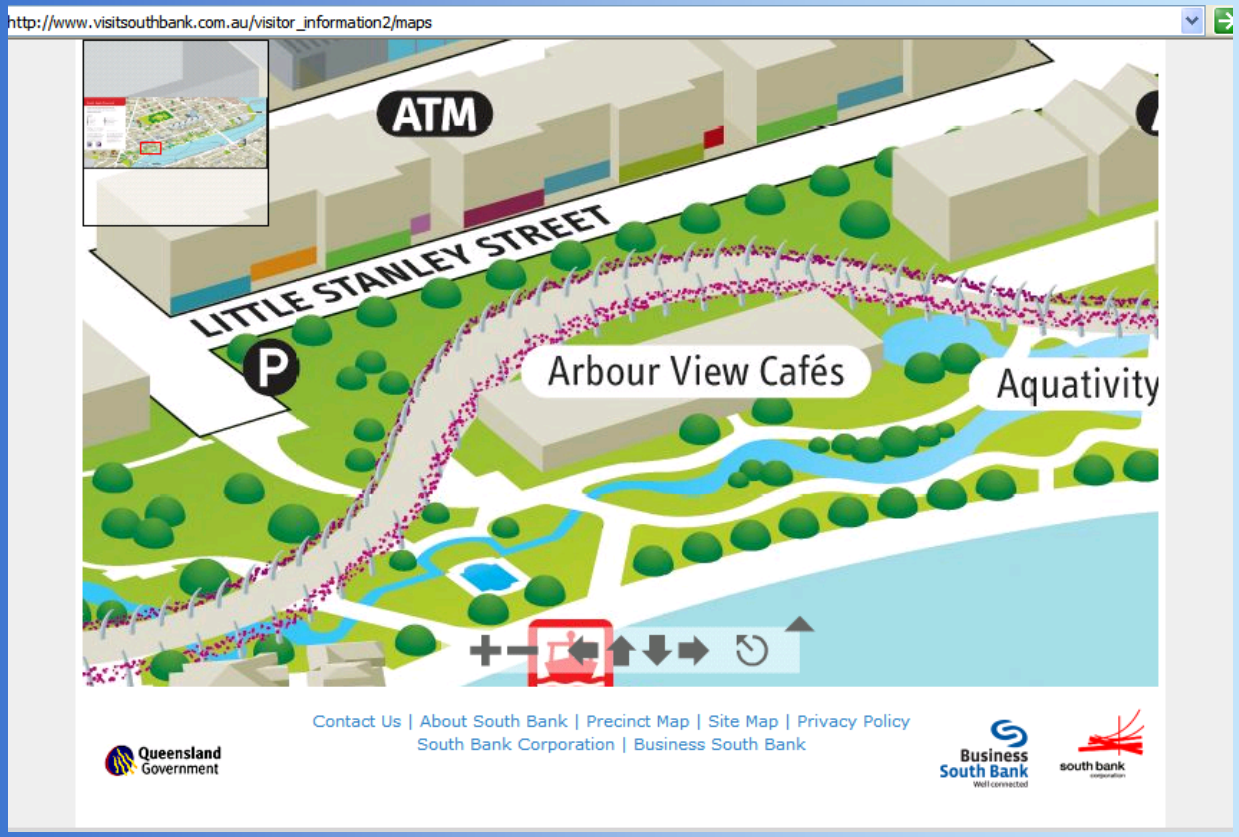



South Bank Precinct Map Source:

http://www.visitsouthbank.com.au/__data/assets/pdf_file/2178/SBP_Map_2007.pdf

# WAYFINDING

## South Bank Precinct Map




South Bank Precinct Map Source:
http://www.visitsouthbank.com.au/visitor_information2/maps

# WAYFINDING

## South Bank Arbour


The Arbour clothed with vibrant magenta bougainvillea plants acts as a central spine through the centre of the parklands for one kilometre, leading the way to the parklands' many attractions. The use of this landscape design guidance feature enables many of the visitors to the Parklands to orientate themselves from many locations within the parklands.

# WAYFINDING

## South Bank Arbour

Although this accessway is not marked as an ‘universal accessway’ it is clearly a dedicated and marked route within the public domain that distinguishes its importance as a public right of way designed for people.

# TACTILE TRAILS

Establish ‘shorelines’ and ‘trails’ between major destinations and information areas. Keep shorelines clear of all obstructions up to a height of 2000mm above ground/floor levels.

**Concept of Shorelining**

# TACTILE TRAILS



**Construction hazards exist everywhere.**

# MAP DESIGN PRINCIPLES

1. Organise the environment into clear spaces either by abstraction or inclusion.
2. Show all organisational elements (paths, landmarks, districts) and use the organisational principle of only including important and memorable connections.
3. Show the user's position.
4. Orient the map to the user, applying the 'forward-up equivalence principle'.

# MAP DESIGN PRINCIPLES

5. Ensure graphic communication is unambiguous and lettering is proportional to the layout so the map remains uncluttered.
6. Use a consistent form of communication e.g. colour coding or place names. Avoid alphanumeric coding because it is less memorable than place names.
7. Limit the information and ensure it is readable.
8. Provide sufficient information to lead the user to the next wayfinding map or directional sign.

# MAP DESIGN PRINCIPLES

9. Incorporating electronic touch-screen directories can be very useful, particularly if a map can be printed. This type of directory can be easily updated. However, interactive touch-screen directories are mostly designed for sighted users, unless purpose-designed software is available (Disability Rights Commission, UK, 2006).
10. Ensure that the map design and signage in general provides three major functions:
    - orientation and direction (connectivity between present location and desired location)
    - identification of locations
    - relevant information for further decision making.

# MAP DESIGN PRINCIPLES


Map Design and Signage – State Library of Queensland and Gallery of Modern Art (GoMA)

This map design and signage provides the three major functions of basic map design principles:
1. orientation or direction (connectivity between present location and desired location);
2. identification of locations; and
3. relevant information for further decision making.

# MAP DESIGN

In general, Map Design and Signage provides the three major design functions:

1. orientation and/or direction for decision making (connectivity between present location and desired location);
2. identification of locations and relevant information for further decision making. Essential use of raised tactile lettering and Braille, noting major attractions, ‘You are here’ graphic together with the identification of public facilities.
3. physical placement, installation and illumination of signage must be suitable for all persons.

# TECHNO-WAYFINDING


## Techno-Wayfinding

VanderKlipp, M., A High-Tech Solution to Wayfinding, Facility Care Magazine Volume 12 Number 5 August 2007 Douglas Publications, http://www.corbindesign.com/press/press_pdfs/facilitycare_2007.pdf www.facilitycare.com

# TECHNO-WAYFINDING

## Digital Spark

The iHubs are equipped with Bluetooth access points allowing information to be downloaded to a Bluetooth enabled device such as a mobile phone or PDA.
Downloads can include maps, coupons, audio and video files, and pictures.

http://www.digitalspark.com.au/

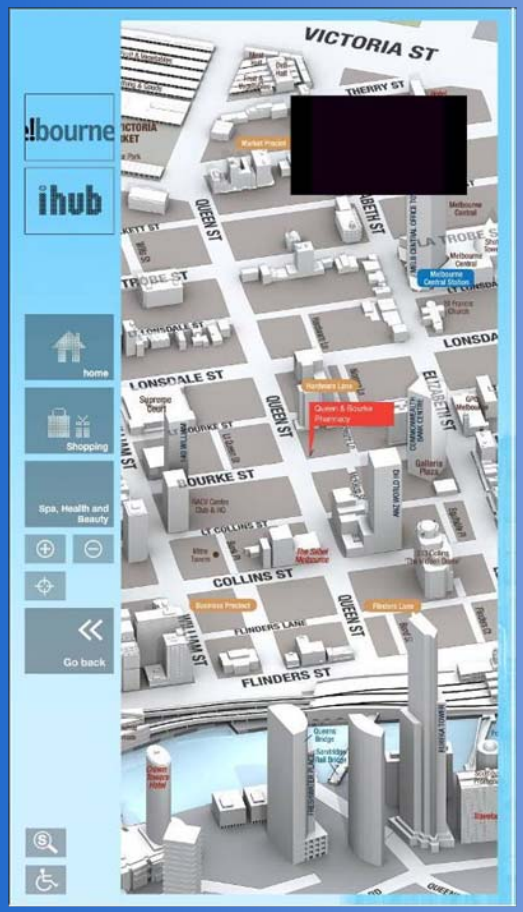
http://www.digitalspark.com.au/flash/main4.swf

# TECHNO-WAYFINDING

Sandridge Bridge Melbourne

Federation Square Melbourne

# TECHNO-WAYFINDING




digitalspark

Digital Spark Pty Ltd
L12,468 St Kilda Rd
MELBOURNE VIC
3004
P. +61 3 9866 5422


**Interactive 3D Map**

http://www.digitalspark.com.au/

# TECHNO-WAYFINDING

TOUCHTAXI

digitalspark


**Interactive Touch Screen**

http://www.digitalspark.com.au/

Digital Spark Pty Ltd
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MELBOURNE VIC
3004
P. +61 3 9866 5422

Content on the TouchTaxi™ interface can be distributed across the entire network, to individual fleets of taxis or to an individual Taxi over a 3G network - content can be scheduled by day part, consumption pattern, or seasonality.

The interface is capable of downloading content to a portable device such as a mobile phone or PDA via Bluetooth.

Each screen is equipped with audio and the interface can display flash embedded video, text and graphics providing rich exciting and dynamic content.

All units are equipped with GPS which will allow for proximity marketing campaigns e.g. when a Taxi travels with-in a certain area – localised content would appear.

# WAYFINDING

## General Comment

No one wayfinding system will suit all situations. An urban environment is very different when compared with a natural environment which is generally for recreation and enjoyment.

However, the application of the seven ‘principles of universal design’ are essential guidance in planning, designing and implementing any wayfinding system/s.

# WAYFINDING

## Principles of Universal Design

**1. Equitable use**
The design is useful and marketable to people with diverse abilities.
**2. Flexibility in use**
The design accommodates a wide range of individual preferences and abilities.
**3. Simple and intuitive use**
Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills or current concentration level.

# WAYFINDING

## Principles of Universal Design

**4. Perceptible information**

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

**5. Tolerance for error**

The design minimises hazards and the adverse consequences of accidental or unintended actions.

**6. Low physical effort**

The design can be used efficiently and comfortably and with a minimum of fatigue.

# WAYFINDING

## Principles of Universal Design

**7. Size and space for approach and use**
Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture or mobility.

The Center for Universal Design, Raleigh, NC: North Carolina State University
http://www.design.ncsu.edu/cud/about_ud/udprinciplestext.htm
accessed 20 July 2008.

# WAYFINDING PUBLICATIONS

## Wayfinding Design Theory – Principles and Practice


Allison, D., (2007), Hospital as city: Employing urban design strategies for effective wayfinding, in Health Facilities Management; June 2007, Volume 20 Issue 6, pp61-65.

Arthur, P. and Passini R., (1992), Wayfinding: People, Signs, and Architecture, McGraw Hill, New York.

Arthur, P. and Passini R., (2002), Wayfinding: People, Signs, and Architecture, Focus Strategic Communications Inc. Ontario, Canada.

Passini, R. (1992) Wayfinding in Architecture, Van Nostrand Reinhold, New York.

# WAYFINDING PUBLICATIONS

## Wayfinding Design Theory – Principles and Practice

Passini, R., (1996), Wayfinding design: logic, application and some thoughts on universality, Design Studies Volume 17 Number 3 July 1996, pp319-331.

Wang, Y., (2007), Taxonomy of Wayfinding Experiences in Design Principles and Practices, An International Journal Volume 1 Number 2, 2007, pp83-92.

Wayfinding symposium, (2006), Wayfinding symposium, (CD ROM and DVD ROM), Wayfinding Australia Pty Ltd, Maroochydore, QLD.

# WAYFINDING PUBLICATIONS

## Wayfinding Graphic (Sign) Design Strategies – Principles and Practice

ADAS. (1999). Good Sign Practices. ADAS in association with E. Collis, Eye Catch Signs Ltd Nova Scotia, Canada and I. Peterson, Automated Disability Access Systems Brisbane and Melbourne Australia. The original document was modified, with permission, for the Australian context by B. Tolliday and I. Peterson, Brailliant Touch, Australia.

Barker, P. and Fraser J. (2000). Sign Design Guide. London: JMU Access Partnership and Sign Design Society in association with Royal National Institute of the Blind, London.

Calori, C., (2007), Signage and Wayfinding Design: A Complete Guide to Creating Environmental Graphic Design Systems, John Wiley & Sons, Inc., New Jersey. ISBN: 978-0-471-74891-5.

# WAYFINDING PUBLICATIONS

**Wayfinding Graphic (Sign) Design Strategies – Principles and Practice**

Berger, C., (2005), Wayfinding: Designing and Implementing Graphic Navigational Systems, Mies: Hove, RotoVision.

Mollerup, P., (2005), Wayshowing: A Guide to Environmental Signage Principles and Practices, 1st ed., Lars Müller Publishers; Baden, Switzerland ISBN-10: 303778055X; ISBN-13: 978-3037780558

Pollet D. & Haskell P. C. (1979), Sign Systems for Libraries: Solving the Wayfinding Problem. R.R. Bowker Company, New York.

# WAYFINDING WEBSITES

Access Brisbane (2008) A Guide to access and facilities for people with disabilities plus stories art and feedback. http://www.brisbane-stories.webcentral.com.au/access/ accessed 20 July 2008.

Australian Government, Department of Human Services, (2007), Access to buildings and services Guidelines and Information, Human Rights and Equal Opportunity Commission (HREOC) (updated April 2008) http://www.hreoc.gov.au/disability_rights/buildings/guidelines.htm accessed 20 July 2008.

HREOC has a free resource titled, *'The good, the bad and the ugly'* (2008) which includes photographs of good and bad examples of the design of features such as TGSI, ramps, signage, accessible toilets and doorways. This can be found at http://www.humanrights.gov.au/disability_rights/buildings/good.htm accessed 20 July 2008.

Vision Australia, Accessible Design For Public Buildings http://www.rvib.org.au/info.aspx?page=721 accessed 20 July 2008.

# WAYFINDING REFERENCES

Arthur, P. and Passini, R., (1990), 1-2-3 evaluation and design guide to wayfinding : helping visitors find their way around public buildings : based on a consultant report Architectural & Engineering Services, Ottawa, Ont. : Public Works Canada.

Downs, R. M. & Stea, D., (eds) (1973), Image and Environment: cognitive mapping and spatial behaviour, Aldine, Chicago.

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Golledge, R.G. & Stimpson, R.J. (1997). Spatial Behaviour: a geographic perspective, The Guilford Press, New York.

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Jacobson, R.D., (1998). Cognitive Mapping without Sight: Four Preliminary Studies of Spatial Learning, Journal of Environmental Psychology 18 pp. 289–305. School of Geosciences, Queen's University, Belfast.

Johnson, M., (1987), The Body in the Mind: the Bodily Basis of Meaning, Imagination and Reason, The University of Chicago Press, Chicago.

Kitchin, R. M., (1994), Cognitive maps: what are they and why study them? Journal of Environmental Psychology 14, 1-19.

# WAYFINDING REFERENCES


Muhlhausen, J. (2000), Wayfinding is not signage: signage plays an important part of wayfinding, but there's more, http://www.signweb.com/index.php/channel/6/id/1433/ accessed 20 July 2008.

Piaget, J., and Inhelder, B., (1967), The Child's Conception of Space, Norton, New York.

PROWAAC. (2001). Public Rights-of-Way Access Advisory Committee (Committee) for the Architectural and Transportation Barriers Compliance Board (Access Board) Final Report. referred to as an 'Universal Access Corridor' at p 161 Appendix H Minority Report submitted by Hol'Lynn d'Lil What to Call the 'Accessible Route', http://www.access-board.gov/prowac/commrept/PROWreport.pdf accessed 20 July 2008.

# IMPORTANT TAKE AWAY ISSUES

## Emergency, Evacuations and Fire Exits

Develop legible, appropriately and prominently located Maps, Signage that are kept current, complying with the Building Code of Australia (BCA).

## Signage

Ensure that signage addresses the legibility of typographic information with respect to criteria such as viewing distance, angular distortions and background contrast. Consider the inclusion of Braille and Pictograms to assist wayfinders.

# IMPORTANT TAKE AWAY ISSUES

## Safe Accessways

A route within the public domain should be declared clearly marked and referred to as a 'universal accessway' (PROWAAC, 2001) to distinguish its importance as a public right of way.

**Designing, implementing and maintaining Wayfinding Systems are the responsibility of everyone; failure to act is not an excuse; it is a legal liability.**

# WAYFINDING

A successful wayfinding system requires a team approach in order to find design solutions, throughout the project from concept to a final environmental statement, a design that provides consistent clues for wayfinding.

# THANK YOU

Are there any questions?