The Healthy Built Environments Program vision is that built environments will be planned, designed, developed and managed to promote and protect health for all people.

Healthy Built Environment Indicators

Never Stand Still - Built Environment

City Futures Research Centre
ACKNOWLEDGEMENTS

The Healthy Built Environment Indicators were prepared by Healthy Built Environments Program (HBEP) research officer Dr Greg Paine assisted by Senior Research Officer Ms Emily Mitchell. The work was initiated by Dr Jennifer Kent in her role as HBEP Senior Research Officer. Dr Vivian Romero assisted with early research. The Indicators were prepared and edited under the supervision of HBEP Director Professor Susan Thompson. Feedback was received from the HBEP Advisory Board. Particular acknowledgement is made to the detailed review comments provided by the Chair of the Advisory Board, Professor Peter Sainsbury. Funding from the NSW Ministry of Health is gratefully acknowledged.

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Executive Summary

The built environments in which we live, work and play, have a critical role in shaping our health. The Healthy Built Environment Indicators presented here are based on this knowledge. The focus of the Indicators is on how the built environment supports physical activity (to reduce obesity, the risk of heart disease, some cancers and depression), social interaction (to reduce risk of mental illness, particularly depression), and the availability of healthy food (to reduce obesity and risk of heart disease and some cancers).

Specifically, the Indicators:

- Establish measures to understand the health implications of built environments for their communities, and identify opportunities for improvements.
- Consolidate a range of measures and advise on where to find data to assess specific built environment characteristics relating to the three healthy built environment domains.
- Provide evidence to undertake and advocate for improvements in the three healthy built environment domains.
- Can be used at a variety of local and regional scales.

The Indicators assist health and built environment practitioners, together with communities, to document what is happening in a locality at a point in time. The findings can then be used in different ways – to compare different areas with each other, to benchmark with known regional, state, national or international norms, and to assess how an area changes over time. The Indicators can support intervention action and enable longitudinal appraisal of effectiveness.

The Indicators comprise:

- The Indicators matrix consisting of easy-to-use questions with associated data sources related to the built environment factors that facilitate physical activity, social connection and access to healthy food.
- This accompanying Guide.
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Accompanying Guide
Introduction

Healthy built environments are about putting the needs of people and communities at the heart of the urban planning process and encouraging decision-making based on human health and well-being.

These Healthy Built Environment Indicators were prepared by the Healthy Built Environments Program (HBEP), now known as the City Wellbeing Program within the City Futures Research Centre, Faculty of the Built Environment, University of New South Wales.

The HBEP was established in 2010 with funding over five years from the NSW Ministry of Health to support the development of communities in which the built environment promotes good health for all.

The work of the Program, commencing with an extensive review of the research literature*, has continually shown that the built environments in which we live, work and play, have an important role in shaping our health. This knowledge is now used to establish a set of healthy built environment indicators.

Specifically, the Indicators:

• Establish measures to understand the health implications of built environments for their communities, and identify opportunities for improvements.

• Utilise the three key health and built environment domains identified in the Literature Review*:

  Getting People Active (physical activity),
  Connecting and Strengthening Communities (social inclusion), and
  Providing Healthy Food Options (nutrition).

• Consolidate a range of measures and advise on where to find data to assess specific built environment characteristics relating to the three domains.

• Provide evidence to undertake and advocate for improvements in the three built environment domains.

• Can be used at a variety of local and regional scales.

The Healthy Built Environment Indicators

There are three parts to the Indicators.

1. ACCOMPANYING GUIDE. The Guide (which you are reading now) details the background, rationale and methodology for developing the Indicators, as well as how they can be used.

2. THE INDICATORS MATRIX. The Indicators are presented in a matrix, with the Guide to assist users.

3. ADDITIONAL RESOURCES. Advice about other documents and websites to assist practitioners.

Obesity, physical inactivity, increased stress, social isolation and poor nutrition have all been identified as key risk factors for chronic contemporary diseases such as diabetes, heart disease and depression. Data from NSW Health suggests that of adults aged 16 years and older in the State, 55% are overweight or obese. Only about:

- 55% meet adequate levels of physical activity
- 50% eat recommended servings of fruit
- 8% eat recommended servings of vegetables

Parallel with this is evidence that our built environments can be both detrimental and beneficial to our health and wellbeing. Car dominated transport systems, dispersed composition of land uses and increased densities of fast food retail outlets are all implicated in exacerbating the risk factors for chronic disease. Conversely, carefully planned built environments can mitigate these risk factors. Indeed, examples such as improvement of air quality through the establishment of smoke-free areas and the facilitation of active travel through the creation of walking paths and cycling lanes demonstrate that the design and planning of our environments is essential in creating and maintaining healthy populations.
2. The Basis for a Healthy Built Environment

There is now considerable research evidence demonstrating a direct relationship between the shape of our built environments and our health. A review by the Healthy Built Environments Program* identified three key domains and seven specific ways the built environment influences our health. They are summarised in Figure 1 and used to structure the Indicators.

These three domains relate to specific behaviours needed to achieve good health:

- **Getting People Active (physical activity)** - to reduce obesity and risk of heart disease and other chronic conditions.
- **Connecting and Strengthening Communities (social interaction)** - to reduce risk of mental illness, particularly depression.
- **Providing Healthy Food Options (nutrition)** - to reduce obesity and risk of heart disease and other chronic conditions.

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**Figure 1: The basis for a healthy built environment – key domains and actions**

<table>
<thead>
<tr>
<th>Key Domain</th>
<th>Specific Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Getting People Active</strong></td>
<td></td>
</tr>
<tr>
<td>The built environment can get people active by</td>
<td>Facilitate utilitarian physical activity</td>
</tr>
<tr>
<td>facilitating both utilitarian physical activity</td>
<td>Increasing the accessibility of destinations via active transport modes (walking, cycling, public transport), and ensuring the experience of walking, cycling and public transport is of high quality will encourage the use of these modes relative tosedentary car travel.</td>
</tr>
<tr>
<td>(“active transport”) and recreational physical</td>
<td>Facilitate recreational physical activity</td>
</tr>
<tr>
<td>activity.</td>
<td>Providing facilities for formal and informal, as well as individual and group physical recreation in public spaces via commercial and non-commercial organisations, will assist in increasing overall levels of physical activity.</td>
</tr>
<tr>
<td><strong>Connecting and Strengthening Communities</strong></td>
<td></td>
</tr>
<tr>
<td>The built environment can connect people and</td>
<td>Facilitate incidental neighbourhood interaction</td>
</tr>
<tr>
<td>strengthen communities – and thus support</td>
<td>Ensuring public spaces are “friendly” (busy, comfortable, safe and open to all) and with clear expectations as to appropriate behaviour included in the design of public spaces (via the provision of facilities and signage) will help encourage positive incidental interactions between individuals and groups.</td>
</tr>
<tr>
<td>psychological health by fostering feelings of</td>
<td>Make community spaces</td>
</tr>
<tr>
<td>belonging and restoration – by facilitating</td>
<td>Providing explicit and well-designed (accessible, comfortable, safe) spaces open to all will allow activities by the community and particular interest groups. Access to natural green environments will extend the notion of community to include the restorative effect of wider nature.</td>
</tr>
<tr>
<td>incidental neighbourhood social interactions,</td>
<td>Build for crime prevention</td>
</tr>
<tr>
<td>making community spaces, and building for</td>
<td>Designing the built environment to discourage crime and feel safe (while still facilitating social interactions) will assist an overall sense of belonging, caring and community commitment.</td>
</tr>
<tr>
<td>crime prevention.</td>
<td></td>
</tr>
<tr>
<td><strong>Providing healthy food options</strong></td>
<td></td>
</tr>
<tr>
<td>The built environment can provide healthy</td>
<td>Facilitate access to healthy food</td>
</tr>
<tr>
<td>food options by facilitating access to healthy</td>
<td>Ensuring supermarkets, green grocers and farmers’ markets are accessible relative to fast food outlets, pubs and convenience stores (eg. through zoning and land use regulation, and subsidised spaces) will promote the consumption of healthy foods.</td>
</tr>
<tr>
<td>food, and by responsible food advertising.</td>
<td>Promote responsible food advertising</td>
</tr>
<tr>
<td></td>
<td>Marketing, advertising and promoting the visibility of healthy foods (eg. near schools and other community locations, and relative to unhealthy foods) will have positive influences on consumption habits.</td>
</tr>
</tbody>
</table>
3. The Healthy Built Environment Indicators

The purpose of the Indicators

The Healthy Built Environment Indicators establish a series of common measures of the shape and form of the built environment and of associated individuals' behaviours in relation to human health. The Indicators can be used to measure what is happening at a point in time within a particular community. They can also be used to make comparisons with another community or with known regional, state, national or international norms. The Indicators can also be used for longitudinal assessment of intervention programs designed to improve a community's health.

Using the Indicators

(1) The Indicators are structured around the three key domains and the related seven specific ways the built environment contributes to our health as identified in the HBEP Literature Review (see Figure 1). In turn, the seven specific ways the built environment can contribute to our health can be expressed as specific actions to address deficiencies.

(2) The Indicators do not include specific measures in respect to illness or disease. These are already well established within the field of epidemiology.

(3) Use of these Indicators commences when:
   (i) Epidemiological studies indicate less than optimal health characteristics and outcomes within a community (see column 1 in the Indicators Matrix) – with the question then arising: to what extent is the built environment contributing?
   (ii) In the absence of any epidemiological studies, a community still wishes to appraise the extent to which their built environment is likely to result in optimal or less than optimal health outcomes, based on the known links between health and built form.

(4) A set of questions about the shape or form of the built environment in the community and associated patterns of behaviour is then established (column 2 of the Indicators Matrix). These questions tease out the matters key to the seven specific built environment actions identified in the HBEP Literature Review. Column 2 of the Matrix also includes a short statement of the desired built environment outcome.

(5) A series of measures such as the nature, extent, frequency and propensity of that built form or behaviour are then listed in column 3. Potential sources of data for these measures are detailed in column 4.

(6) Action can then be taken to rectify assessed deficiencies in the built environment by referring to the Healthy Urban Development Checklist (last column of the Matrix).

(7) Testing the effectiveness of remedial action can then be made by undertaking follow-up epidemiological studies of the health status of the community and comparing the findings against the original measurements in a continual “cycle of action” (see Figure 2).
We know that relationships between our health and the built environments where we live, work, travel and play exist. Nevertheless, these relationships are complex and contextual, making it critical to approach their measurement as follows:

- In reference to the wider literature on healthy built environments – see Figure 1.
- On the basis of a specific readily-defined community or locality.
- Valuing both quantitative and qualitative measures.
- In a collaborative and interdisciplinary way, using the expertise of researchers and practitioners from both the built environment and health professions, plus the in-depth local knowledge of the community itself.

There is substantial interconnection, and hence overlap, between key aspects of our built environments and our subsequent behaviours. However, for simplicity, the Indicators Matrix minimises repetition by placing individual indicators within the key domain and specific action deemed most relevant.

For example, access to healthy foods requires sufficient shops selling affordable fresh food, as well as convenient, practical and safe access to those shops. These access measures are also relevant to the Getting People Active domain. In this example, relevant access measures have been placed within the Getting People Active domain and not repeated in the Providing Healthy Food Options domain.

Finally, the Indicator Matrix can be regarded as a “core” set of measurements. Additional indicators can be added, as appropriate to the specific needs and interests of each community and/or the existing availability of data.
Figure 2: Cycle of action – ensuring a community remains healthy

WHAT IS THE CONTRIBUTION OF THE BUILT ENVIRONMENT?
• Measure this using the HBE Indicators.

WHAT IS THE CONTRIBUTION OF OTHER FACTORS?
• Measure this using other Indicators.

Measures of the health of a community indicate remedial action required.

Test the success of the remedial action by re-measuring the health of the community.

Undertake remedial action.
What do the Indicators measure?

The Indicators measure both the “shape” of the built environment and relevant behaviours of its inhabitants and users. The terminology “Healthy Built Environment Indicators” risks suggesting they are only about measures of the “shape” or “form” of the built environment, albeit resting on an assumption that such environments will support healthy behaviours. While our behaviour is significant in influencing our health, it is important to note that such behaviour occurs within a built environment context. Accordingly, the built environment is a key determinant of healthy and unhealthy behaviours as part of every-day living. Figure 3 illustrates this relationship by indicating that:

- Certain of our behaviours constitute a particular overlap between the health and built environment fields.
- Understanding what is occurring within these two fields will need to include measurement of relevant behaviours.

Therefore, the Indicators include measures relevant to the behaviour of the population when using different built environments. This is part of the overall objective of the Indicators to assess how the shape of the built environment under scrutiny is leading to behaviour/s that promote and/or support good health.

Figure 3: Overlap of behavioural factors when measuring health and built form
How the Indicators were determined

The Indicator measures were determined in reference to:

(i) the research on the factors that can facilitate a healthy built environment, as undertaken through the HBEP Literature Review;

(ii) other work in both Australia and overseas to develop indicators for healthy built environments;

(iii) associated earlier work by NSW Health to develop the Healthy Urban Development Checklist; and

(iv) on-going work generally in respect to the broader notion of individual and community wellbeing.

The development of the measures themselves is based on the types of questions users of the Indicators might ask. Figure 4 details the rationale behind each measure.

Some indicators use existing composite measures – to minimise the number of entries in the Indicators Matrix for ease of use, and to maintain a more holistic perspective. In practice, the data required to inform these composite measures include a wide number of criteria. Each needs to be measured prior to compiling the composite. Examples are:

- **Walkscore** (originally from the USA)  
  www.walkscore.com

- **Walkability Index** (Australian Heart Foundation)  

- **Safer By Design Evaluation** (NSW Police Crime Prevention Through Environmental Design (CPTED))  

**Figure 4: The rationale behind the Indicator measures**

**Physical Activity: Facilitate utilitarian physical activity**

<table>
<thead>
<tr>
<th>Built Environment Contribution to Healthy Behaviour</th>
<th>Rationale for the Built Environment Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do people engage in active transport modes?</td>
<td>Relative number of trips by active transport (defined as walking, cycling and public transport use) indicates levels of non-sedentary means of transport. It is also important to distinguish between types of active transport.</td>
</tr>
<tr>
<td>Do people use public transport?</td>
<td>Relative number of public transport trips is an indicator of an aspect of active transport.</td>
</tr>
<tr>
<td>Is the public transport viable (convenient, comfortable, safe &amp; affordable)?</td>
<td>Satisfactory access to public transport can encourage active travel modes. Facilities, such as bus shelters and bicycle racks, can also be important in encouraging public transport use. Access to destinations further afield may be facilitated by public transport.</td>
</tr>
<tr>
<td>Do people walk or cycle as a means of transport?</td>
<td>Relative number of trips by walking or cycling indicates levels of two forms of active transport. Similar health benefits arise if people cycle for (otherwise walkable) trips.</td>
</tr>
<tr>
<td>Is walking viable transport (convenient, comfortable, safe)?</td>
<td>The grouping, layout and travel distance between land uses, particularly destinations accessed daily, influence the quantity and quality of walking, and therefore propensity to walk regularly for transport.</td>
</tr>
<tr>
<td>Do people cycle as a means of transport?</td>
<td>Relative number of trips by cycling indicates levels of active, rather than sedentary, means of transport.</td>
</tr>
<tr>
<td>Is cycling viable for active transport (convenient, comfortable, safe)?</td>
<td>The grouping, layout and travel distance between land uses, particularly destinations accessed daily influence the quantity and quality of cycling, and therefore the propensity to cycle.</td>
</tr>
<tr>
<td>Do people use stairs?</td>
<td>Using the stairs, rather than a lift or escalator, provides an opportunity for incidental physical activity.</td>
</tr>
<tr>
<td>Is use of stairs viable?</td>
<td>The visibility of, and ease of accessibility and convenience of stairs increases the propensity to use them.</td>
</tr>
</tbody>
</table>
**Physical Activity: Facilitate utilitarian physical activity**

<table>
<thead>
<tr>
<th>Built Environment Contribution to Healthy Behaviour</th>
<th>Rationale for the Built Environment Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do residents or workers in an area walk for recreational physical activity?</td>
<td>Recreation walking (from a leisurely to a vigorous pace) is a good way to achieve required minimum hours of physical activity to maintain good health.</td>
</tr>
<tr>
<td>Is walking viable for recreational physical activity (convenient, comfortable &amp; safe)?</td>
<td>The provision of comfortable, safe, convenient and attractive routes can encourage the propensity to walk for recreational physical activity. Green spaces (e.g. parklands) and access to natural areas (e.g. waterways) are particularly important.</td>
</tr>
<tr>
<td>Do residents cycle for recreational physical activity?</td>
<td>Recreation cycling (from a leisurely to a vigorous pace) is a good way to achieve required minimum hours of physical activity to maintain good health.</td>
</tr>
<tr>
<td>Is cycling viable for recreational physical activity (convenient, comfortable &amp; safe)?</td>
<td>The provision of comfortable, safe, convenient and attractive routes can encourage the propensity to cycle (either leisurely or actively) for recreational physical activity.</td>
</tr>
<tr>
<td>Does public open space provide for recreational physical activity?</td>
<td>An important function of public open space is to provide facilities for both vigorous and less-vigorous recreational physical activity, especially for those activity modes which require spatial area and/or dedication of particular facilities and/or groups or teams.</td>
</tr>
<tr>
<td>Are other facilities available (by either public or private providers) for recreational physical activity?</td>
<td>Some recreational physical activities will not able to be provided within public spaces at the neighbourhood scale (e.g. sporting ovals, large parklands, extensive walking trails) – but still need to be accessible to invite use. Private spaces (e.g. indoor gymnasiums, yoga studios) if accessible (distance, transport options for access, operating hours, provision of child care etc.) allow additional opportunities for recreational physical activity.</td>
</tr>
</tbody>
</table>
## Social Interaction: Facilitate incidental neighbourhood interaction

<table>
<thead>
<tr>
<th>Built Environment Contribution to Healthy Behaviour</th>
<th>Rationale for the Built Environment Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the design of common areas in buildings foster incidental person-to-person contact?</td>
<td>Common areas can foster incidental person-to-person contact (amongst residents, shoppers, commuters, workers and tourists). This can be encouraged by including seating, a good ambience, and a certain level of activity to engage users' interest.</td>
</tr>
<tr>
<td>Does the design of building frontages foster incidental person-to-person contact?</td>
<td>Building frontages can foster incidental person-to-person contact (amongst residents, shoppers, commuters, workers and tourists with passers-by). This can be encouraged by including seating, a good ambience, windows and verandahs looking to the public space, and a certain level of activity to engage users' interest.</td>
</tr>
<tr>
<td>Does the design of public space foster incidental person-to-person contact?</td>
<td>Residents, shoppers, commuters, workers and tourists are more likely to sit and linger with others provided there is adequate seating, pleasant outlooks, and a certain level of activity to engage users' interest.</td>
</tr>
</tbody>
</table>

## Social Interaction: Making community spaces

<table>
<thead>
<tr>
<th>Social Interaction: Making community spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is formal public and semi-public space accessible to the community at large?</td>
</tr>
<tr>
<td>Is the design of formal public and semi-public spaces inviting to, and appropriate for the community at large?</td>
</tr>
<tr>
<td>Are residents and others invited to participate in the broader design and governance of their community spaces?</td>
</tr>
<tr>
<td>Do new developments include a welcome program for residents to initiate on-going social interaction?</td>
</tr>
<tr>
<td>Does the design and governance of public and private space allow contact with nature?</td>
</tr>
</tbody>
</table>
Social Interaction: Facilitate incidental neighbourhood interaction

Healthy Built Environment Indicators

People will not interact within, or feel part of a community they perceive to be unsafe. Actual and perceived levels of security can inhibit or promote choices to actively travel, participate in recreational physical activity and/or engage in social interaction. Fostering a sense of belonging, caring and commitment to public space also requires a good level of perceived safety.

Social Interaction: Building for crime prevention

Is the use of public space for active transport, incidental and organised physical exercise, and social interactions, hindered by actual or perceived threats to personal security?

Rationale for the Built Environment Measure

Built Environment Contribution to Healthy Behaviour

People will not interact within, or feel part of a community they perceive to be unsafe. Actual and perceived levels of security can inhibit or promote choices to actively travel, participate in recreational physical activity and/or engage in social interaction. Fostering a sense of belonging, caring and commitment to public space also requires a good level of perceived safety.
**Built Environment Contribution to Healthy Behaviour**

**Rationale for the Built Environment Measure**

<table>
<thead>
<tr>
<th>Question</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is fresh healthy food readily available?</td>
<td>The built environment can be shaped to support or hinder the sale of healthy eating options through zoning and land use regulation for retail and other food uses. A greater diversity of food related spaces will help to provide a variety of healthy food, fulfilling different needs in nutrition, affordability and cultural preference.</td>
</tr>
<tr>
<td>Are the shops selling fresh healthy food accessible?</td>
<td>Accessibility of supermarkets, green grocers, and farmers’ markets can promote or hinder consumption of healthy foods.</td>
</tr>
<tr>
<td>Is there a relative over-abundance of fast food shops?</td>
<td>The placement and relative accessibility of fast food outlets, pubs and convenience stores may entice consumers away from or even prevent the purchase of healthier alternatives.</td>
</tr>
<tr>
<td>Can residents grow healthy food?</td>
<td>The provision of space and resources can encourage people to grow some of their own food. This helps people to access fresh, affordable and nutritious food. It also raises interest and awareness about healthy eating generally. Visibility of fresh food growing can also enhance interest and awareness.</td>
</tr>
<tr>
<td>Can farmed food be sourced close to residents so that it is fresh and healthy when eaten?</td>
<td>Healthy food is fresh. Ensuring agricultural areas are close to urban areas can help to keep food fresh. Food does not have to travel far from producer to consumer, and there is less need for extensive transport infrastructure or artificial treatments to maintain food freshness. Visibility of fresh food growing can also raise interest and awareness of healthy eating generally.</td>
</tr>
<tr>
<td>Are there different opportunities to sell and distribute healthy food (e.g. markets, co-ops, food trucks)?</td>
<td>Maintaining a diversity of food outlets – not just shops or supermarkets – increases the variety of food available in a community as well as catering for local cultural demands and needs. A variety of fresh food environments will also facilitate incidental social interactions.</td>
</tr>
</tbody>
</table>
**Nutrition: Promote responsible food advertising**

<table>
<thead>
<tr>
<th>Built Environment Contribution to Healthy Behaviour</th>
<th>Rationale for the Built Environment Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are eating habits being adversely affected by local advertising?</td>
<td>Marketing and advertising of healthy and unhealthy foods influences consumption habits. Public exposure to signage advertising healthy food in, around and near public spaces, sporting grounds and schools in particular, can affect patterns of consumption.</td>
</tr>
<tr>
<td>Is the presence of healthy food options visible?</td>
<td>Marketing and advertising of healthy and unhealthy foods influences consumption habits. If healthy food options are hidden away they are less likely to be consumed.</td>
</tr>
</tbody>
</table>
The Indicators and the Healthy Built Environment Context

While the Indicators were designed to fit with, and augment existing key NSW healthy built environment tools, guides and research documentation they have much broader applicability. The aim is to assist health and built environment practitioners to achieve built environments that support human health using available resources in a complementary way.

The Indicators sit alongside four other key NSW documents detailed in the Additional Resources section.

The Matrix of Indicators is structured to relate to the HBEP Literature Review and the Healthy Urban Development Checklist.

Where an appraisal of the built environment characteristics of a community using the Indicators reveals that the shape or form of that locality is contributing to poor health outcomes refer to the Healthy Urban Development Checklist for assistance in determining the best form for that built environment. Use of the Healthy Neighbourhood Audit may also be helpful in conducting a detailed appraisal of a locality. The Healthy Neighbourhood Audit may already have been used as a tool to gather data to inform the Indicator measures themselves.

There is a considerable body of other resources aimed at achieving healthy built environments. Some are listed in the Additional Resources section.
Figure 5: A suite of five NSW documents to assist health and built environment practitioners achieve healthy built environments
4. Placing the Indicators in Broader Context

The wider determinants of healthy, sustainable communities

The social, cultural and environmental determinants of health are wider than those included in these Indicators. All are important in preventative health action.

These wider determinants of health are presented in the Healthy Urban Development Checklist - for example “quality” employment, the presence of contaminants in the environment, equity and governance arrangements within a community, and broader environmental sustainability issues.

There is also a growing body of work exploring these wider determinants of health. Some of this work establishes related indicators – referred to variously as indicators of “liveability”, “wellbeing”, “sustainable communities”, “resilience”, or “reliable prosperity”. The Australian Bureau of Census and Statistics is developing a set of national “community” indicators. Generally these are collaborative projects, involving local government, regional and state health departments, and universities. Some examples are listed in Figure 6.

Figure 6: Wider determinants and indicators of a healthy, sustainable community
**Healthy communities = sustainable communities**

Parallel with action for healthy communities are actions for sustainable communities.

It is generally accepted there is little practical difference between the aims, objectives and actions developed within individual programs established under these two movements – notwithstanding their different starting points. Healthy natural environments and healthy built environments are both critical for a healthy community; and a community needs to be healthy to sustain itself into the future. This is illustrated in Figure 7.

**Figure 7: Healthy communities = sustainable communities**

- **HEALTHY COMMUNITIES** (eg. “Healthy Cities” movement)
- **HEALTHY COMMUNITIES = SUSTAINABLE COMMUNITIES**
- **SUSTAINABLE COMMUNITIES** (eg. “Agenda 21”)
Putting it all together

The three domains of healthy built environments identified in the Literature Review are closely connected and interlock with each other. These interlockings also comprise their own important, active entities of spatial (built environment) and behavioural interactions.

For instance:

- It is easier to be active when you are doing things with others.
- Nutrition is important in maximising the benefits from keeping active.
- Food is a good catalyst for maintaining social connections (eating together, community gardening, attending markets).

When these six entities (the three domains and the three connecting interactions) are combined, they create a “synergistic” whole that is more powerful in generating healthy outcomes than any of the individual components in isolation. This is illustrated in Figure 8.
Figure 8: Building healthy built environments – putting it all together

A built environment that supports our health

- GETTING ACTIVE
  - supporting physical & mental health
- SOCIALISING
  - connecting & strengthening communities
- EATING WELL
  - providing healthy food

Doing things with others encourages activity.

Food is a good way to interact with others.
Envisaging a composite built environment response

Built environments that support human health need to be site and community-specific. There are nevertheless urban forms that, although not specifically developed to support health, result in environments that are generally conducive to good health across a range of sites and communities.

These forms or models include walkable communities, transit-orientated development (TOD), urban villages, liveable neighbourhoods, smart-growth and new urbanism. Various handbooks and checklists exist for these approaches, and have informed, for example, the *Healthy Urban Development Checklist.*

Features of such development forms include:

- A close connection between land use planning and transport planning.
- Population densities able to support effective public transport.
- Mixed residential, non-residential and community land uses clustered around or within walking distance of public transport stops.
- Public spaces and streets that are pleasant, inviting, and well-maintained.
- Streets designed with not just the motor car in mind, making it pleasant and safe for other users (“complete streets”).
- Daily neighbourhood activities clustered to make them convenient to access, and to promote a “bustle” that encourages socialisation.
- In new developments, up-front provision of retailing, parks and other community facilities to ensure patterns of behaviour conducive to good health are established when residents first arrive and settle.
Indicators Matrix
Indicators Matrix

A built environment that supports our health

GETTING ACTIVE
- supporting physical & mental health
  - Facilitate utilitarian physical activity
  - Facilitate recreational physical activity

SOCIALISING
- connecting & strengthening communities
  - Make community spaces
  - Build for crime prevention
  - Facilitate incidental neighbourhood interaction

EATING WELL
- providing healthy food
  - Promote responsible food advertising
  - Facilitate access to healthy food

Facilitate utilitarian physical activity doing things with others encourages activity

Facilitate recreational physical activity eating well is part of keeping fit

Food is a good way to interact with others

Healthy Built Environment Indicators Indicators Matrix
2. Built environment measure

- Number of all trips by the total population / number of trips made by the total population (%)
- Number of trips made by an individual / number of trips made by that individual made by public transport (%)
- Population satisfied with the availability of public transport modes as a way to make “utilitarian” trips in the neighbourhood / total population (%)
- Number of all trips by an individual under 5 km / number of trips made by that individual made by public transport (%)
- Number of all trips by an individual under 5 km / number of trips by that individual made by cycling (%)

3. Built environment measure

- People 18-64 years who walk to destinations (%)
- Number of people using stairs or ramps to go up levels / number of people using a lift (%)
- Number of people using stairs or ramps to go down levels / number of people using a lift (%)
- Number of all trips by an individual under 5 km / number of all trips by that individual made by walking (%)

4. Source(s) of data

- ABS data
- Journey to work data
- Population interviews
- Transport/economic research data
- Desk-top mapping of distances & ABS housing data
- Journey to work data
- Desk-top mapping of distances
- ABS data
- Journey to work data
- Desk-top mapping of distances
- ABS data
- Journey to work data
- Desk-top mapping of distances
- ABS data
- Journey to work data

5. Associated references in Healthy Urban Development Checklist

- EN 7 – EN 9
- Physical activity
- TC 1 – TC 2
- Built environment
- BI 4
- Promote an integrated approach to social infrastructure planning.
- EM 1
- Improve location of bus stops and cycling options.
- EN 1
- Contribute to achieving air quality.

Physical Activity
Facilitating utilitarian physical activity

1. Health & behaviour being sought

- Associated behaviour
  - Physical Activity
  - Healthy Built Environment Indicators
  - Corrected

2. Built environment contribution

- Grouping, layout, travel distance, and travel time between activities, particularly daily activities, is conducive to walking or cycling.

3. Built environment measure

- Population directly or indirectly supported by public transport (%)
- Number of dwellings within 500m of a walking access point / all dwellings (%)
- Number of dwellings within 500m of a bus stop / all dwellings (%)
- Number of all trips by the total population / number of trips made by the total population (%)
- Number of all trips by an individual under 5 km / number of trips made by that individual made by walking (%)
- Number of all trips by an individual under 5 km / number of all trips by that individual made by cycling (%)
- Number of accidents involving pedestrians or cyclists (%)
- Number of all trips by an individual under 5 km / number of all trips by that individual made by cycling (%)
- Number of children who cycle to school / number of children attending school (%)
- Walkscore
- Desk-top mapping of distances
- ABS data
- Journey to work data
- Population interviews.
- Social attendance data.

4. Source(s) of data

- Transport/economic research data
- Desk-top mapping of distances & ABS housing data
- Journey to work data
- Population interviews.
- Desk-top mapping of distances
- ABS data
- Journey to work data
- Desk-top mapping of distances
- ABS data
- Journey to work data
- ABS data
- Journey to work data

5. Associated references in Healthy Urban Development Checklist

- EN 7 – EN 9
- Physical activity
- TC 1 – TC 2
- Built environment
- BI 4
- Promote an integrated approach to social infrastructure planning.
- EM 1
- Improve location of bus stops and cycling options.
- EN 1
- Contribute to achieving air quality.

- The security aspects of facilitating “active transport” modes are covered in section (3) of SOCIAL INTERACTION (Building for Crime Prevention), and not further included here.

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### Physical Activity

**Facilitating recreational physical activity**

#### 1. Health & behaviour being sought
- **HEALTH OUTCOME**
  - Continuous reductions in levels of:
    - diabetes
    - obesity (body mass index)
    - heart disease
    - depression.

#### 2. Built environment contribution

<table>
<thead>
<tr>
<th>Measure</th>
<th>People 18-64 years</th>
<th>Activities</th>
<th>Number of hours of recreational cycling per week</th>
<th>Number of hours of recreational walking per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking and cycling</td>
<td>Residents</td>
<td>Total population</td>
<td>Leisure</td>
<td>Total population</td>
</tr>
<tr>
<td>Do residents achieve the recommended number of hours of physical activity per week?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Do residents walk for recreational physical activity?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Do residents cycle for recreational physical activity?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Are other facilities available (by either public or private providers) for recreational physical activity?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Walking and cycling matrix**
- *Walking and cycling facilities* include:
  - Footpaths
  - cycleways
  - urban paseo
  - crosswalks
  - road underpasses
  - pedestrian and cyclist bridges
  - pedestrian/cyclist改善
  - footbridges
  - other (ref: urban design)

**Do residents walk for recreational physical activity?**

- *Walking for recreation* is defined as walking done for enjoyment only, and not for transport purposes.

**Do residents cycle for recreational physical activity?**

- *Cycling for recreation* is defined as cycling done for enjoyment only, and not for transport purposes.

**Are other facilities available (by either public or private providers) for recreational physical activity?**

- *Physical activity facilities* include:
  - sport facilities
  - parks
  - recreation areas
  - playgrounds
  - marinas
  - campgrounds
  - other (ref: urban design)
Social Interaction
Facilitating incidental neighbourhood interaction

1. Health & behaviour being sought

**HEALTH OUTCOME**
Continued reductions in levels of depression and other mental health issues/problems.

**ASSOCIATED BEHAVIOUR**
- Potential to engage in incidental social interactions.
- Actual engagement in incidental social interactions.

- High level of actual incidental social interaction in the neighbourhood.
- High level of trust in the community.
- High levels of use of community facilities and public space.

**Measure**
No concise numerical standard available.
Compare local data on propensity to talk with neighbours and meet people when shopping/out & about with wider state or national data.

2. Built environment contribution

**Does the design of common areas in buildings foster incidental person-to-person contact?**
- % common areas within commercial and residential buildings that include opportunities for contact with passers-by (eg. seats on a porch, open windows to living areas)
- % of commercial buildings accessible to the public managed to allow seating, eating, display and sale activity

**Does the design of building frontages foster incidental person-to-person contact?**
- Does the design of building frontages foster incidental person-to-person contact?
- Does the design of common areas in buildings foster incidental person-to-person contact?
- Does the design of public spaces foster incidental person-to-person contact?
- Public open space managed to allow private activities to provide seating, eating, display and sale activity
- Design of public open space encourages lingering and social interaction by pedestrians and visitors.
- Streets designed and used as public space for all residents

**Measure**
No concise numerical standard available.

3. Built environment measure

**Does the design of common areas within commercial and residential buildings that include opportunities for contact with passers-by (eg. seats on a porch, open windows to living areas) foster incidental person-to-person contact?**
- % of commercial buildings accessible to the public managed to allow seating, eating, display and sale activity
- % of commercial buildings that include a semi-public transition space to the street

**Does the design of public open space foster incidental person-to-person contact?**
- % public open space areas managed to allow commercial uses providing extra activity (planting, display and sale activity)

- % residents satisfied with their level of interaction with neighbours
- % residents satisfied with the level of trust in their neighbourhood
- % residents likely to run into friends or acquaintances when in public space in their neighbourhood
- % residents satisfied with their level of interaction with neighbours
- % residents satisfied with the level of trust in their neighbourhood
- % residents likely to run into friends or acquaintances when in public space in their neighbourhood

**Common areas of buildings designed for, and achieving incidental interaction.**

**Measure**
No concise numerical standard available.

4. Source(s) of data

- On-ground survey.
- On-ground survey.
- On-ground survey.
- Population interviews.

Associated reference in Healthy Urban Development Checklist (NSW Health, 2009)
SC 1 – SC 5
EM 2
TC 4
PS 2
PS 3
PS 3
SC 1 – SC 5
Social cohesion and social connectivity.
EM 2
Increase access to a range of quality employment opportunities (refer EM2.2).
TC 4
Transport and physical connectivity (refer TC4.2).
PS 2
Ensure public open spaces are safe, healthy, accessible, attractive and easy to maintain.
PS 3
Promote quality environments that encourage activity.
1. Health & behaviour being sought

**HEALTH OUTCOME**

- Individual satisfaction with:
  - potential to engage in incidental social interactions,
  - actual engagement in incidental social interactions.
- High levels of use in community facilities, including public spaces.
- High levels of use in community facilities and public space.
- High levels of participation in neighbourhood governance.

**MEASURE**

- No concise numerical standard available.
- Compare local data on propensity to talk with neighbours and meet people within shopping & social areas with wider state or national data.

**SOURCE(S) OF DATA**

- On-ground survey.
- Population interviews.
- Specific interest group interviews.
- Surveys of/ interviews with estate management.
- Surveys of/ interviews with estate management documents.

---

2. Built environment contribution

**ASPECT**

- Is formal public and semi-public space accessible to the community at large?
- Are public spaces and community facilities designed for use by all residents of the community and for specific interest group needs?
- Does the design of public and semi-public space encourage the community to interact with nature?

**HEALTH OUTCOME**

- % of open space available with unrestricted access
- % of open space available with unrestricted access
- % of open space available with unrestricted access
- % of open space available with unrestricted access

**MEASURE**

- % residents satisfied with the overall range of open space available in the neighbourhood or otherwise accessible
- % residents satisfied with the overall range of open space available in the neighbourhood or otherwise accessible
- % residents satisfied with the overall range of open space available in the neighbourhood or otherwise accessible
- % residents satisfied with the overall range of open space available in the neighbourhood or otherwise accessible

**SOURCE(S) OF DATA**

- On-ground surveys.
- Population interviews.
- On-ground surveys.
- Population interviews.
- Specific interest group interviews.
- Surveys of/ interviews with estate management.
- Surveys of/ interviews with estate management documents.

---

3. Built environment measure

**ASPECT**

- Is the design of formal public and semi-public space inviting to the community at large?
- Are residents and others invited to participate in the broader design and governance of their common or community spaces?
- Do new developments include a “Welcome” program for residents to initiate on-going social interaction?
- Does the design and governance of public and semi-public space encourage the community to interact with nature?

**HEALTH OUTCOME**

- % residents satisfied with the overall range of active and passive recreation spaces and community facilities available in the neighbourhood or otherwise accessible
- % residents satisfied with the overall range of active and passive recreation spaces and community facilities available in the neighbourhood or otherwise accessible
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**MEASURE**

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**SOURCE(S) OF DATA**

- On-ground surveys.
- Population interviews.
- Specific interest group interviews.
- Surveys of/ interviews with estate management.
- Surveys of/ interviews with estate management documents.

---

4. Source(s) of data

**HEALTHY URBAN DEVELOPMENT CHECKLIST**

- On-ground survey.
- Population interviews.
- Specific interest group interviews.
- Surveys of/ interviews with estate management.
- Surveys of/ interviews with estate management documents.

**ASSOCIATED REFERENCE**

- Social infrastructure provision.
- Social cohesion and social connectedness.
- Public open space.
- Consider crime prevention and sense of security.

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**1** Specific matters related to public roadways / streets are dealt with in preceding section.
## Social Interaction
### Building for crime prevention

### 1. Health & behaviour being sought

**HEALTH OUTCOME**
Continued reductions in levels of depression and other mental health disorders/problems.

**ASSOCIATED BEHAVIOUR**
Frequency and nature of use of public space is sufficient to ensure an adequate level of incidental and organized interpersonal contact.

**Measure:**
No concise numerical standard available. Compare local data on propensity to talk with neighbours and meet people when shopping/outing & abroad with wider state or national data.

### 2. Built environment contribution

Is use of public space for active transport, for incidental and organized physical activity, and social interactions facilitated by actual or perceived threats to security?

### 3. Built environment measure

- Recorded crime incidents in local area / recorded crime incidents in NSW (%) [CS 1]
- Recorded crime incidents committed in a public space (including on public transport) in local area / recorded crime incidents committed in a public space (including on public transport) in NSW (%) [CS 2]
- Population who feel unsafe walking to “daily” household destinations / total population (%) [PS 2]
- Public spaces which achieve a high Safer By Design score: all public spaces (%) [PS 3]
- Recorded crime incidents committed in a public space (including on public transport) in local area / all recorded crime incidents in local area (%) [PS 4]
- Recorded crime incidents committed in a public space (including on public transport) in local area / all recorded crime incidents in NSW (%) [PS 5]
- Population who feel unsafe walking in local parks / total population (%) [SC 1 – SC 5]
- Population who feel unsafe in local shopping centre / total population (%) [SC 4]
- Population who feel unsafe in the local shopping centre / total population (%) [SC 5]

### 4. Source(s) of data

- Bureau Crime Statistics.
- Population interviews.
- On-ground survey (Safer By Design Evaluation - refer NSW Police).
- Consider crime prevention and sense of security.
- Ensure public open space is safe, healthy, accessible, attractive and easy to maintain.
- Promote quality streetscapes that encourage activity.
- Social cohesion and social connectivity.

### Associated references in Healthy Urban Development Checklist (NSW Health, 2009)

- CS 1
- PS 2
- SC 1 – SC 5
**Nutrition**

**Providing healthy food options**

1. Health & behaviour being sought

   **HEALTH OUTCOME**
   - Continued reductions in levels of:
     - diabetes
     - obesity (body mass index)
     - heart disease
     - depression.

2. Built environment contribution

   **HEALTH INDICATOR**
   - Consumption of fruits and vegetables/day
   - Consumption of 2 serves of fresh, cooked vegetables/day.
   - Consumption of EDNP* food

   **ASSOCIATED MEASURE**
   - Health & behaviour being sought
     - depression.
     - heart disease
     - obesity (body mass index)
     - diabetes
     - reductions in levels of:

3. Built environment measure

   **HEALTH OUTCOME**
   - Increased access to abundant food.
   - Increased access to healthy food.
   - Increased access to healthy food outlets.

   **HEALTH INDICATOR**
   - Consumption of 2 serves of fresh, cooked vegetables/day.
   - Consumption of 5 serves of fresh fruit/day.
   - Consumption of 2 serves of fruit (ie. 5 half cups).

   **ASSOCIATED MEASURE**
   - Health & behaviour being sought
     - depression.
     - heart disease
     - obesity (body mass index)
     - diabetes
     - reductions in levels of:

4. Source(s) of data

   **HEALTH OUTCOME**
   - Increased access to abundant food.
   - Increased access to healthy food.
   - Increased access to healthy food outlets.

   **HEALTH INDICATOR**
   - Consumption of 2 serves of fresh, cooked vegetables/day.
   - Consumption of 5 serves of fresh fruit/day.
   - Consumption of 2 serves of fruit (ie. 5 half cups).

   **ASSOCIATED MEASURE**
   - Health & behaviour being sought
     - depression.
     - heart disease
     - obesity (body mass index)
     - diabetes
     - reductions in levels of:

---

*EDNP* = energy-dense, nutrient-poor

---

**Healthy Built Environment Indicators**

**NSW Health, 2009**
Nutrition
Promote responsible food advertising

1. Health & behaviour being sought
   **HEALTH OUTCOME**
   Continued reductions in levels of:
   - diabetes
   - obesity (body mass index)
   - heart disease
   - depression.

2. Built environment contribution
   **ASSOCIATED BEHAVIOUR**
   - Consumption of 2 serves fresh fruit/day.
   - Consumption of 5 serves fresh vegetables/day.
   - Consumption of EDNP food minimal/not the norm.

   **HEALTH OUTCOME**
   Continued reductions in levels of:
   - diabetes
   - obesity (body mass index)
   - heart disease
   - depression.

   **ASSOCIATED BEHAVIOUR**
   - Consumption of 2 fresh fruit/day.
   - Consumption of 5 fresh vegetables/day.
   - Consumption of EDNP food minimal/not the norm.

3. Built environment measure
   **MEASURE:**
   People 18 years and over consume 2 serves of fruit (ie. 2 medium pieces) and 5 serves of cooked vegetables (ie. 5 half cups) daily.

   **Source(s) of data:**
   - On-ground survey.
   - Desk-top mapping of distances.
   - On-ground survey.
   - Review of policy documents.

   * EDNP = energy-dense, nutrient-poor

   **Associated reference in Healthy Urban Development Checklist (NSW Health, 2009)**
   Marketing of EDNP foods cited as a negative influence on children’s eating habits; however no specific action included.

   Exposure to EDNP foods cited as a negative influence on children’s eating habits; however no specific action included.
Additional Resources
# 1. NSW documents to assist health and built environment practitioners

<table>
<thead>
<tr>
<th>Document</th>
<th>Description</th>
<th>Use when …</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Healthy Built Environments: A review of the literature</strong>&lt;br&gt;(HBEP, City Futures Research Centre, UNSW).</td>
<td>A detailed review of 1,080 documents dealing with the empirical evidence and best practices about the connection between the built environment and human health. Defines contributing built environment factors in relation to three risk factors associated with contemporary chronic diseases: physical inactivity, social isolation and obesity. Updated regularly – on the HBEP website.</td>
<td>… wanting knowledge and evidence on the connections between our health and the shape and form of our built environments, and guidance on research into the shape and form of the built environment most conducive to promoting good health. <a href="https://cityfutures.be.unsw.edu.au/research/programs/city-wellbeing/city-wellbeing-resources/literature-review/">https://cityfutures.be.unsw.edu.au/research/programs/city-wellbeing/city-wellbeing-resources/literature-review/</a></td>
</tr>
<tr>
<td><strong>Healthy Built Environments Fact Sheets</strong>&lt;br&gt;(HBEP, City Futures Research Centre, UNSW).</td>
<td>Summarises the findings of the Literature Review. Separate Fact Sheets are available on each of the three key domains where the built environment can influence health as identified in the Literature Review, plus the importance of green open space.</td>
<td>… needing quick and easy reference to research-based evidence on key healthy built environments topics. <a href="https://cityfutures.be.unsw.edu.au/research/programs/city-wellbeing/city-wellbeing-resources/fact-sheets/">https://cityfutures.be.unsw.edu.au/research/programs/city-wellbeing/city-wellbeing-resources/fact-sheets/</a></td>
</tr>
<tr>
<td>Document</td>
<td>Description</td>
<td>Use when ...</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Healthy Urban Development Checklist: a guide for health services when commenting on development policies, plans and proposals. (NSW Health)</td>
<td>Provides a checklist of matters to consider when designing, assessing and developing healthy built environments, based on 10 separate topic areas. Equally useful for both health and built environment practitioners.</td>
<td>... designing or assessing the merits of existing and proposed development, and needing guidance on the built environment shape and form most conducive to promoting good health. <a href="http://www0.health.nsw.gov.au/policies/gl/2010/pdf/GL2010_001.pdf">http://www0.health.nsw.gov.au/policies/gl/2010/pdf/GL2010_001.pdf</a></td>
</tr>
<tr>
<td>Healthy Built Environment Indicators (City Wellbeing, City Futures Research Centre, UNSW)</td>
<td>Establishes a framework to measure the health implications of built environments, and identify opportunities for improvement.</td>
<td>... collecting evidence of the state of a built environment in affecting health, to allow for comparison, and to advocate for and measure the success of actions taken.</td>
</tr>
</tbody>
</table>
2. Other resources to assist practitioners undertaking built environment actions to improve health outcomes

**Heart Foundation**

Substantial reference material, guidelines and checklists for healthy urban design responses and promotion of active living, both nationally and State specific.


**Healthy Places and Spaces**

A national website sponsored by the Heart Foundation, Planning Institute Australia and the Australian Local Government Association. Comprises a guide to creating healthy spaces and places; links to research and other work including international and Australian State Government guides and checklists.

http://www.healthyplaces.org.au

**University of NSW City Wellbeing (formerly Healthy Built Environments Program)**

Literature review on the links between health and built environments, and best-practice responses. Fact sheets on key matters. Other reference material, research work and on-line lectures and talks.

https://cityfutures.be.unsw.edu.au/research/programs/city-wellbeing/

**University of Melbourne Place, Health and Liveability Research Program**

Lists key projects, research work and publications, including a major project on indicators of “community wellbeing” in Melbourne.

www.mccaugheycentre.unimelb.edu.au/research/health_and_liveability
Healthy Built Environment Indicators Additional Resources

University of Western Australia Centre for the Built Environment and Health

Lists key projects, research work and contributions to healthy built environments guidelines and checklists.

www.sph.uwa.edu.au/research/cbeh

Inquiry into Environmental Design and Public Health in Victoria.

Undertaken by the Victorian Parliament, but applicable generally. Comprehensive summary of issues, health data, desirable design responses and policy.


NSW Office of Preventive Health

Part of NSW Health, but applicable generally. Publications and other resources to reduce lifestyle related risk factors leading to chronic disease, including economic appraisals of the benefits of prevention.

http://www.preventivehealth.net.au/

The Healthy Active by Design Tool (HAbD)

Guides, checklists and case studies, prepared by the Heart Foundation (Western Australia) in conjunction with other relevant agencies and organisations.
