Built Environments & Child Health: A Policy Review

BEACHES
Built Environments And Child Health in WalEs and AuStralia

TELETHON KIDS INSTITUTE
Discover. Prevent. Cure.

Swansea University
Prifysgol Abertawe

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Foreword

The built environment is a key influence on children and young people's health and wellbeing.

Places and spaces have a significant impact on child development, with research indicating that physical surroundings shape a child's interactions with others and their life experiences into adulthood. High-quality built environments also support healthy lifestyles, improving physical, social and emotional wellbeing.

The right to play and enjoy community life in an environment that is safe and welcoming is something all children and young people are entitled to. These rights are enshrined in the United Nations Convention on the Rights of the Child.

I have heard from thousands of children and young people from across WA during my term as Commissioner for Children and Young People. Connections to family, friends, education and their community, as well as connection to culture for Aboriginal and Torres Strait Islander children, are consistent themes.

Through WA's Speaking Out Survey, we have heard that not all children and young people feel connected to their community, or feel they have access to the recreational activities that they would like.

If we can create built environments that respond to the needs of children and young people so that they have the ability to access amenities, be safe and feel connected, then this will have a positive effect for generations to come.

This report highlights the need for:

- children and young people to be considered in the development, implementation and evaluation of state and commonwealth policy related to the built environment and health
- inclusion of child-specific built environment features in relevant policy
- design policies to be inclusive, for all ages and all abilities.

Children and young people need to be considered and consulted in the development, implementation and evaluation of state and commonwealth policy related to the built environment and health.

I have recommended to government that a whole-of-government Child Wellbeing Strategy and a Child Impact Assessment tool should be considered in WA. These would provide a mechanism to assess the impact of any proposed legislation, policy or strategy on the rights, interests and wellbeing of children and young people.

I acknowledge the work of all involved in the development of this report which adds to the evidence base highlighting the impacts of the built environment on a child's wellbeing.

COLIN PETTIT

COMMISSIONER FOR CHILDREN AND YOUNG PEOPLE WA, NOV 2015 - JAN 2022

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Executive Summary

Childhood obesity is one of the most serious public health challenges of the 21st century and is affected not only by individual choice but also by societal and environmental influences. The main modifiable risk factors for childhood obesity are unhealthy eating and low levels of physical activity. The built environment is also a modifiable risk factor for child obesity. It is modifiable through policy and at scale. The built environment can impact on long-term, positive solutions to childhood obesity through supporting (or hindering) physical activity and healthy eating in children. Coordinated policy across multiple sectors and levels of government, developed using a strong research evidence base, can drive the built environment to better support more active lifestyles and healthy eating, and prevent childhood obesity.

Most research on the built environment and obesity has been undertaken with adults and the built environment is mostly designed to meet their needs. However, there are differences in the way the built environment influences obesity in children compared with adults. Of the research that has focused on children, walkability, land-use mix, green spaces, recreational facilities, safety, and availability of certain types of food outlets are among the most consistent built environment correlates of childhood obesity. Some evidence has also indicated the importance of an aesthetic environment, social connectivity, home yards and controlled outdoor advertising of unhealthy foods.

A policy analysis was conducted to investigate how Western Australian and national policies address the health of children through the built environment's influence on obesity and the modifiable risk factors for obesity, physical activity, sedentary behaviour, and diet. Policy analysis is crucial to achieving reforms in health promotion by raising awareness of current policy gaps and opportunities and demonstrating successful policy-related actions being taken across the system. The Comprehensive Analysis of Policy on Physical Activity (CAPPA) framework was used to guide the analysis.

A total of 31 Western Australian and ten national built environment-related policy documents (defined as policies, strategic plans, frameworks, and guidelines) were reviewed. Policy documents were developed by various state and national government departments including those in charge of planning, health, transport, sport and recreation, local government, crime prevention, and parks and wildlife. Most policy documents were produced by a single government department, although there were exceptions.

The policy documents reviewed mostly referred to the role of the built environment in supporting physical activity. The role of the built environment in supporting healthy eating was mentioned in only two of the documents and only three policy documents addressed the need to minimise sedentary behaviour.

Of the policy documents reviewed, the most referred-to built environment factors that may impact childhood obesity were street connectivity, parks, open spaces and recreation facilities, and safety. Overall, seven of the reviewed policy documents included specific targets related to built environment features, most of which were related to active transport; and only five included an implementation or evaluation plan.

Only five of the policy documents recognised the specific needs of children through the built environment.

Recommendations for future policy development and review include the need for the voices of children and families to be incorporated and the inclusion of child-specific built environment features such as walkability, park access and quality, and home yard size and attributes. Consideration of the way different sub-groups of children interact with the built environment and the development of multi-departmental policies with transparent implementation and evaluation plans are also needed to impact the modifiable risk factors for obesity across childhood.

Introduction

This research investigated how Western Australian and national policies address the health of children through the built environment's influence on physical activity, sedentary behaviour, diet, and obesity. The research forms part of BEACHES project. The BEACHES project is funded by the UK Research Institutes – National Health and Medical Research Council Built Environment and Prevention Research Scheme. The BEACHES project aims to improve understanding of how the built environment drives obesity in children and to inform evidence-based planning policy and practice strategies to prevent the rise in non-communicable diseases (NCDs) from childhood to adulthood.

Article 31 of The United Nations Convention on The Rights of The Child:

"Children have the right to relax, play and to join in a wide range of leisure activities."

Background

Childhood obesity is one of the most serious public health challenges of the 21st century. The problem is global, is steadily affecting many countries, particularly in urban settings, and the prevalence has increased at an alarming rate.[1] Globally in 2016, the number of overweight children under the age of five was estimated to be more than 41 million[1] and more than 340 million children and adolescents aged 5–19 years were overweight.[2] A quarter of Australian children aged 5–14 years are overweight or obese.[3] Only 20 per cent are sufficiently active and more than 60 per cent engage in excessive sedentary time.[4] Overweight children are more likely to become overweight and obese adults.[5] They are also more likely to suffer from psychological comorbidities such as depression, anxiety, low self-esteem, and various emotional and behavioural disorders.[5] Childhood obesity is associated with an increased incidence of diabetes, coronary heart disease and some cancers in adulthood.[6]

The World Health Organization (WHO) recognises that the increasing prevalence of childhood obesity is caused by societal changes.[7] The main modifiable risk factors for childhood obesity are unhealthy eating and low levels of physical activity.[6] Childhood obesity and its associated modifiable risk factors are influenced increasingly by social and economic development and policies across agriculture, transport, urban planning, the environment, food processing, distribution and marketing, and education.[8] There is no single policy or strategy that can solely help reverse the prevalence (or prevent the increase) of obesity in society. As such, there is a need to adopt multidimensional and integrated obesity-prevention policies and implementation plans involving multiple sectors to address the chronic problem of childhood obesity.

1.1. The Ecological Framework

Childhood obesity research has predominantly focused on the contribution of individual behaviours such as diet and physical activity; however ecological approaches have broadened this focus to include factors across multiple levels of influence.[9] Obesity is a complex problem that extends beyond individual choice and is affected by multiple interrelated influences related to the social (e.g., level of safety[10] and social connection[11]) and built environment (**Figure 1**). For example, the built environment can impact access to healthy food and a child's ability to be physically active[12] through factors such as access to healthy food retail outlets and the density of convenience stores, parks, open space, and recreation facilities, aesthetics, and land-use patterns. These factors, and others, will be discussed in more detail in this report.

The policy environment including local government, state, national and global policies and their level of integration across the areas of planning, bio-diversity, health, transport and sport and recreation also influence obesity levels.[13] Policy is recognised as a powerful instrument to influence public health issues.[14] There is a growing body of evidence supporting interventions which incorporate multiple strategies and act across all levels of the socioecological model, beyond family-focused strategies, to fully address the problem of childhood obesity.[15] Such an approach requires coordinated policy across multiple sectors and levels of government.

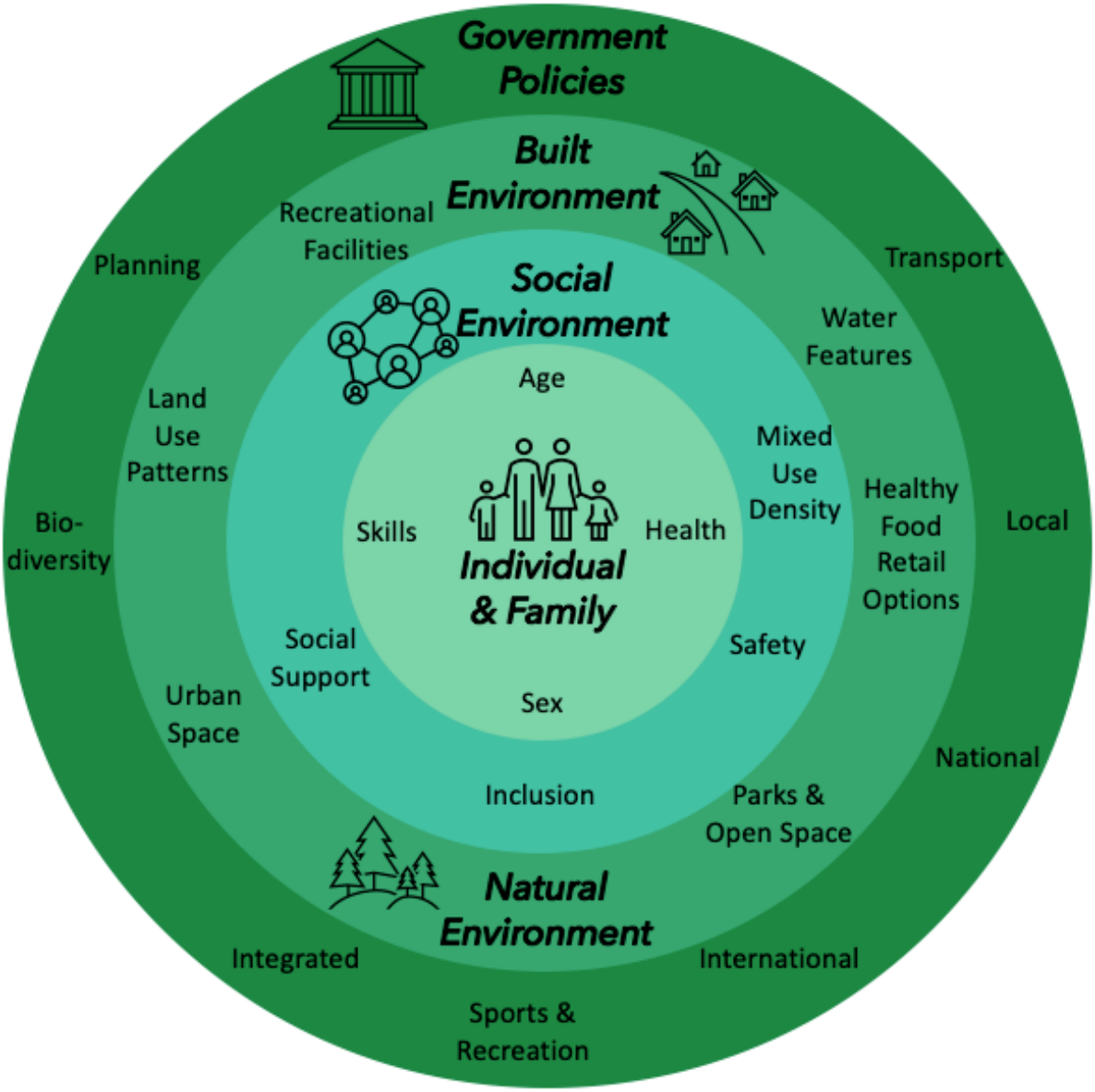


Figure 1. Ecological model of the different levels of influence on child health-related outcomes.[16]

1.2. Built Environment Policy and Obesity

The *WHO Global Action Plan for the Prevention and Control of Non-Communicable Diseases* identifies policy approaches as a core component of actions to address risk factors for obesity.[17] Obesity prevention policies

can be considered with respect to food environments and physical activity environments. In relation to food, policies are typically designed to alter the food environment such that healthier choices are the easier choices. Similarly, obesity-prevention policies targeting physical activity environments seek to alter the environment to make increased levels of physical activity and decreased levels of sedentariness the easy choices. Sedentary behaviour needs to be considered along with physical activity in policy frameworks when focusing on obesity. However, although both sedentarism and physical activity fall within the physiological movement continuum, they are not mutually exclusive behaviours and must be considered separately.[18]

There are a broad range of policy areas influencing the food environment, including local government policies on land use, local and/or state government policies on food safety, and policies on agricultural subsidies and economic sanctions operating at national and international levels. Some potential policy action areas, such as restricting the marketing of unhealthy foods, can span all levels of governance, ranging from local restrictions on the placement of billboards to cross-jurisdictional restrictions on television advertising. Policy areas influencing physical activity environments include urban planning and transport policies (at a local, state, and national level), as well as organisational policies on the provision of facilities (e.g., recreation centres, parks, and playgrounds) for physical activity. Policy areas of focus may include those where existing policies serve as barriers to obesity prevention (e.g., local public liability laws that can be a barrier to opening school grounds after hours) and areas where there are opportunities for action (e.g., taxation incentives for the use of public transport). One of the key recommended strategies to support the creation of places where people can be active is the **strengthening of policy frameworks, governance, and leadership systems at all levels of government**, to encourage the dissemination and implementation of strategies to enable active communities.[17] An **essential determinant of active and healthy living is the policy environment.**[16]

1.3. Child Obesity and the Built Environment

Policies that address creating more health-enhancing built environments should be evidence-based and meet the needs of various groups of people in a population.[19] However, most research on the built environment and obesity has been undertaken with adults, and the built environment is mostly designed to meet their needs. **Of the research that has focused on children, walkability,[20] land-use mix,[21] presence of green space and recreational facilities,[22] safety[10] and availability of certain types of food outlets[23] are among the most consistent neighbourhood correlates of childhood obesity.** In addition, higher population density and lower urban sprawl have been consistently associated with lower body mass indexes (BMIs) in older children.[24] Most of the research investigating childhood obesity and the built environment has focused on how the built environment supports or hinders children's **active transport (i.e., walking, cycling and use of public transport), structured (i.e., sport participation) and unstructured (i.e., leisure-based) physical activity and healthy eating behaviours.**[25] The built environment's impact on children's **sedentary behaviour** is also important, however it has received less research focus.

There are differences in the way the built environment can influence obesity in children compared with adults.[26] For example, high-walkable neighbourhoods are associated with active transport and lower obesity rates in adults.[27] However, these neighbourhoods often have higher levels of traffic, and exposure to traffic increases child safety issues and is negatively associated with children's active transport.[28] Differences in the built environment correlates of obesity also vary across childhood. For example, the home yard and proximal spaces are important for young children to be physically active[29] while adolescents are more active when they have independent mobility with places to visit.[30]

1.4. Children's Physical Activity and the Built Environment

A supportive neighbourhood built environment is considered to be important for increasing physical activity because it provides children and families with cues, opportunities and supportive infrastructure for active transport-related behaviours such as walking or cycling to school and other places, and structured and unstructured physical activity.[31]

Active transport is an important source of physical activity for children, and a potential source of habitual activity.[32] It includes travel between destinations by walking, cycling, or other non-motorised modes.[33] There are several built environment features that are important for supporting children's active transport. These include safe pathways for walking and cycling,[8] pedestrian safety structures (e.g., railings that delineate the footpath from the road and signage that clearly indicates when and where pedestrians should walk)[34] and traffic safety.[35] An example of how active transport can be encouraged in a community is '***Your Move***.'

Your Move

The Your Move Schools program encourages students and their families to get active by walking, riding, scooting, and using public transport for the school trip. Through the award winning Your Move website, the program offers peer-to-peer story sharing, teaching resources, expert advice, a suite of activities to choose from, and access to funding and rewards to encourage more active travel to school.

Your Move Schools is delivered by the Department of Transport as a free program and open to any school or educational facility for children in Western Australia. More than 170 schools are signed up to the program, ranging from K-12 and located throughout the Perth metropolitan and WA regional areas.

Member schools are required to conduct a Hands Up Survey of students' travel behaviour at the start and end of every year. A Your Move champion leads activity at a school and is supported to develop an active travel culture at the school by selecting and implementing tried and tested activities. The champions share stories on the website about what their school has been doing to encourage more active travel. This earns the school points which can be redeemed for funding and rewards designed to enable more active travel to school – such as providing bike riding and road safety skill training, installing wayfinding signs, and improving bike access and bike parking. Making a small change by actively travelling to and from school a few times a week can result in huge benefits. Schools involved in the Your Move program can expect walking and bike riding rates of 36 per cent on average (based on past 7 years of data), which is well above current levels of 20 per cent.

"Walking gives me time to reflect on the day, as well as getting much needed exercise" Queeneth, Year 9

"Walking or riding is more social. We make new friends and get to know each other better" Danielle, Year 9

Parent perceptions of safety also significantly impact children's active transport.[36] For example, parents' perception of crime in a neighbourhood, regardless of actual levels, can negatively impact children's active transport.[37] Parents' perception of safety is discussed in more detail in section 1.7.1.

From a public health perspective, the greatest population-wide opportunity for children's active transport is to and from ***school***. Fewer Australian children walk and cycle to school than ever before. Over the past 40 years the national rate of active travel to school has declined from 75 per cent to 25 per cent.[38] In Perth, the rate is as low as 20 per cent[39] and half of children travel to school by car despite living less than one kilometre away.[40] Living close to school, mixed-use neighbourhoods (e.g., co-location of houses, shops, schools, offices) and connected, grid-like street layouts[25] are positively associated with children's active school transport. Footpaths and bike lanes, traffic lights, definitive crosswalks, and reduced speed limits on roads are also important for supporting children's safe active commuting to and from school.[25] These factors can work together to promote active transport. For example, one study reported that the coexistence of both a safe route to school and traffic-calming measures was associated with increased active transport to school, whereas the association was non-significant for each factor alone.[41]

Declines in active transport have been paralleled by a decrease in children's ***independent mobility.*** Children's independent mobility is defined as the license and ability to move around the neighbourhood unaccompanied by adults.[42] Aspects of the built environment can support children's independent mobility. These include living in neighbourhoods with well-connected and low-traffic streets[28] and access to both small and larger-sized local parks.[43] Boys are more independently mobile than girls, which exposes them to greater access to physical activity opportunities in their neighbourhood.[44] However, the social environment (e.g., parent-perceived safety and social norms) influences children's independent mobility regardless of the destination being visited.[43] Improving the built environment through increasing street connectivity and park access as well as greater parent-perceived levels of neighbourhood cohesion and safety (from traffic and stranger danger) may better support children's independent mobility and increase physical activity levels.[45] Limited studies have explored the direct relationship between independent mobility and children's obesity.

In contrast, there is considerable research on the built environment factors influencing children's structured and unstructured physical activity.

Structured physical activity is any activity that is organised, planned, and developed with the assistance of an instructor, and has objectives and goals.[46] ***Unstructured physical activity*** is considered free time, self-selected free play, non-guided activity, or non-formal activity that allows individuals to engage in creative, explorative, and social play.[46] Parks, open spaces and recreation facilities support both structured and unstructured physical activity in children. Home yards and access to safe places near home are important for providing young children with opportunities to participate in unstructured physical activity outdoors.

Features of the built environment that support children's structured and unstructured physical activity (and prevent obesity) are discussed in the following sections.

1.4.1. Street Connectivity

Street connectivity refers to the ease of moving between destinations and is positively associated with children's active school transport.[47] However, direct routes to school - when designed to cater for heavy traffic - can reduce the likelihood of children walking to school because of traffic safety concerns.[48] Mixed findings have been found in relation to street connectivity and children's overall physical activity. A recent systematic review found a positive association between street connectivity and children's physical activity, and a negative association between street connectivity and children's weight-related outcomes.[49,50] However, neighbourhoods with higher street connectivity have fewer cul-de-sacs and are thus higher-traffic

areas, which are not suitable for younger children's outdoor activity.[34] Residing on a cul-de-sac (compared with a through road), and the presence of traffic-calming measures (e.g., speed bumps) is associated with higher play-based physical activity in young children[51] and also boys aged 13–15 years.[52] However, reduced street connectivity limits the ability of older children to walk to school.[53] The evidence suggests that connectivity may promote physical activity for some age groups through its impact on active transport.[54]

1.4.2. Mixed Land Use

Mixed land development integrates retail, office, residential, community and recreation uses, thereby providing a purpose to walk.[55] Land use mix including access to proximate destinations may have a positive influence on older children's active travel and overall physical activity levels.[56,57] For example, higher levels of out-of-school-hours physical activity is significantly associated with neighbourhoods with mixed-use planning, especially for older children and adolescents.[58] In addition, the risk of overweight/obesity among children may be less for those living in neighbourhoods with greater land use mix.[59] However, further research is needed to confirm these findings.

1.4.3. Aesthetics

An aesthetically pleasing neighbourhood has interesting places to walk to, attractive buildings and access to green spaces.[60] The presence of trees, interesting features to look at and a lack of litter and graffiti are associated with higher physical activity in children.[61] Children whose parents believe their neighbourhood is aesthetically pleasing are two-and-a-half times more likely to report active commuting compared to those whose parents rated their neighbourhood as less aesthetically pleasing.[62] Importantly, children do not necessarily visit the closest green space. Rather, they visit parks with the most appealing aesthetics and attributes.[62] Adolescent girls have been found to be more physically active on weekends if they rated their overall neighbourhood as attractive with enjoyable scenery.[63] Based on the literature available, it appears children are more likely to be active in neighbourhoods that offer a variety of places to visit that are aesthetically pleasing.

1.4.4. Parks, Open Spaces, and Recreation Facilities

To support the diversity of different age groups of children, many types of recreational facilities (e.g., parks, sports complexes and playgrounds), both public and private, near homes and schools, are needed to encourage children's participation in structured and unstructured physical activity.[8] However, the presence and proximity of recreational facilities is important to children as well as their features.[64] For example, more attractive and well-maintained parks with high-quality play equipment[65] and a range of play areas[66] are more likely to be used by children. Parks with water features have also been found to be associated with children spending less time watching television.[67] For adolescents in particular, safe parks and open spaces with high-

quality features close to home or school may stimulate physical activity, especially if adolescents are familiar with others using the park.[68] Urban spaces for skate-boarding and other recreation-based physical and social activities are also important to support adolescents' physical activity; adolescents have been found to be active in non-green urban areas such as streets, car parks and shopping malls.[69] Finally, a longitudinal study demonstrated a sustained and inverse relationship between parks and recreational programs and children's BMIs over an eight-year period.[70] An example of community development of a nature-based play space can be seen in the case study of the City of Busselton. In this example, input from children was gained in the design phase and cultural considerations were central to the project.

Djiljit Mia Project

Initial consultation for the provision of a nature-based play space, included a planning workshop, information table at Hannay Lane Street party, and participation of students from a local Primary School. A working group was formed, and further community meetings took place.

The success of Djiljit Mia lies with the strength of community ownership, the delivery of the project, and the transformation of an area that was under-utilised. The Hannay Lane precinct was enhanced to include nature-based play features including tree rope swings, cubby-house-making, log balance, sound-sensory play and sand play. The project was successful in creating a natural gathering space for local families and visitors, in the heart of the CBD, ensuring minimal impact on the brook, incorporating existing trees and the natural environment, and using repurposed and recycled materials throughout.

The **City of Busselton** is committed to working towards a formal journey of reconciliation, enhancing respect, through creating a sense of Aboriginal place and relationships, by recognising Aboriginal history. The Djiljit Mia project is an important step for understanding and appreciating the cultural significance of the area.

1.4.5. Home Yards

The ability of children to take part in unstructured outdoor physical activity has declined because of their increasingly structured, supervised, and indoor lives.[30] This is of concern as lower levels of time spent outdoors is related to lower physical activity and higher obesity levels.[71] Young children (3–5 years) spend on average 70 minutes a day playing in and around their home yard,[29] reinforcing the importance of this environment for young children's physical activity. However, a range of factors have led to a reduction in the

amount of outdoor home yard space available for play for many young children (e.g., building of bigger houses and a trend towards smaller lot sizes).[72] Additionally, the attributes of the home yard space are also important. Fixed play equipment, irrespective of yard space, is associated with pre-schoolers' home-based outdoor play.[29] The presence of a basketball hoop in the backyard has been positively associated with children's physical activity levels, particularly when combined with parental support for physical activity.[73] Natural features may also be important.[29] Overall, further research is needed to understand the relationship between the home space (i.e., yards, home size and type) with children's physical activity, sedentary behaviour and obesity.[29]

1.4.6. Other Neighbourhood Characteristics

There are several other relevant neighbourhood characteristics that are associated with outdoor unstructured physical activity in children. For example, footpaths, parallel parking bays[74] and driveways, grass verges and stairwells[75] can provide opportunities for children to be physically active.

1.5. Children's Diet and the Food Environment

Children's dietary behaviours are shaped by the community food environment, defined as types, locations and temporality of food outlets (e.g., supermarkets, convenience stores, fast-food outlets).[76] Access to healthy food outlets is associated with children's weight status. For example, the count of healthy food outlets within 800 metres of home is associated with a decreased risk of children being overweight or obese in WA.[77] Two key food environment features as they relate to child obesity include the density of convenience stores and outdoor advertising of unhealthy food.

1.5.1. Density of Convenience Stores

Convenience stores provide access to high-fat food, sugary drinks, fast food, take-away or snack food, and other unhealthy food options. Generally, the density of convenience stores in neighbourhoods is associated with higher levels of obesity in children with the effects stronger in older children. However, these findings are not consistent. A recent review showed that while there was a strong positive association between convenience store access and weight-related behaviours (e.g., purchasing of unhealthy foods) among children, associations between convenience store access and children's weight status were mixed.[78] Stronger and more consistent findings have been observed between convenience stores around schools and children's weight status; a longitudinal study examined 11 types of food outlets within 800 meters of schools and found higher BMI among children with increased access to convenience stores in their school neighbourhood, especially for girls and for urban compared with regional school children.[76]

1.5.2. Outdoor Advertising of Unhealthy Food

Children's exposure to unhealthy food advertising, including television, online and outdoor advertising contributes to childhood obesity by influencing food preferences and food purchases, leading to poor dietary intake.[79] Most research of the effects of unhealthy food advertising on children has not separated outdoor advertising from other forms. Yet, outdoor advertising is a common form of food marketing around metropolitan schools, with 74 per cent of outdoor food advertising within 500 metres of Perth schools being for unhealthy foods.[80] Perth primary schools were found to have an average of 25 outdoor food advertisements within 500 metres of the school boundary, secondary schools had 22 and schools catering for children from kindergarten to year 12 had 41.[80] Children are commonly exposed to unhealthy foods during the school commute, with discretionary foods comprising 80 per cent of outdoor food advertising on school routes.[81] While outdoor food advertising appears to be an important mechanism for food marketers to target children,[82] and has the capacity to influence their food choices, the specific contribution it makes to childhood obesity requires further investigation.

1.6. Children's Sedentary Time and the Built Environment

Sedentary behaviours, primarily sitting behaviours that require very little energy to perform,[83] are associated with obesity in children.[84] Leisure screen-based behaviours such as television viewing, computer use and playing electronic games are measures of sedentary time.[85] Poor neighbourhood design may make being sedentary an easier option than being active.[67] With reduced home yard size, time spent indoors has increased.[86] This has resulted in an increase in children's sedentary behaviour, with possible negative consequences for child health.[87] Studies on sedentary behaviour, children and the built environment have shown mixed findings. Access to different types of neighbourhood destinations has been associated with less screen time for girls, but not boys.[88] In addition, some features of the built environment such as size of parks are associated with less sedentary behaviour in children.[67] Further research is needed to confirm the features of the built environment consistently associated with children's sedentary behaviour.

1.7. Perceptions of the Built Environment and Child Obesity

Perceptions of the built environment can act as powerful determinants of neighbourhood activity and can be more proximal determinants of behaviour change than the actual environment.[89]

1.7.1. Parent Perceptions of Safety

Even if a child's environment is well designed, a parent's perception of safety can limit the ability of their child to engage in outdoor activity. The key concerns of parents are road safety and 'stranger danger'.[90] Parental perception of footpath and street safety were found to be strongly associated with children's independent mobility.[91] Subjective ratings of safety, for example, fear of crime, is a stronger predictor of behaviour (e.g., reluctance to go outdoors to exercise) than actual crime rates.[92] Additionally, it has been found that parental rather than children's perceptions of road safety is associated with children's walking[45] and cycling in the neighbourhood[93] and levels of obesity.[94]

1.7.2. Social Connection

The built environment can encourage (or discourage) social contact among neighbours, involvement in neighbourhood activities and community organisations, and affect perceptions of safety, security, and feelings of belonging.[95] Social connections foster further interaction and can support healthy behaviours in children. For example, the level of neighbourhood social connection provides casual monitoring of local children's outdoor activities.[45] Parents' perceptions of neighbourhood social cohesion and social connections have been found to be significantly associated with independent mobility trips in 8–13-year-old children and to increase the likelihood of outdoor physical activity in younger children.[45] In addition, children who have

many friends in their local area are more than twice as likely to participate in active transport compared to other children.[96]

1.8. Summary

Table 1 includes a summary of the built environment features identified in the research evidence as being important for preventing childhood obesity. The relevance to specific ages of children and the strength of research evidence (from strongest to weakest) based on the findings from relevant literature reviews are included.

Table 1. Built environment features important for preventing childhood obesity.

Built Environment Feature	Definition	Relevance to children	Age groups relevant to	Strength of evidence
Parks and recreation facilities	Land reserved for passive recreation, sport and recreation, preservation of natural environments, green space	Presence, proximity, and attributes of parks important Different types of public open space needed for promoting children's physical activity	All ages, with specific features of parks important to different age groups	Strong: considerable evidence to support association between parks and children's physical activity
Aesthetics	The attractiveness of a place affects the overall experience. Includes a combination of interesting places to walk to, attractive buildings and green spaces	Children are more likely to visit aesthetically appealing parks Trees and interesting features increase physical activity	All age groups	Medium: evidence is conclusive, but not many studies conducted

Street connectivity	The directness of links and the number of connections in a path, street or road network impacts the ease with which people can walk and cycle around a neighbourhood and between places	Higher street connectivity supports active transport to school More cul-de-sacs provide safer (less traffic) opportunities for outdoor play near home	Higher street connectivity more relevant to older children Cul-de-sacs are more relevant for younger children	Medium: further research needed in specific age groups of children
Mixed land use	Houses, shops, schools, offices, libraries, open space, and cafes, co-located to promote active transport to and between different activities	More child relevant destinations support more active transport	Appears more relevant to older children who are independently mobile	Medium: some evidence. Needs more child-specific research
Safety	Perceptions of safety influence the nature and extent that people use spaces and places. Safety refers to traffic safety, levels of crime in a neighbourhood and stranger danger	Parents' perception of safety relevant to children's independent mobility, active transport, and general physical activity	All ages - particularly relevant to children 10 to 12 years when starting to become independently mobile	Medium: well researched but more studies on factors that influence parental perceptions of safety needed
Food outlets (convenience stores)	Provide access to high-fat food, sugary drinks, fast food, take-away or snack food, and other unhealthy food options	Proximity of convenience stores to schools positively related to child obesity	All ages	Weak to Medium: some evidence but needs further focus
Home yard	Back-yard spaces and fixed and portable play equipment in home yards that encourage outdoor play	Back-yard size and attributes associated with children's physical activity. Natural features may also be important	Younger children	Weak to Medium: some evidence but needs further focus
Outdoor advertising	Outdoor advertising on billboards and in other outdoor spaces that promote unhealthy food	Outdoor advertising of unhealthy food associated with children's poor dietary intake	All ages	Weak: little research conducted with children

Social connection	Neighbourhoods where people have a sense of belonging. Can affect feelings of safety and security and encourage interactions and activity	Parent perceptions of social connection enhance physical activity in young children and independent mobility in older children	All ages	Weak: little research conducted with children

Research Aims & Questions

This research investigated how Western Australian and national policies related to the built environment address the health of children (0–17 years) through the built environment's influence on obesity and the modifiable risk factors for obesity, physical activity, sedentary behaviour, and diet. To achieve this aim, the following research questions were addressed:

1. **To what extent are children and families included in policies?**

2. **To what extent is the built environment specifically targeted in policies?**

3. **To what extent are the policies based on research evidence of the influence of the built environment on childhood obesity?**

4. **How do the policies address the impact of the built environment on childhood obesity?**

Methodology

Policy analysis is perceived as crucial to achieving successful reforms in health promotion[97] by raising awareness of current policy gaps and opportunities and demonstrating policy-related actions being taken across the system. There is no consensus on how to perform a policy analysis and which method is best.[97] A plethora of instruments, tools and techniques are available for policy analysis in general,[98] health policy analysis,[99] and specific areas within health policy such as obesity policies.[100] In this research, **a policy was defined as a set of ideas or plans that are used as a basis for making decisions**. Policies were reviewed in a systematic way and against a set of criteria to identify gaps and opportunities for future policy development, to enable built environments that prevent the increase in childhood obesity.

2.1. Search Strategy

Official Western Australian government department and agency and national government and agency websites were searched for current policies related to the built environment. Western Australian government department websites searched included: Department of Planning, Land and Heritage; Department of Health; Department of Local Government, Sport and Cultural Industries; Department of Transport; Department of Biodiversity, Conservation and Attractions; and Department of Parks and Wildlife. National websites included: Department of Infrastructure, Transport, Regional Development and Communications; Department of Environment and Energy; and Department of Health.

The search strategy involved combining the terms “obesity” or “health” or “physical activity” and “policy” or “framework” or “plan” and “built environment” or “transport” or “planning”. Policy documents were included if they either explicitly aimed to impact health through the built environment or were directed at one of the built environment factors shown to influence childhood obesity, as identified by the research evidence (see **Table 1**). Policies, strategy papers, frameworks, strategic frameworks, plans, guidelines, and programs were included. Only current policies were included. Current policies were those available on government websites at the time of the search (February 2021) and were not classified as superseded or archived. As it was difficult to discern which policies were still being used, the search was confined to those published from 2005 to 2021. Each policy was then checked for references to other relevant policies, and these were included if they met the inclusion criteria. To limit the scope for this review, policies developed by specific local government jurisdictions were excluded, although those developed at a state or national level and relevant to local government, in general, were included. Discussion papers and reports were also excluded.

In addition to the search of government websites, a Google Scholar search was conducted to identify journal articles reviewing Australian policies related to the built environment and child health. The search strategy involved combining the terms “obesity” or “health” or “physical activity” and “policy” and “built environment” or “transport” or “planning” and “Australia” and “review.” The first ten pages of the search were checked to identify peer-reviewed journal articles. These papers were then searched for reference to Western Australian or national policies. The policies were scanned to see if they met the inclusion criteria. Policies were also read to identify references to other relevant policies, which in turn were checked against the inclusion criteria.

An advisory group comprising policy makers and practitioners from various state government departments and not-for-profit organisations provided input into the methods through regular stakeholder meetings, to ensure that all relevant policies were captured and that the process of analysis was relevant to policymaking and practice.

2.2. Analysis Framework

The Comprehensive Analysis of Policy on Physical Activity (CAPPA) framework[101] was used to guide the analysis. The CAPPA defines 38 elements of a comprehensive analysis of Physical Activity and Sedentary Behaviour policies, through the six categories of: *Purpose; Level; Policy sector; Type of policy; Stage of the policy cycle;* and *Scope of analysis*. Some modifications to the CAPPA analysis framework were made to meet the needs of this research and these are outlined below. In addition, a further five categories were added to the CAPPA framework, making a total of 11 categories.

1. **Purpose**: focuses on whether policies are audited and or assessed. *Policies were both audited and assessed in this analysis.*

2. **Level**: describes whether a policy is an international, national, subnational, local, or institutional policy. *In the current analysis, policies were defined as either a national or state-based (and which state) policy. Categories used for this study were Western Australian policies or national policies.*

3. **Policy sector**: includes 11 elements – health, sport, recreation and leisure, education, transport, environment, urban/rural planning and design, tourism, work and employment, public finance, and research*. The specific name of the government department that developed the document was recorded.*

4. **Type of policy**: includes five elements – formal written policies, unwritten formal statements, written standards and guidelines, formal procedures, and informal policies. *Policy documents were classified as policies, policy frameworks or acts; strategic frameworks, strategy papers or frameworks; plans; guidelines or guides; programs; or standards.*

5. **Stage of the policy cycle**: includes eight elements – agenda-setting, formulation, endorsement/legitimisation, implementation, evaluation, maintenance, termination, and succession of policy. *This category was not considered relevant as each of the reviewed documents was in the implementation stage.*

6. **Scope of analysis**: includes seven elements – availability, context, processes, actors, political will, content and effects. *Policy documents were assessed for reference to the nine built environment features identified in the research evidence as important for addressing childhood obesity (**Table 1**).*

7. **Health and built environment objectives**: *These were assessed to confirm the focus of the policy documents (research questions 2 and 3).*

8. **Focus on children**: *This enabled research question 1 to be addressed.*

9. **Specific built environment and health targets addressed**: *This provided evidence for research questions 2-4.*

10. **Implementation and Evaluation**: inclusion of implementation and evaluation plans*. This provided evidence for research question 4.*

11. **The focus of the document**: Built environment and physical activity; Built environment and diet; Built environment and sedentary behaviour; and Built environment and obesity. *This provided evidence for research questions 3 and 4.*

Results

3.1. Description of Policies Reviewed

A total of 31 Western Australian and ten national policy documents were identified as meeting the inclusion criteria and were reviewed using the CAPPA criteria outlined in the methods section (see **Appendix 1**). Of the documents identified, eight were policies, one was an Act, and 32 were either strategic plans, frameworks, programs, or guidelines.

The documents reviewed were developed by various state and national government departments including those in charge of planning, health, transport, sport and recreation, local government, crime prevention, and parks and wildlife. All state policies were produced by the Department of Planning, Lands and Heritage. Of the ten national documents reviewed, only one was a policy*: Our Cities, Our Future*.[102] Most of the documents were produced by a single government department although there were exceptions such as *Active Living for All*[103] which was led by the Department of Sport and Recreation (now the Department of Local Government, Sport and Cultural Industries) in collaboration with four government departments: Department of Health, Department of Transport, Department of Education and Department of Planning (now the Department of Planning, Lands and Heritage). Some, although not all, provided evidence of extensive consultation in the process of document development such as the *Sustainable Health Review*[104] wherein people who receive health services, carers, clinicians and staff in the WA health system, Health Service Providers, non-government organisations, industry and the wider community provided input. However, such consultation or collaboration was not always evident. Overall, input from children was not evident in the development of any of the documents reviewed.

3.2. Child-Relevant Built Environment Features Included in Policies

In relation to child-relevant built environment features, 23 of the policy documents mentioned street connectivity (see **Table 2**). Consideration of safety, which included traffic safety and crime, was addressed in 22 of the policy documents. The need for high-quality parks and open spaces was addressed in 21 policy documents.

Table 2. Number of policies addressing child-relevant built environment features.

Built Environment Features	Number of Policies
Street connectivity	23
Safety	22
Parks and recreation facilities	21
Aesthetics	12
Social connection	9
Mixed land use	8
Food outlets (convenience stores)	5
Outdoor advertising	1
Home yard	0

The most comprehensive documents, where over half of the child-relevant built environment factors were addressed included *Liveable Neighbourhoods*,[105] the *State Public Health Plan for WA*,[106] *Our Cities, Our Future*,[102] *Healthy Spaces and Places*,[55] *State Planning Policy 4.2*[107] and the *State Planning Strategy 2050*.[108] The features relevant for preventing child obesity identified in these policies are presented in **Table 3**.

Table 3. Policies mentioning the most child-relevant built environment features.

Policy (Year)	**Liveable Neighbour-hoods*** (2015)	**State Public Health Plan for W.A.*** (2019)	**Our Cities Our Future** (2011)	**Healthy Spaces & Places** (2009)	**State Planning Policy 4.2*** (2010)	**State Planning Strategy 2050*** (2014)
Street connectivity	✓	✓	✓	✓	✓	✓
Safety	✓	✓	✓	✗	✓	✓
Parks and recreation facilities	✓	✓	✓	✓	✓	✓
Aesthetics	✓	✓	✓	✓	✓	✓
Social connection	✓	✗	✗	✓	✗	✗
Mixed land use	✓	✗	✓	✓	✓	✓
Food outlets (convenience stores)	✗	✓	✗	✗	✗	✓
Outdoor advertising	✗	✗	✗	✗	✗	✗
Home yard	✗	✗	✗	✗	✗	✗

* Denotes Western Australian policies

3.3. Policies With Child-Relevant Built Environment Features Linked to Health Outcomes

Twenty six of the 41 policy documents referred to health or wellbeing in their objectives. For example, The *State Planning Strategy 2050*[108] stated one of their objectives as: *"The provision of well-designed buildings, movement corridors, public open spaces and civic places to improve the safety, health, cohesion and economy of the State's communities."* Furthermore, *The State Planning Policy 7.2 Precinct Design*[109] stated as one of it aims *"ensure that development within precincts integrates landscape design that enhances sustainability outcomes and contributes to community wellbeing."*

All but one of these 26 policy documents referred to the role of the built environment in supporting physical activity (e.g. *Safe Active Streets Program*;[110] *Moving Australia 2030*).[111] The role of the built environment in supporting healthy eating was mentioned in only two of the documents: The *Sustainable Health Review*[104] and the *State Public Health Plan for WA*,[106] (e.g., an objective of the *State Public Health Plan*[106] is to *"decrease unhealthy food and drink sold in publicly-owned facilities such as schools, hospitals, and sport and recreation centres."*). The role of the built environment in discouraging sedentary behaviour was mentioned in three policy documents: *Healthy Spaces and Places*,[55] *Active Living for All*[103] and the *WA Health Promotion Strategic Framework*.[112] For example; *"Our sedentary, car-dependent lifestyles are significant contributing factors to the prevalence of preventable health issues. Development practices have contributed to these problems by often giving priority to cars (vehicular movement), rather than encouraging people to walk, cycle and use public transport"* (Healthy Spaces and Places). The role of the built environment in preventing obesity was mentioned in the *WA Health Promotion Strategic Framework*[112] and *Healthy Spaces and Places*.[55] For example; *"A comprehensive, cross-sectoral approach is needed to create an environment that supports people to achieve and maintain a healthy weight."*

3.4. Inclusion of Children in Policies

Only five state, and no national policy documents recognised the specific needs of children through the built environment (see **Table 4**). Only the Pathway to a Healthy Community – A Guide for Councillors and Local *Government*[113] outlined specific strategies for different age groups of children, recognising that the needs of 0–6-year-old children are different to 7–12-year-old and 13–16-year-old age groups. An example of a policy that recognised that children have different physical activity or food-related built environment needs compared to adults is *Planning and Designing for Pedestrians: Guidelines 2016*[114] in which children were identified as a specific group who had unique pedestrian requirements:

"Young children are often considered to be smaller adults; however, they have special characteristics that require specific design considerations. Their smaller size limits their ability to be seen and see from the kerb, and children do not have the perceptual or cognitive capacity to make sound judgements about traffic safety until about 12 years of age."

However, children's specific requirements were only addressed in this policy document in relation to children's crossings and as pedestrians around schools. It also stated that there was a need to collaborate with specific groups of people, however, it was not clear that children were one of these groups. Some policy documents, such as the *Strategic Directions 6,*[115] mentioned the need for consideration of people across the life course but did not specify which people or sub-groups.

Table 4. Built environment relevant policies that refer to children.

Policy	Relevance to children
Planning and Designing for Pedestrians*	Children's crossings and specific strategies around schools.
Pathway to a Healthy Community*	Provides prompting questions to guide local government in planning the built environment for young children and young people. For example: Are there appropriately equipped playgrounds in the municipality? How many, and where are they?
Active Living for All*	Includes children as a target group with specific strategies. For example: Design multi-purpose public open spaces that are functional and accessible and cater for the needs of children, adolescents, adults, and seniors of all abilities.
Driving Change – Road Safety*	Includes children's road safety as a target with some specific strategies included.
Sustainable Health Review*	Has a focus on the early years but not specific to the built environment.

* Denotes Western Australian policies

3.5. Policies with Built Environment Targets

Seven of the reviewed documents included specific targets related to the built environment factors identified in **Table 1** (see **Table 5**). Most of the specific targets were related to active transport. For example: *"To plan for activity centres to include about 10-15 minutes walking time, or an 800 metre distance, for rail stations and about 5-7 minutes walking time, or 400 metres, for bus stops located on bus routes'; 'Increase the number of walking trips per adults per week by 10 percentage points'; 'Public open space to be provided within 300 metres (of safe walking distance) for all'; 'Public transport, walking and cycling will account for an increased*

modal share in our major cities'; and '30 per cent of all passenger trips in our capital cities." However, it is worth noting that it was not specified whether these targets were relevant for children.

Table 5. Policies with built environment targets.

Policy	Example of targets presented
Development Control Policy 1.6*	Public transport: about 10-15 minutes walking time, or an 800 metre distance, for rail stations; about 5-7 minutes walking time, or 400 metres, for bus stops located on bus routes.
Public transport for Perth 2031 Planning Document*	Acceptable walking distance to public transport (400 – 1,000 metres).
Liveable Neighbourhoods 2015 WA*	Public open space to be provided within 300 metres (of safe walking distance) for all.
Walk WA: A Walking Strategy for WA 2007–2020*	Increase the number of walking trips per adults per week by 10 percentage points.
Planning and Designing for Pedestrians*	Pedestrian networks need to provide access to mixed-use centres and bus routes within a 400 metre walk and access to train stations within 800 metres of strategic and secondary activity centres.
State Planning Policy 4.2*	Extent of the walkable catchment is either 200 metres, 400 metres or 800 metres depending on the centre type.
Moving Australia 2030	Public transport, walking and cycling will account for an increased modal share in our major cities, and 30 per cent of all passenger trips in our capital cities.

* Denotes Western Australian policies

Implementation and evaluation were mentioned in the text of all the policy documents but only five documents included an implementation or evaluation plan. Where an implementation or evaluation plan was mentioned in the other documents, it was not found in a search of the department website.

Discussion

This project investigated how Western Australian and national policies address the health of children through the built environment's influence on obesity and the modifiable risk factors for obesity, physical activity, sedentary behaviour, and diet. The key findings of the review of policies are discussed in this section.

4.1. Policies Did Not Specifically Focus on Children or Have Their Input

The health, wellbeing and/or quality of life of the community was a stated objective of most policy documents reviewed. However, the community was mostly considered as one and sub-groups were not defined. Overall, there was a lack of focus on children in the policies reviewed. Only five of the policies specifically addressed the needs of children through the built environment. Research evidence indicates that children and adults differ in the way the built environment impacts their health-related behaviours. For example, high density and well-connected communities support active transport in adults and older children. However, high density can lead to traffic and safety issues that can prevent active transport to school for younger children and reduce their independent mobility.[116] Higher street connectivity (and therefore lack of cul-de-sacs) is also associated with less opportunity for young children's outdoor unstructured play.[51] Thus, built environment policy development, implementation and evaluation that does not consider the needs of children may result in negative unintended consequences for children and families. Two major built environment-related policy concerns when considering children are: a) how should city planners and urban designers balance the need for highly integrated/connected streets while minimising traffic volume?, and b) how can child-friendly destinations be better integrated together in a neighbourhood?[117] These questions need to be considered in policies to address the influence of the built environment on childhood obesity.

It is important to recognise that built environment policy may have markedly different impacts on children of different ages. For example, the density of farmers' markets in the neighbourhood was negatively associated with obesity among primary school students; the association, however, was not significant among high school students.[118] For the two groups of students in the same study, the associations with the density of fast-food restaurants were the opposite. This can be explained by adolescents' increased mobility and, therefore less reliance on eating meals prepared at home.[118] In terms of physical activity, adolescents appear to be more active in non-green urban spaces[119] and parks that offer them some form of challenge, such as adventure equipment.[120] Young children are more active when playground equipment is present and there are trees to climb, rocks and other forms of nature for creative play.[121] Overall, the specific requirements of

children as well as different age groups of children need to be addressed in policies that consider the built environment.

While consideration of children in built environment policy is important, so too is the place-based culture of neighbourhoods. Place-based culture, the ideas, meanings, and mental representations prevalent in an area can both moderate and mediate the effects of the built environment on obesity and other child health outcomes.[122] In addition, racial and ethnic groups often have different preferences for activity spaces. This, for example, can influence the degree to which different groups of children utilise certain types of parks[123] or all parks.[124] Policies, and particularly policy implementation, need to acknowledge the place-based culture of neighbourhoods.

A focus on children in the built environment can be achieved through seeking their voices in the development and review of policy. This was not evident in the policies reviewed in this research. The current literature demonstrates the potential benefits for children and the community of consulting with children when developing policy. Encouraging and enabling children's participation in urban planning in an on-going and systematic way can lead to empowering a new generation of youth to engage with planning.[125] In this process, children can provide insight into what features they need in the built environment to enable them to live active and healthy lives. Designing neighbourhoods for, and with, children is gaining attention worldwide and is exemplified by the Australian and global movements towards creating 'child-friendly cities'. A local example of this is the City of Kalamunda child consultation project.

City of Kalamunda

The City of Kalamunda is committed to providing healthy, sustainable spaces and opportunities for children to develop their physical and social skills, while engaging in outdoor play. Following community consultation, recommendations included: Revitalisation of Stirk Park to create all abilities and nature play experiences, a watercourse to assist with storm water conveyance, location of fitness opportunities and circuit paths around the park, and inclusion of a new skate park.

Another initiative demonstrating the City of Kalamunda's commitment to environments promoting physical activity was funding received under the Western Australian Bicycle Network Grants to design and deliver improved bicycle routes in High Wycombe. The High Wycombe Shared Path Decorative Project included shared paths connecting people to the new train station.

The City, in partnership with The Place Team, facilitated a workshop, interactive survey and outcomes report to engage with young people in the community. Four themes emerged important to young people: the natural environment & sustainability, transportation and inspiration, play and active fitness, storytelling, and animals. The results were used to inform a final art design brief for a local Indigenous artist. Following treatment designs being supported, installation of the works was scheduled.

4.2. Policies Did Not Focus on Child-Relevant Built Environment Features

While 21 of the 41 policies addressed children's need for structured and unstructured outdoor physical activity through a focus on parks and recreation facilities, the home yard or immediate neighbourhood were not considered in the policies reviewed. In young children, the home yard is an important behaviour setting for supporting young children's active play and unstructured physical activity. Yet in many Australian major cities, larger houses are being built on smaller blocks with little private space available for children to be active outdoors at home.[126] International research also shows that decreased "doorstep" play space for children, loss of vegetation and increased traffic have negatively impacted children's outdoor play.[127] Providing amenities such as neighbourhood vegetation, numerous proximate and safe play spaces, and low-traffic zones are important tools for policy makers and designers to support children's outdoor play, an essential component of child development and health.

Providing proximate and safe play spaces can help to increase the independent mobility of children. Greater independent mobility facilitates increased physical activity for both boys and girls and is particularly important for children in the 10-to-12-year age group, the age children are transitioning to secondary

school.[128] However, poor parental perceived safety (regardless of actual levels) can negatively impact children's independent mobility and decrease their physical activity levels.[45] While 22 of the policy documents included mention of safety, it was uncertain whether this referred to perceived safety or objective measures of crime (e.g., child abductions) or traffic safety (road volumes, traffic calming measures). Addressing parent perceptions of safety through built environment policies will help to improve the independent mobility of children, increase their physical activity levels, and help prevent obesity.

More than half of the policies reviewed addressed the impact of the built environment on children's physical activity. Few policies considered the built environment's impact on children's sedentary behaviour. This is not surprising considering the relatively scant and inconsistent findings of the relationship between the built environment and children's sedentary time. However, there is some evidence that these associations differ by age group and gender and by whether the measures used are objective (accelerometry) or subjective (e.g., child or parent reported).[129] Children's sedentary behaviour and built environment research needs to be further advanced to inform the development of health-promoting policies for children. In addition, the food environment received little attention in the policies reviewed. Although further research is needed, specific placement of convenience stores and supermarkets and restrictions on outdoor unhealthy food marketing within neighbourhoods and around schools, enforced through policies and laws, could contribute to preventing the rise in obesity in children.

4.3. Policy Implementation and Evaluation Information Needed

It was difficult to know to what extent policy documents had been implemented or evaluated, as government websites did not always include links to the evaluations or reviews. It is essential that policies relevant to planning healthy communities have strong implementation plans, with designated funding, clear targets and a commitment to evaluation.[7] It is also important for policy design and implementation to become an integrated process rather than discrete stages.[130] A review of the implementation of the Liveable Neighbourhoods policy found greater emphasis on policy implementation was needed.[131] The review concluded that creating truly liveable, health promoting communities requires a dedicated process of implementation that needs to be combined with regional planning.[131] In addition, ongoing evaluation of policies is required and needs to be readily accessible to the public. Policy implementation and evaluation needs to guide future policy and program development. Future research can assist with evaluating the impact of built environment policy through natural experiments of the impact of changes to the built environment on childhood obesity.

Improved policy implementation and evaluation requires a clear understanding of 'if' and 'how' key policies are used. For example, what influence do policies have on built environment initiatives around schools as barriers (i.e., traffic management and increased car parking provision) compared with enablers (i.e., motor

vehicle speed management, path location and width, kerb ramps and safe road crossing points) of active school transport? Further research is needed to understand the interplay of different built environment and child health-relevant policies and government and non-government decision-makers who do or do not consider such policies in their day-to-day operations. One possible way forward is for all built environment-related polices and large- as well as small-scale changes to the built environment to undergo a 'child impact assessment'. This could be a relatively simple question to ask whether there are any negative unintended consequences of the proposed built environment policy, practice, or decision, on children.

A greater use of policy implementation-based targeted goals and measures are needed.[13,132] Short-, medium- and long-term policy targets may support implementation of more ambitious, evidence-informed policy.[13] Commitment to using built environment indicators to measure the impacts and outcomes of policies and to monitor progress towards reform, may assist policy makers to achieve their policy goals of creating healthy, liveable and sustainable cities.[133] Indicators can be well used in policy and practice contexts if made accessible and directly linked to the needs of policy makers and practitioners.[134] Furthermore, indicators could be used by children, families, the community and stakeholders to advocate and mobilise policy action for healthier built environments for children.

4.4. Collaborative Approach to Child-Relevant Built Environment Policy Development

While there was some evidence of policy documents jointly developed across different government sectors and evidence of input by various stakeholders, this was not universal. Collaboration in built environment policy development is vital given the many ways the built environment can impact the wellbeing of children across childhood. Traditionally, policy making has tended to be developed in distinct administrative silos, even though most policy interventions are implemented at different levels of government and thus have wide reach and implications. Although there is a growing interest in improving inter-organisational partnering, this has been limited.[135] Policy design requires continuous collaboration with a range of stakeholders, including upstream and downstream organisations or individuals. In the case of built environment policies, it is important that consultation with children - including those with a culturally and linguistically diverse and Aboriginal and Torres Strait Islander background - occurs, to prevent the design of purely adult environments that ignore the needs of vulnerable population groups such as children.

Conclusions

While there was an emphasis in policy documents about how the built environment can support physical activity and enhance community health, child input into policy development and reference to child-specific built environment research were generally not evident. A stronger focus on children in policies will enable the design of built environments that will act to prevent obesity and ensure healthy communities into the future. Policies that are underpinned by research with clear and transparent implementation and evaluation plans are likely to be more effective in preventing the rise of childhood obesity.

Recommendations

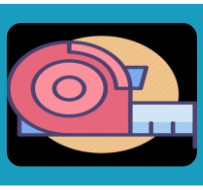
Below are the major recommendations from this policy review. This list is not exhaustive but is a starting point for round-table discussions to be conducted with policy makers and key stakeholders following the release of this report.

The voices of children need to be included in the development of policies related to the built environment and health.

Consideration of the way different sub-groups of children interact with the built environment (age and gender groups, and cultural and socio-economic backgrounds) is needed to develop policies that address the modifiable risk factors for childhood obesity.

Include child specific built environment features in policy development. While a “one size fits all” approach mostly applies, some built environment features support adult health while having a negative impact on child health.

Given the complexity of built environment-related policies, many components are needed to create healthy environments, thus collaboration between government sectors is needed to develop multi-sectorial policies.



A more rigorous and transparent process of policy implementation and evaluation is required. Increased use of targets and measurement tools will assist with this process.

Greater attention needs to be given to the development of a healthy food environment through built environment policy.

Further research is needed in some areas to better inform policy development (e.g., children’s sedentary behaviour and the built environment, outdoor advertising and its relationship to childhood obesity and the relationship between independent mobility and childhood obesity).

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Appendix One: Detailed Results Tables

Review of Australian policies related to the built environment, children and young people, physical activity, sedentary behaviour, diet, and obesity

1. Name and type of policy	2. Built environment and health related objective	3. Policy sector	4. Children	5. Specific goals and targets related to BE and health	6. Implementation and evaluation of the policy	7. BE factors relevant to child obesity*	8. BE and: PA Diet Sedentary behaviour Obesity	9. Other
Western Australian Policies								
Better places and spaces – a policy for the built environment WA **2013** https://www.dplh.wa.gov.au/getmedia/034a34c4-92d4-4b16-81fe-12527d4232fe/OGA_Better-Places-and-Spaces_-Policy	Refers to the built environment as places that need to be safe, attractive, functional, productive, sustainable, efficient, and inspiring and that good design contributes to the wellbeing, safety, and productivity of all users	Govt of WA	Not specified	None – broad statements	The Office of the Govt Architect is to oversee the implementation of this policy	1 6	None	Revolves around the concept of "Good Design"
State Planning Policy – Design of the Built Environment 7 **2019**	Good design encourages social engagement and physical activity in an inclusive, equitable	Department of Planning and Land	Not specified	Broad policy. Measures are expected to be a part of the action plans	Not presented	1 4 5 7	None	Design WA suite of policies

*Categories: 1. Aesthetics; 2. Street connectivity; 3. Mixed land use; 4. Parks and recreation facilities: 5. Safety; 6. Social connection; 7. Food outlets (convenience stores); 8. Home yard; 9. Outdoor advertising.

1. Name and type of policy	2. Built environment and health related objective	3. Policy sector	4. Children	5. Specific goals and targets related to BE and health	6. Implementation and evaluation of the policy	7. BE factors relevant to child obesity*	8. BE and: PA Diet Sedentary behaviour Obesity	9. Other
https://www.dplh.wa.gov.au/getmedia/30f0b7b9-9ac0-4711-8b68-c2d2708e5764/SPP-7-0-Design-of-the-Built-Environment	manner and considers how the activities inside buildings can bring life and activity to public spaces	Heritage (DPLH)		and other documents that it feeds into				
State Planning Policy 7.2 Precinct Design **2020** https://www.dplh.wa.gov.au/getmedia/72f825b7-0058-4d6e-bbab-aba04acbadd1/SPP-7-2-Precinct-Design-Final	Development within precincts integrates landscape design that enhances sustainability outcomes and contributes to community wellbeing	DPLH	Not specified	None	Relevant to precinct structure plans, local development plans, subdivision, and development. These planning proposals are to be prepared and determined in accordance with this policy	2 5 6 7	None	As above
State Planning Policy 7.3 – Residential Design Codes **2019**	No direct objectives related to health and the built environment	DPLH	Not specified	None	These design codes are introduced into local planning schemes under	1 4	None	As above

1. Name and type of policy	2. Built environment and health related objective	3. Policy sector	4. Children	5. Specific goals and targets related to BE and health	6. Implementation and evaluation of the policy	7. BE factors relevant to child obesity*	8. BE and: PA Diet Sedentary behaviour Obesity	9. Other
https://www.dplh.wa.gov.au/rcodes					the Planning and Development (Local Planning Schemes) Regulations 2015			
The Public Health Act WA 2016 https://www.legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc_43155.pdf/$FILE/Public%20Health%20Act%202016%20-%20%5B00-k0-00%5D.pdf?OpenElement	An Act to protect, promote and improve the health and wellbeing of the public of Western Australia and to reduce the incidence of preventable illness, and to provide, to the extent reasonably practicable, a healthy environment for all Western Australians	Govt of WA	Not specified	None	Not presented	None	None	
Development Control Policy 1.6 Planning to	No mention of health however, one objective	DPLH	Not specified	About 10-15 minutes	Implemented through	2 5	BE and PA	An old document

*Categories: 1. Aesthetics; 2. Street connectivity; 3. Mixed land use; 4. Parks and recreation facilities: 5. Safety; 6. Social connection; 7. Food outlets (convenience stores); 8. Home yard; 9. Outdoor advertising.

1. Name and type of policy	2. Built environment and health related objective	3. Policy sector	4. Children	5. Specific goals and targets related to BE and health	6. Implementation and evaluation of the policy	7. BE factors relevant to child obesity*	8. BE and: PA Diet Sedentary behaviour Obesity	9. Other
Support Transit Use and Transit Oriented Development **2006** https://www.dplh.wa.gov.au/getmedia/7fabf297-5bf3-4b6b-a389-0030c16a2ad8/DCP_1-6_transit_use	is: To promote and facilitate walking and cycling within transit-oriented precincts by establishing and maintaining high levels of amenity, safety, and permeability in the urban form.			walking time, or an 800 m distance, for rail stations, and about 5-7 minutes walking time, or 400 m, for bus stops located on bus routes	consideration of proposed planning and advice to other departments			that doesn't appear to have been updated
Liveable Neighbourhoods WA (draft) Operational Policy **2015** https://www.dplh.wa.gov.au/getmedia/afb82ec4-31a5-4a14-8af4-c840b3c2b81e/FUT-LiveableNeighbourhoods_2015	The urban structure must facilitate walking, cycling and public transport - providing access to facilities for all users, opportunities for social interaction, and promoting more active living. Active communities have healthier residents, are more connected, safer,	DPLH Western Australian Planning Commission (WAPC)	Not specified	Walkable neighbourhoods represented by approx. circles of 400-450 m radius around proposed centres. Cluster six to nine	Neighbourhood Design (not complete) is a review of Liveable Neighbourhoods (LN). LN is used as the operational policy for the design and assessment of structure plans (regional, district	1 2 3 4 5 6	BE and PA	Aligned to the State Planning Strategy 2050. It supports Perth and Peel @ 3.5million, Directions 2031 and Beyond,

1. Name and type of policy	2. Built environment and health related objective	3. Policy sector	4. Children	5. Specific goals and targets related to BE and health	6. Implementation and evaluation of the policy	7. BE factors relevant to child obesity*	8. BE and: PA Diet Sedentary behaviour Obesity	9. Other
	cohesive and productive.			neighbourhoods to provide an adequate population Public open space to be provided within 300 metres (of safe walking distance) for all	and local) and subdivisions, for new urban and suburban (predominantly residential) areas in the metropolitan area, country centres, and on greenfield and large brownfield and urban infill sites			State Planning Policy 3: Urban Growth and Settlement
State Planning Policy 4.2 – Activity Centres for Perth and Peel **2010** https://www.dplh.wa.gov.au/getmedia/4386f155-219a-405f-97b7-	Maximise access to activity centres by walking, cycling and public transport while reducing private car trips. Plan activity centre development around a legible street	DPLH	Not specified	Extent of the walkable catchment is either 200m, 400m or 800m depending on centre type; and a walkable	Not presented	1 2 3 4 5	None	

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e012e4963683/SPP-4-2activity_centres_policy_2	network and quality public spaces			catchment is measured from rail stations, major bus transfer stations or stops located on high-frequency bus routes				
Western Australian Strategies, Plans and Frameworks								
Directions 2031 and Beyond (Framework and Strategic Plan) **2010** https://www.dplh.wa.gov.au/projects-and-initiatives/planning-for-the-future/directions-2031	New urban areas must be planned to reduce dependency on private vehicle use…Increasing congestion will lead to declining community health and increasing obesity as walking and riding become less practical	DPLH WAPC	Not specified	No specifics	Implementation and outcomes measures for Directions 2031 remain to be developed	2 4 5	BE and PA	Developed using: The State Planning Strategy and State Planning Policies 1 – 6
State Planning Strategy 2050	The provision of well-designed buildings,	DPLH	Not specified	No specifics	This Strategy provides a State	1	BE and PA	The State Planning

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2014 https://www.dplh.wa.gov.au/projects-and-initiatives/planning-for-the-future/state-planning-strategy-2050	movement corridors, public open spaces and civic places improves the safety, health, cohesion and economy of the State's communities	WAPC			strategic context from which public authorities and local governments participating in or influenced by the planning system can express and frame their respective legislative mandates. It is reviewed every five years by the WAPC	2 3 4 5 7		Strategy 2050 is an overarching strategic document that provides direction for all State, regional and local planning strategies, policies and approvals
Strategic Directions 6 2016 – 2020 (Planning Document) **2016**	Urban parklands and green spaces for sport and active recreation are integral components of urban infrastructure and	WA Dept Sport and Recreation	Refers to people across the life-course	No specifics Identified strategic challenges	States that it will review movement towards the strategic challenges regularly	4 5 6	BE and PA	

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https://test-dlgsc-sitefinitycms-ause.azurewebsites.net/docs/default-source/sport-and-recreation/strategic-directions-6.pdf?sfvrsn=fc3dec13_1	make a significant contribution to community health…we must be efficient with resources, focus on the function of sites etc.							
Perth and Peel @ 3.5 million (Planning Framework) **2018** https://www.dplh.wa.gov.au/getmedia/404a6895-f6ec-4829-87df-8de5b80075b8/FUT-PP-Perth_and_Peel_Sub_Region_March2018_v2	Ensure the green network contributes towards an active and healthy community. Identify sites to meet the growing requirement for regional sport and recreation facilities	DPLH WAPC	Not specified	None although there are infill targets	Implementation plans included in frameworks	2 3 4	None	Four detailed land use planning and infrastruct-ure frameworks have been developed to align with Directions 2031 and Beyond and the State Planning Strategy 2050

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Public Transport for Perth 2031 (Planning Document) **2011** http://www.ppt.asn.au/pubdocs/ABOUT_P_PT_Plan2031.pdf	Public transport has the added benefit of promoting more active lifestyles simply by encouraging individuals to walk or cycle to the bus stop/train station	Dept of Transport	Not specified	Acceptable walking distance to public transport (400 – 1,000 metres)	Not within this document	2	BE and PA	Developed using Directions 2031 and Beyond
WA Health Promotion Strategic Framework 2017 – 2021 **2017** https://ww2.health.wa.gov.au/-/media/Files/Corporate/Reports-and-publications/HPSF/WA-Health-Promotion-Strategic-Framework-2017-2021.pdf	A more active WA: Promote environments that support physical activity and reduce sedentary behaviour; Reduce barriers and increase opportunities for physical activity across all populations Curbing obesity: Promote environments	Dept of Health	Not specified although does discuss childhood obesity. A guiding principle is: Taking a life - course approach	All Australian State and Territory Govts are signatories to the National Healthcare Agreement 2016. This sets specific performance benchmarks. The WA Dept	Strategic directions outlined. Uses the Research and Evaluation Framework Implementation Guide	2 4 6	BE and PA BE and SB BE and Obesity	Aims to reduce chronic disease

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	to develop healthy weight			Health reports against these indicators to the Common-wealth				
Sustainable Health Review (Strategy paper) **2019** https://ww2.health.wa.gov.au/-/media/Files/Corporate/general-documents/Sustainable-Health-Review/Final-report/sustainable-health-review-final-report.pdf	Built Environment not mentioned however one of the recommendations is: Health actively partner in a whole-of-government approach to supporting children and families in getting the best start in life to become physically and mentally healthy adults	Dept of Health	Outlines strategies for children in the early years	None	Outlines outcomes and an implementation plan	7 9	BE and Diet	
WA Hiking Strategy: Bushwalking and trail running in Western Australia 2020 – 2030 **2020**	Trail planning and development to consider short- and long-term community, health, social, economic, and	Dept of Local Govt, Sport and Cultural Industries	Not specified	None	An implementation plan is to be developed	4 5	BE and PA	

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https://www.dlgsc.wa.gov.au/docs/default-source/sport-and-recreation/wa-hiking-strategy-bushwalking-and-trail-running-in-wa-2020-2030_web.pdf?sfvrsn=27d72990_6	environmental considerations	and; Dept of Biodivers-ity, Conserv-ation and Attraction						
WA Bicycle Network Plan 2014 – 2031 (Planning Document) **2013** https://westcycle.org.au/wp-content/uploads/2017/08/WABN_Plan_Final.pdf	Encourage cycling to build active and healthy communities and provide a high quality inter-connected cycling network	Dept of Transport	Not specified	None	An implementation reference group was developed. Specific roles outlined for various departments	2 5	BE and PA	
Healthy Weight Action Plan WA 2019 – 2024 **2019**	A key function of the Action Plan is to enable and maintain	Dept of Health	Not specified except in	Halt the rise in obesity in WA by July 2024	To be implemented by	None	None	This Action Plan complement

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https://apo.org.au/sites/default/files/resource-files/2019-11/apo-nid269176_5.pdf	innovation and continuous quality improvement in the way the public health system plans, funds and delivers early intervention and weight management services and programs *NOTE: There is no reference to the built environment except in the companion resource that discusses the obesogenic environment*	WA Public Health Alliance	the statistics presented	and have the highest percentage of population with a healthy weight of all states in Australia by July 2029	the WA Obesity Collaborative			the existing preventive work outlined in the WA Health Promotion Strategic Framework 2017–2021, outcomes from the Preventive Health Summit Summary Report, and the State Public Health Plan for WA 2019–2024
State Public Health Plan for WA 2019 – 2024	Improve the surrounding	Dept of Health	Not specified	No specific targets. Local	Annual review	1 4	BE and PA BE and Diet	

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2019 https://ww2.health.wa.gov.au/-/media/Files/Corporate/general-documents/Public-Health-Act/State-public-health-plan/State-PH-Plan-2019-2024/State-Public-Health-Plan-WA.pdf	environment to create vibrant, liveable neighbourhoods that offer a sense of belonging, culture and spirit, and by facilitating behaviour change to support people to lead healthier lifestyles. Develop built environment policies to incorporate healthy urban design principles in the local environment		although one of the targets is reducing childhood obesity	govts to develop their own targets		5 6 7		
Public Parkland Planning and Design Guide WA **2014**	Our parklands are important community assets that help keep us healthy, active and socially connected. To	Dept Sport and Recreat-ion; Dept	Not specified	None	Not referred to as this document is just guidelines	2 4 5	BE and PA	

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https://www.dlgsc.wa.gov.au/docs/default-source/sport-and-recreation/public-parkland-planning-and-design-guide-(wa).pdf?sfvrsn=9584b7c0_1	maintain these valuable assets, it is important that parklands continue to meet the needs of current and future generations	of Water; WAPC						
Walk WA: A Walking Strategy for WA 2007 – 2020 **2007** https://www.readkong.com/page/walk-wa-be-active-wa-sport-and-recreation-5667748?p=2	By 2020, Western Australia will be a vibrant, safe, accessible place with a supportive walking environment where all Western Australians enjoy walking for health, recreation, or transport	Premier's Physical Activity Task Force, Department for Planning and Infrastructure	Not specified	Has many specific targets such as: increase the proportion of walking trips per adult of less than 10 minutes by 10 percentage points. Increase the number of walking trips per adults per	Has an implementation and evaluation plan	1 4 5	BE and PA	

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				week by 10 percentage points				
Active Living for All – A framework for physical activity in WA 2017 – 2019 **2017** https://www.dlgsc.wa.gov.au/docs/default-source/sport-and-recreation/active-living-for-all-2017-19.pdf?sfvrsn=709284e5_1	Active living is supported by the places in which we live – through the built environment such as pedestrian and cycle paths and end-of-trip facilities, sport and recreation facilities, public open space, parks and town squares	Govt of WA in collaboration with the Dept Health, Dept Transport, Dept Education and Dept Planning	Refers to children and young people with some specific objectives for each group	Aim includes guidelines of 30 mins/day PA for adults and 60 min/day for children	Outlines priorities for implementation but no specific plan	1 2 4	BE and PA BE and SB	
Pathway to Increasing Active Living – a guide for Local Government **2015**	Create social and physical environments that encourage and support health and wellbeing	South Metropolitan Population	Not specified but includes children	None	It outlines how to plan and includes sections on how to implement and evaluate the plan	2 4 5	BE and PA	

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https://smhs.health.wa.gov.au/Opathwur-services/Health-promotion/~/media/3A30E36A19FA477CBD097A0B78C36DA0.ashx		Health Unit	and young people as priority groups					
Planning and Designing for Pedestrians (Guidelines) **2016** https://www.transport.wa.gov.au/mediaFiles/active-transport/AT_WALK_P_plan_design_pedestrians_guidelines.pdf	Creating communities that encourage people to choose walking as a mode of transport is a way to foster more sustainable, healthier and safer communities	Dept of Transport, Dept of Planning, WALGA, IPWEA, Disability Services	Children are specific-ally consider-ed through-out the guidelines	Pedestrian networks need to provide access to mixed use centres and bus routes within a 400m walk, and access to train stations within 800m of strategic and secondary activity centres	Not presented	2 5	BE and PA	

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Reducing Crime and Anti-Social Behaviour in Pedestrian Access Ways (Guidelines) **2009** https://www.dplh.wa.gov.au/DepartmentofPlanningLandsHeritage/media/Policies/Guidelines/GD_reducing_crime.pdf	To provide a tool for use by local government in assessing and responding to crime risks associated with pedestrian access ways	Dept of Planning Office of Crime Prevent-ion	Not specified	None	Not presented	2 5	BE and PA	
WA Guidelines for Community Infrastructure **2007** https://smartnet.niua.org/sites/default/files/resources/guidelines_for_community_infrastructure.pdf	States the need for community facilities, which include recreation facilities and public open space, to be accessible to all and designed to create social connectivity	Parks and Leisure Activities WA	Not specified	None	Not presented	4 5 6	BE and PA	

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Driving Change – Road Safety Strategy WA **2020** Driving Change - Road Safety Strategy 2020-2030 (www.wa.gov.au)	One objective is to increase awareness amongst new and current drivers of how to safely share the road with bike riders, pedestrians and others	Govt of WA	Specific-ally addresses children's road safety	None	Not presented	5	BE and PA	
Safe Active Streets (Program) **2015** https://www.transport.wa.gov.au/activetransport/safe-active-streets-program.asp	The program is a key strategy to provide safe walking and riding routes through suburbs to local amenities including schools, parks and shops	Dept of Transport	Not specified although does say it aims to cater for people of all ages	None	Not presented	2 5	BE and PA	
Designing Out Crime (Planning Document) **2005** https://www.dplh.wa.gov.au/getmedia/87627346-3ade-4e6a-99f0-	The proper design and effective use of the built environment can lead to a reduction in the fear and incidence of crime and an improvement in the quality of life	WA Planning Commiss-ion	Not specified	Distinct performance criteria presented	Not presented	3 5	None	

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31365a215f3c/GD_designing_out_crime								
Pathway to a Healthy Community – A Guide for Councillors and Local Government **2017** https://smhs.health.wa.gov.au/~/media/HSPs/SMHS/Corporate/Files/Hlth-prom/Pathway-healthy-community.pdf	Health and wellbeing are influenced by the built, natural, social, and economic environments in which we live, work and play	Govt of WA South Metropol-itan Health Service	Specific-ally addresses the needs of children and adoles-cents	None	Provides guidance for implementation and evaluation	Most of these were mention ed in the "Prompti ng Question s" sections	None	The document Pathway to Active Living provides more detail
Department of Transport Strategic Plan 2020 – 2022 **2020** https://www.transport.wa.gov.au/mediaFiles/about-	Communities are safe, liveable and prosperous in line with government priorities: Safe drivers, vehicles and waterways	Dept of Transport	Not specified	None	Not presented	5	BE and PA	

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us/About_P_DoT_Strategic_Directions.pdf	Safe and effective coastal infrastructure							
National Policies								
Our cities, our future **A national urban policy for a productive, sustainable and liveable future** **2011** https://www.infrastructureaustralia.gov.au/sites/default/files/2019-06/Our_Cities_National_Urban_Policy_Paper_2011.pdf	Support community wellbeing by: Improving the quality of the public domain Improving public health outcomes Enhancing access to cultural, sporting and recreational activity	Dept of Infrastructure and Planning	Not specified	None	Will establish an Urban Policy Forum with key stakeholders and independent experts to advise on implementation Annual progress reviews	1 2 3 4 5	BE and PA	
National Strategies, Plans and Frameworks								
National Obesity Strategy **To be released soon – consultation has been completed.**	There is strong support for investing in infrastructure and urban planning that	COAG Health Council	This document has not been distributed to the public yet					

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https://consultations.health.gov.au/population-health-and-sport-division/national-obesity-strategy/results/nos-summaryconsultationreport.pdf	would promote healthy lifestyles							
Australia: State of the Built Environment (Report) **2016** https://soe.environment.gov.au/sites/default/files/soe2016-built-launch-20feb.pdf?v=1488792899	Without improved coordinated and integrated urban planning, increased population pressures, and poor design and planning are likely to have increasingly negative future consequences on liveability and… on the natural environment and human health	Australian Govt – Dept of Environment and Energy	Not specified	None	As it is purely a report it doesn't include implementation and evaluation However, includes assessments of various BE factors in a report card	2 3 4	None	

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Smart Cities Plan Commonwealth **2016** https://www.infrastructure.gov.au/cities/smart-cities/plan/index.aspx	Prioritises projects that meet broader economic and city objectives such as accessibility, jobs, affordable housing and healthy environments	Dept of Infrast-ructure Trans-port, Regional Developm ent and Common wealth.	Not specified	None	No implementation or evaluation of the plan included	2 4	None	
Healthy Spaces & Places – a national guide to designing places for healthy living **2009** HSP-Overview.pdf (heartfoundation.org.au)	Encourage the development of built environments that provide opportunities for physical activity and other health-related activities Continue to improve health outcomes for all Australians through better-designed built environments	Heart Foundat-ion, Aust. Local Govt Assoc, Planning Institute of Aust	Not specified	None	The checklist can be used in evaluation of plans and policies	1 2 3 4 6	BE and PA BE and SB BE and Obesity	

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National Primary Health Care (Strategic Framework) **2013** https://www1.health.gov.au/internet/main/publishing.nsf/Content/nphc-strategic-framework	No reference made to the built environment	Not specified	Discusses early childhood health	None	The Commonwealth and states will also work together to ensure the Framework is used to guide the development of regional level plans by Medicare Locals and Local Hospital Networks	None	None	
Moving Australia 2030 – transport plan for a productive and active Australia. **2013** https://resources.heartfoundation.org.au/images/u	To improve and sustain our natural environment; maximise the efficiency of our built environment; to improve the quality of community life; to improve the health of	Moving People 2030 taskforce	Not specified	Public transport, walking and cycling will account for an increased modal share in our major	Not presented	2	BE and PA	

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ploads/publications/Moving-Australia-2030.pdf	our cities, regions and population. Improve walking and cycling amenity and connectivity			cities, and 30 per cent of all passenger trips in our capital cities				
Australian Infrastructure Plan **2016** https://www.infrastructureaustralia.gov.au/sites/default/files/2019-06/Australian_Infrastructure_Plan.pdf	No reference to health but discusses the need for increased active transport: Transport strategies should integrate options for walking and cycling within broader networks	Common wealth Govt.	Not specified	None	Discusses the development of an Infrastructure Measurement Framework	2	BE and PA	
Investing in Cities **2015** https://www.asbec.asn.au/wordpress//wp-content/uploads/2015/07/150706-ASBEC-Policy-Investing-in-Cities.pdf	Urban design encourages physical activity and social interaction, and promotes a healthy lifestyle (Creating Places for People Protocol)	Australian Sustain-able Built Environ-ment Council	Not specified	None	Includes a Success Indicator Framework	1 2 4 6	BE and PA	

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Australian Children's Education and Care – National Quality (Standards and Framework) **2018** https://www.acecqa.gov.au/nqf/national-quality-standard	Educators will provide indoor and outdoor areas that are organised in ways to promote safe physical play and activity for children of different age groups and capabilities	Australian Children's Education and Care Quality Authority	Written specifically for early childhood	7 square metres per child needed for outdoor space 3.25 metres of indoor space per child	Assessment and regulation process involved	None	Touches on BE and PA	

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