



Local Development Plan

2021 > 2036

Cardiff Council - January 2025

Background Technical Paper Number 5

Deposit Plan

Health and Wellbeing



Cardiff Replacement Local Development Plan Deposit Plan 2021 to 2036

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1. OVERVIEW

This *Planning Healthy Places* technical paper provides the policy context, background evidence and data that supports the health and well-being strategic and detailed policies SP12 and HF1:

- **SP12: Securing health and wellbeing and resilience**
- **HF1: Health, wellbeing and development**

The Council will support developments that:

- i. Provide and promote infrastructure that prioritises walking and inclusive cycling
- ii. Provide and promote road safety measures to reduce vehicle speed
- iii. Provide accessible and well-maintained green infrastructure, open green spaces and blue spaces
- iv. Provide a food growing and food retail environment that enhances access to healthy food choices
- v. Provide local facilities that enable access to community, healthcare and social care services
- vi. Considers the capacity of existing healthcare facilities and help provide additional facilities where a need identified
- vii. Ensure low levels of air pollution
- viii. Delivers a range of homes, according to population need, that are insulated, warm, naturally lit and well-ventilated and have adequate kitchen facilities, cycle storage and access to outdoor spaces
- ix. Are supported by a Health Impact Assessment for major developments where appropriate, in line with the Welsh Government Health Impact Assessment Regulations.

2. INTRODUCTION

Health is ‘*a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity*’ (World Health Organisation, 1948) (1).

Health is inextricably linked to well-being, social and economic conditions, the physical environment we live in, individual health behaviours and skills, wider environmental factors and inequities in power, money and resources. Access to healthcare is also important, but only a very small part of what enables people to remain healthy throughout their lives (2).

The built and natural environment (buildings, homes, places, streets, routes, land, watercourses, natural habitats) and the activities undertaken in these (living, working, learning, playing, shopping, travelling, moving) determines the health and well-being of the population (3). Access to green open spaces, to healthy food, to opportunities for being active, to clean air, to well-designed buildings that promote well-being and to supportive services delivered from local facilities all help people and communities to maintain and improve their health and well-being.

3. PLANNING AND HEALTH

Spatial planning is intrinsically linked to health and well-being (4) (5) and has an important role in facilitating and enabling health and well-being and addressing health inequalities¹ through influencing and shaping urban and rural environments. The Health Map (6) (Figure 1) illustrates the impact and the influencing factors of the built and natural environment on health and well-being.

Figure 1 The Health Map



Source: H Barton and M Grant: 'A health map for the local human habitat'. *Journal of the Royal Society for the Promotion of Health*, 2006, Vol 126(6), 252-253

https://www.researchgate.net/publication/6647677_A_health_map_for_the_local_human_habitat

4. PLANNING POLICY CONTEXT

National planning policy identifies the role that the planning system can play in shaping the social, economic, environmental and cultural factors that influence health and well-being.

- *Planning Policy Wales Edition 12* (7) has a focus on promoting healthier places and includes facilitating accessible and healthy environments as a key planning principle and as a National Sustainable Placemaking Outcome. Planning can influence and deliver (5) (8):
 - infrastructure that prioritises walking and inclusive cycling
 - road safety measures that reduce vehicle speed and accidents
 - accessible and well-maintained green infrastructure, open green and blue spaces
 - a food growing and food retail environment that enhances access to healthy food choices

¹ Health inequalities are the unfair and avoidable differences in health status seen within and between countries. There is a social gradient between health and illness: the lower the socio-economic position, the worse the health. Also, poorer health status is generally observed in more deprived communities (2)

- local facilities that enable access to community, healthcare and social care services
- low levels of air pollution
- a range of homes, according to population need, that are insulated, warm, naturally lit, energy efficient and well-ventilated and have adequate kitchen facilities, cycle storage and access to outdoor spaces.

Through delivering the above and influencing the built and natural environment, planning can improve health and well-being and reduce health inequalities.

- *Future Wales: the national plan 2040* (9). The plan provides a framework for the provision of new infrastructure/growth and seeks to address key national priorities through the planning system, including improving the health and wellbeing of communities. It includes the following outcomes:
 - A Wales where people live and work in connected, inclusive and healthy places
 - A Wales where people live in distinctive regions that tackle health and socio-economic inequality through sustainable growth.

5. HEALTH POLICY AND STRATEGY CONTEXT

In addition to planning policy, the current health policy context influences the role of the built and natural environment on health and well-being:

- The *Well-being of Future Generations (Wales) Act 2015* (10). The Act provides a government wide policy framework centred on the sustainable development principle in Wales and enacts a ‘*Health in all Policies*’ approach by making a ‘*Healthier Wales*’ a required policy goal for all public bodies in Wales. This policy goal includes a section entitled ‘Place-making and designing-in community health and well-being’ and a sub-section ‘Enable places to support the health and well-being of people and communities’ (10).
- The Cardiff Well-being Plan 2023-2028 (11). The plan is a requirement set out in the *Well-being of Future Generations (Wales) Act 2015* for public services to work together through Public Services Boards to improve the well-being of each Local Authority area and contribute to the seven national well-being goals. The plan focuses on addressing inequalities and improving health across the well-being objectives.
- The *Socio-economic Duty Equality Act 2010* (12). The Act came into force on 31st March 2021 in Wales and places a legal responsibility on particular public bodies to have due regard, when they are making strategic decisions, of the need to reduce inequality of outcome resulting from socio-economic disadvantage.
- The *Active Travel (Wales) Act 2013* (13) has enabled the building of new and improved infrastructure for walking and cycling and promoted walking and cycling as a mode of transport.
- The *Public Health (Wales) Act 2017* (14). The Act aims to address a number of specific public health concerns, and to create social conditions that are conducive to good health

and where avoidable harms can be prevented. The Act included the requirement to produce a national strategy on preventing and reducing obesity (15) and to undertake health impact assessments on key decisions. The Health Impact Assessment (Wales) Regulations (16) are included under the Act.

6. HEALTH IMPACT ASSESSMENT (HIA)

Health Impact Assessment (17) is '*A combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population*'.

HIA (18) is viewed as '*a systematic, objective and practical assessment process that can help identify links across the wider determinants of health and well-being and any impacts of a policy, programme or project on the health and well-being of the population or specific group affected*'.

Planning Policy Wales (7) recognises that when used in the planning system, HIA can make a 'valuable contribution towards plan making' and ensure that health and well-being is maximised for the local population.

Undertaking health impact assessments during the design and determination of planning applications ensures that health and wellbeing, including health inequalities, are considered and addressed, resulting in the creation of healthy places that support residents' mental and physical health and wellbeing. HIA has successfully been used to demonstrate positive outcomes of policies and plans on the health and well-being of population groups on various topic areas including planning and health. Examples of HIAs are available on the Wales Health Impact Assessment Support Unit (19) website.

7. KEY DEMOGRAPHIC AND POPULATION HEALTH INDICATORS FOR CARDIFF

This section outlines some key demographic and population health indicators for Cardiff. These issues are important factors to consider when planning new developments or regenerating areas of the city so that healthy spaces are created for the population and that the focus remains on improving health and addressing health inequalities.

The Cardiff Replacement Local Development Plan 2021-2036 notes the following key population demographics for Cardiff:

- The population of the city has increased steadily over the last 20 years and Welsh Government projections indicate that Cardiff will continue to experience growth up to 2036 (20)
- Large inequalities exist within the city with deprivation in terms of housing, physical environment, employment, income, educational achievements and health generally

concentrated in the ‘southern arc’. The gap in life expectancy between the most and least deprived areas has been growing.

- Cardiff has a diverse cultural background and ethnic minorities comprise 15.3% of Cardiff’s population (20). This is much higher than the Welsh average of 4.4%, and by far the highest of the Welsh local authorities.
- The population of the city is getting older, and is predicted to continue to do so.

7.1 INEQUALITIES IN CARDIFF

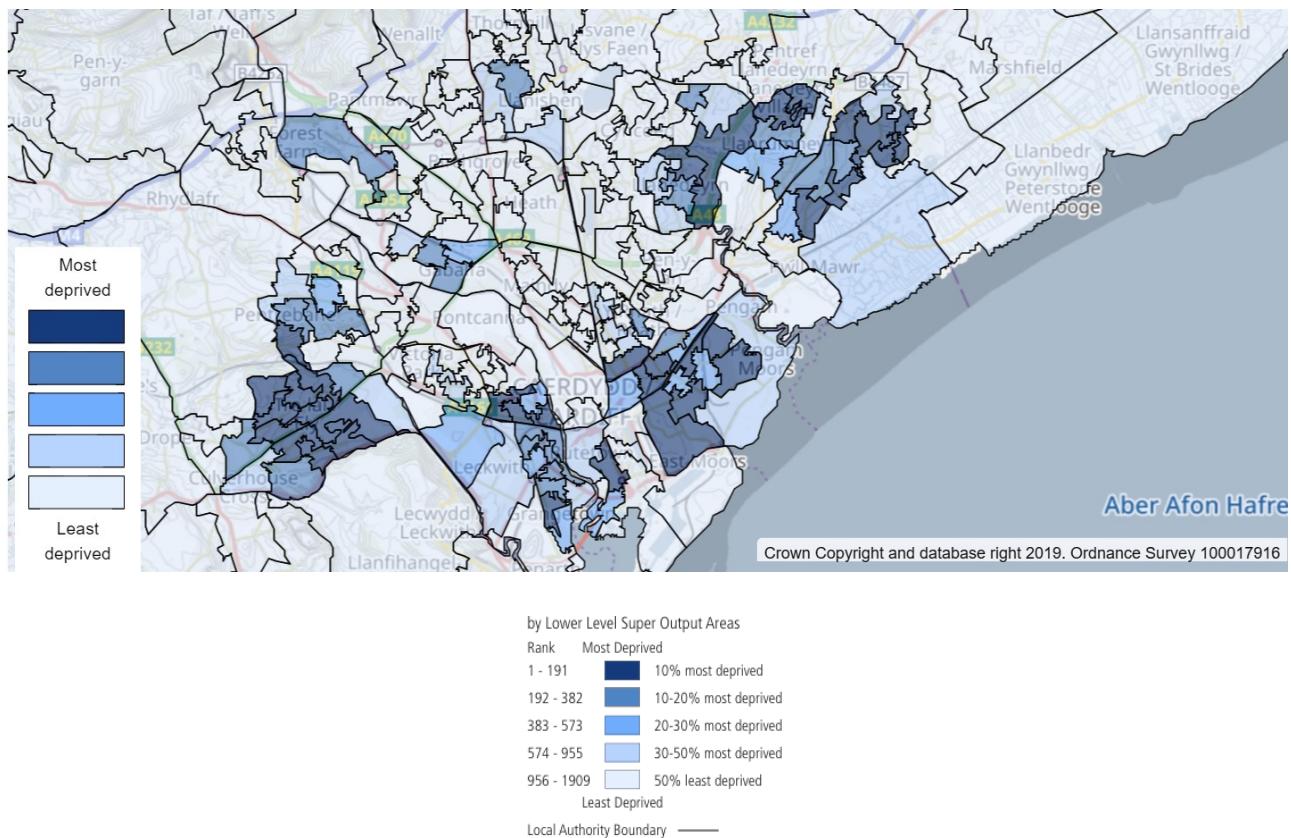
Health Inequalities

Health inequalities are the unfair and avoidable differences in health status seen within and between communities. There is a social gradient between health and illness: the lower the socio-economic position, the worse the health. Also, poorer health status is generally observed in more deprived communities (2).

Cardiff is above the Wales average in the proportion of Lower Super Output Areas (LSOAs) in the 10% most deprived areas in Wales; almost one fifth of the LSOAs in Cardiff are ranked in the most deprived in Wales. Over the last ten years, health has deteriorated and health inequalities widened in Cardiff (21). There are clear health inequalities across the city, with wards in the ‘Southern Arc’ generally more deprived in terms of health (20). The ‘Southern Arc’ is an area with a population of approximately 155,000 people made up of the following electoral divisions: Adamsdown, Butetown, Caerau, Canton, Ely, Grangetown, Llanrumney, Riverside, Rumney, Splott and Trowbridge (11). Figure 2 (22) illustrates the areas in Cardiff experiencing the poorest health.

Additionally, across a range of personal well-being measures (levels of happiness, satisfaction, anxiety and feeling worthwhile), well-being deteriorates as deprivation increases in Cardiff (20).

Figure 2: Welsh Index of Multiple Deprivation 2019. Health Domain. Cardiff (22)



Source: Stats Wales. WMID Maps from 2019. Map of health deprivation [WIMD - Explore \(gov.wales\)](https://wimd-explore.gov.wales)

In 2010 (23), it was estimated that reducing health inequalities in England had the potential to save £31.3 billion per year in productivity losses and £20.32 billion per year in lost taxes and higher welfare payments. Additional NHS healthcare costs associated with inequality were estimated to be in excess of £5.5 billion per year. Similar costs in Wales would likely to have been seen at that time.

Life expectancy

The gap in life expectancy (21) between the least and most deprived populations in Cardiff has been generally increasing in recent years for both males and females, suggestive of growing inequality.

In 2018-2020:

- Life expectancy in Cardiff was 82.8 years for females and 78 years for males
- The gap in life expectancy for males was 9.2 years and for females 7.8 years between least and most deprived areas illustrating those in more deprived areas have seen their life expectancy declining, while it has increased in more advantaged areas.

Healthy life expectancy

Healthy life expectancy (years of life lived in good health) (21) differs greatly between the least and most deprived areas. Those living in the most deprived areas experienced poorer health for longer and die at a younger age

In 2018-2020:

- Healthy life expectancy was 65.9 years for females and 62.9 years for males showing a little increase for men and a slight fall for women
- Gap in healthy life expectancy at birth (comparing least to most deprived fifth), for males was 13.7 years and for females 18.5 years

This inequality in health leads to people in the most deprived areas often experiencing more complex conditions, needing to access health and social care more frequently, and having a poorer quality of life.

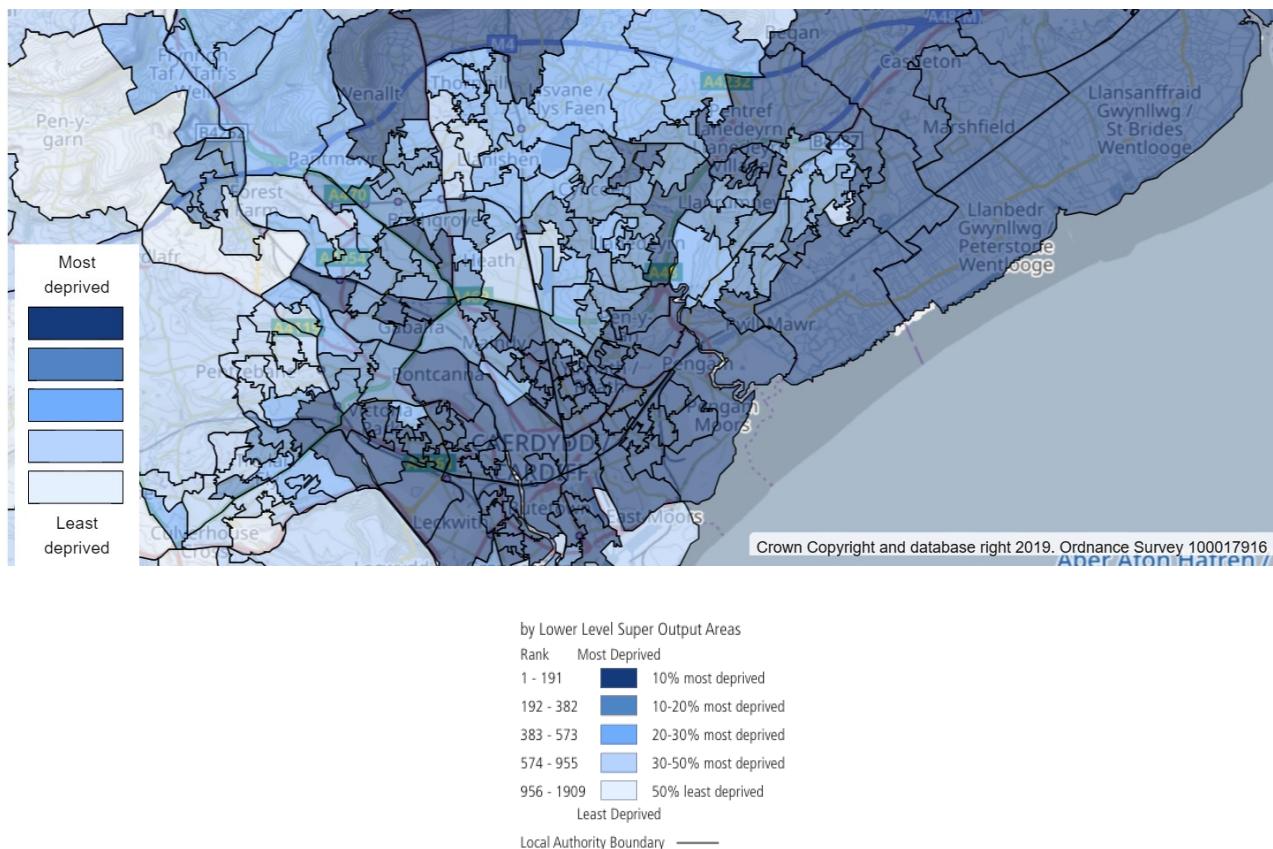
Environmental inequalities

Environmental inequalities (4) impact on health and well-being and enforce health inequalities. There is a gradient in the distribution of environmental disadvantages with those living in the most deprived neighbourhoods more exposed to environmental conditions that negatively affect health, for example, air pollution, damp and poorly insulated housing, living near major roads, and lack of green spaces. Additionally, the unhealthiest high streets are likely to be located in more deprived areas with the highest number of fast food outlets, betting shops, more littering and fouling, noise and air pollution, unhealthy retail outlets, crime and fear of crime and road traffic accidents (2).

Figure 3 (24) illustrates that there are clear inequalities in terms of the physical environment² across Cardiff, with wards in the 'Southern Arc' experiencing the most environmental disadvantage. The most deprived areas in relation to physical environment are those that have high levels of air pollution, less access to green spaces and being located in a flood risk area.

² The physical environment domain of the WMID contains three sub domains – air quality, flood risk and green space (61)

Figure 3: Welsh Index of Multiple Deprivation 2019. Physical Environment Domain. Cardiff (24)

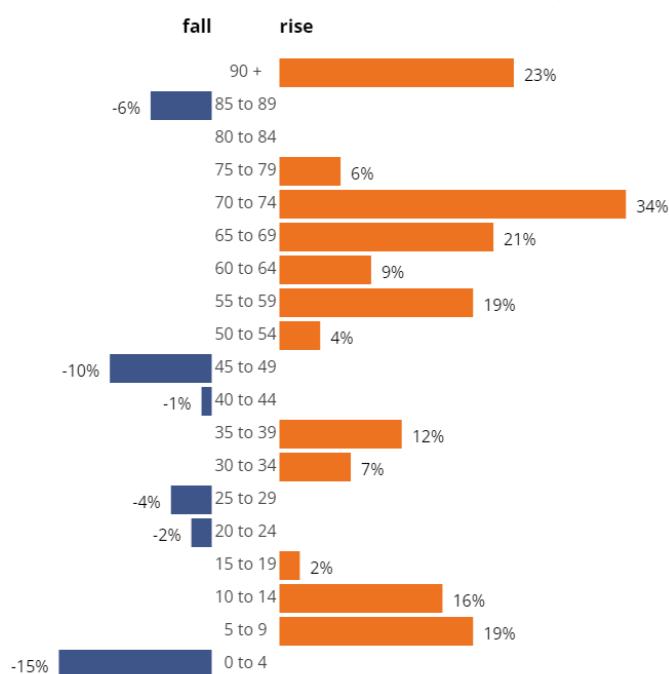


Source: Stat Wales. WMID Maps from 2019. Map of physical environment deprivation [WIMD - Explore \(gov.wales\)](https://wimd-explore.gov.wales)

7.2 AGEING POPULATION

Between 2011 and 2021 in Cardiff, there was an increase of 15.3% in people aged 65 years and over, an increase of 2.6% in people aged 15 to 64 years, and an increase of 5.3% in children aged under 15 years, as Figure 4 shows (25).

Figure 4: Population change (%) by age group in Cardiff, 2011-2021 (25)



Source: Office for National Statistics. How the population changed in Cardiff: Census 2021 (25)

- By 2037 the number of people aged 65 to 84 is projected to increase by 42% and the number of those aged 85 and over to nearly double (20). Additionally, Cardiff's older population is currently more concentrated in the North of the city; the Cardiff North locality has both the highest percentage and number of people aged 65+, at 20%

7.3 LONG TERM HEALTH CONDITIONS

Although 77% of the population of Cardiff (26) reported their health as good or very good in 2021-22:

- 44% reported experiencing a long term illness, with 17% having 2 or more long term illnesses.
- 13% reported having musculoskeletal complaints, 9% heart and circulatory complaints, 9% respiratory conditions, 12% mental health conditions.

The following sections highlight key health conditions which are directly impacted by the natural and built environment.

a. Obesity

In Wales in 2021-22 (27), 62% of adults were overweight or obese, of which 25% were obese. In Cardiff, 57% of adults were overweight or obese, of which 20% were obese, with some communities experiencing far higher levels. Among children (28), nearly one

in three children across Wales are overweight or obese by the time they start primary school; in Cardiff (20), over a fifth of children (aged 4 or 5) are overweight or obese.

Being overweight or obese (29) significantly increases the risk of developing chronic diseases including cardiovascular disease (CVD), cancers, diabetes, musculoskeletal illnesses and chronic respiratory disease.

In terms of the impact of the burden of overweight and obesity on society, costs to the health system and the economy are rising significantly (30). It has been estimated that, if rates of overweight and obesity continue to rise, by 2050, this will cost the NHS in Wales £465 million per year, with a cost to society and the economy of £2.4 billion.

An individual's weight is influenced by a range of factors, beyond personal choice.

b. Diabetes

There has been a steady increase in the number of adults with diabetes in Wales, an increase of almost 60,000 people (40%) over a period of 12 years to 2021/22; this increase is mostly due to an increase in Type 2 diabetes. Cardiff's relatively young population is a factor in its lower prevalence; however, deprivation is a factor in diabetes prevalence together with increasing age (31).

Approximately, 10% of the total NHS Wales budget is spent on treating people with diabetes, with £105 million spent on drugs used to manage diabetes in 2022/23. Diabetes-related hospital stays cost £428 million in 2021/22 (31).

Estimates for Wales vary but if current trends continue, by 2035/36 there will be an increase of 22% in the number of people living with diabetes compared to 2021/2022; the worst-case high-count model estimates an increase of 32% (31).

c. Mental health

In Wales (26), 11% of adults reported a mental health condition (32) in 2021-22, and 12% in Cardiff. Inequality is a key determinant of mental ill health and mental ill health leads to further inequality. The estimated cost of mental ill health to society is £7.2 billion per year.

Where someone lives can have an impact on their mental health (33). It is reported that the majority of people with a mental health condition have lived in housing that has made their mental health worse. The evidence has strengthened on the negative impacts of cold homes on mental health (34). 28 per cent of young people in the UK are likely to be at risk of multiple mental health symptoms due to living in a cold home, compared to four per cent of children living in adequate warmth. Becoming unable to heat a home doubles the risk of adults developing new mental health conditions and triples the risk of these getting more severe if people already had mild mental health conditions, even after controlling for other socio-economic variables.

The quality of the wider built environment is also a determining factor for mental health, with noise, pollution levels, quality of greenspace and access to services having an impact (33).

8 PLANNING HEALTHY SPACES

Spatial planning provides opportunities to (35) (36) create healthy places and spaces and consider how all of these factors interact to create social cohesion:

- provide active environments that support walking and inclusive cycling, and active travel
- creating walkable environments and communities
- facilitating access to well-maintained and safe open green and blue spaces
- create open green and blue spaces for recreation and play
- create healthy food environments (food retail and food growing)
- provide community and social infrastructure that supports the delivery of local healthcare, community and social services
- design and provide high quality streets and spaces
- promote and deliver buildings, including homes, that support health and well-being
- providing well designed, safe, warm and affordable homes
- creating attractive public realm spaces
- improving environmental quality (air quality, noise, etc)

8.1 CREATING ACTIVE ENVIRONMENTS TO IMPROVE HEALTH

Being physically active (37) can reduce the risk of major illnesses, such as coronary heart disease, stroke, type 2 diabetes and cancer and lower the risk of early death by up to 30%. Research shows that physical activity can boost self-esteem, mood, sleep quality and energy and lower the risk of many of the long-term chronic conditions as well as stress, depression, dementia and Alzheimer's disease. The recommendation is for adults to be active every day and aim to do at least 150 minutes of physical activity over a week, through a variety of activities. Children and young people (aged 5 to 18 years) should aim for an average of at least 60 minutes of moderate or vigorous intensity physical activity a day across the week (37).

Cardiff compares well with other local authorities across Wales in terms of the population being active. However (28),

- A fifth are active less than 30 minutes a week
- 3 in 10 people are not active for 150 minutes per week (27)
- almost one-third do less than 30 minutes of physical activity per week.

Deprivation is a key factor in relation to levels of activity, with 47% of the most deprived fifth of the population reaching sufficient levels as opposed to 62% for the least deprived fifth (38).

a. Walking and cycling

In recent years, Cardiff Council has invested in active travel infrastructure demonstrating a commitment to walking and cycling. Findings from the 2023 Walking and Cycling Index (39) highlighted that, each year, walking and cycling in Cardiff results in:

- 745 serious long-term health conditions prevented, potentially saving the NHS £9.5 million
- 17,000 tonnes of greenhouse gases saved
- £245.5 million in economic benefit to individuals and the region
- Up to 92,000 cars taken off the road every day

However,

- Participation in walking, wheeling³ and cycling on a regular basis has decreased since 2021. 49% of residents reported walking or wheeling at least five days a week in 2023, compared to 53% in 2021. For cycling, 19% of residents reported cycling at least once a week, compared to 23% in 2021.
- Additionally, more men than women reported cycling, feeling safe/unsafe was reported as an issue/barrier and participation reduces with age and increasing deprivation.

Features of the built environment that have an impact on physical activity include (36) (40):

- walkable communities
- active travel routes
- location, density and diverse activities
- network of multi-functional open spaces
- high quality streets and spaces
- physical access to public services, employment, local fresh food
- safety and security
- open and green spaces
- air quality and noise
- active buildings inside and out
- public transport options.

b. Opportunities to Play

Access to high quality play opportunities is critical for the health and wellbeing and development of children. Play as spontaneous and creative behaviour can improve community relationships and increase social connections, improve cardiovascular health and decrease risk of heart disease, counter depression and improve mental well-being (41).

³ Some people who use wheeled mobility aids, for example a wheelchair or a mobility scooter, may not identify with the term walking and may prefer to use the term wheeling. Sustrans uses the terms walking and wheeling together to ensure they are as inclusive as possible.

It is known that high quality play opportunities for children contribute to mitigating the negative effects of poverty on children's lives and helps build their resilience. Play is important to all children in the development of their physical, social, mental, emotional and creative skills (42).

Provision for teenagers in parks and public spaces is usually considered in terms skate parks, MUGAs (multi-use game areas) and other pitches and BMX or pump tracks. These facilities and outdoor spaces tend to be used more by boys and men, for example (43)

- Skateboard GB data indicates that 85% of skateboarders are male, 15% female
- MUGAs are used more by boys and men.

This inadvertent absence of provision for play for teenage girls impacts on the rights of girls and on their sense of belonging, on activity levels and the consequential impact on physical and mental health (44).

Research (44) in Yorkshire and Glasgow highlighted that

- parks do not meet the needs of the majority of girls: 68% saying there is nothing for them to do, 50% reporting there are no sporting activities for them
- 49% of girls don't feel safe to exercise in parks compared to 26% of boys
- 80% of women and girls who used parks felt uncomfortable in their chosen park
- 22% teenage girls felt safe in their chosen park.

Planning for play can shape physically healthy habits, improve daily movements, interactions, and experiences, and encourage social interaction and collaboration. Spatial planning (41) can play an important role in creating environments that encourage and enable play through:

- identifying population needs for different environments for play at different life stages
- providing safe spaces for play, especially for girls and women
- providing inclusive open and green/blue spaces
- ensuring location, density and the diverse activities provided address health and environmental inequalities.

8.2 CREATING A HEALTHY FOOD ENVIRONMENT (FOOD RETAIL AND FOOD GROWING)

Cardiff compares well with other local authorities across Wales in terms of the population eating healthily. However (27):

- Three fifths of adults are not eating five portions of fruit and vegetables a day
- Some are not eating any fruit or vegetables a day

Poor diet is a key preventable risk factor to ill-health, contributing to lower life expectancy and earlier onset of ill-health. Poor diet and being overweight or obese can lead to a range of physical health issues, and can also result in a number of psychological problems. People most at risk of diet-related ill health include the disabled, those on lower incomes, those in

deprived areas, those from some minority ethnic backgrounds and vulnerable people such as the homeless (45).

The effects of poor diet are unevenly distributed, with individuals from the lowest socioeconomic areas having double the prevalence of obesity, compared to the least deprived.

Access to a food environment that promotes healthy food choices is known to improve health, support the maintenance of a healthy weight and reduce the risks of developing long term health conditions (5). It is an essential part of a multi-component approach to reducing levels of overweight and obesity that also considers, for example, individual behaviour change, food preparation and food served in schools, workplaces and NHS settings. The evidence suggests (5):

- Increased access to healthy, affordable food for the general population is associated with improved healthier food purchasing behaviour and improved dietary behaviours (such as, increased fruit and vegetable consumption)
- Increased access to unhealthier food retail outlets is associated with increased weight status in the general population and increased obesity and unhealthy eating behaviours among children living in low income areas
- Access to urban agriculture appears to improve attitudes to healthier food, increases opportunities for physical activity and social connectivity and increases fruit and vegetable consumption.

a. Hot food takeaways

Some research suggests that the concentration or clustering of takeaways in centres can dominate the retail environment, limiting the number of units available for healthier food choices and resulting in an over-exposure of takeaway uses which may influence behaviour (46). Density of fast food outlets varies across Wales (47) and England (48); in Wales the mean was 100.65 fast food outlets per 100,000 population in 2018. Across Cardiff, the density of fast food outlets in 2018 was 93.99 per 100,000 population (47). More recent unpublished data for 2023, suggests that the density across Cardiff has increased slightly from 2018 to 2023.

Overall, there is some evidence around the association between exposure to hot food takeaways and obesity but results are mixed. However, there is good evidence that there are higher numbers of hot food takeaways in more deprived areas (46) and children who spend time in deprived neighbourhoods tend to eat more fast food and are *more likely* to be overweight or obese (49). Hot food takeaways are often co-located with other potentially less healthy land uses, such as betting shops, gambling and shisha bars and the availability of alcohol; these factors can influence the health of local communities (50).

b. Food growing environment

There is growing evidence of the benefits of food growing to health and well-being. Gardening and food growing can reduce stress and stress related conditions and help to achieve and maintain a healthy weight (51). Access to allotments and adequate garden space appears to result in numerous positive physical and mental health related impacts and outcomes (5).

Spatial planning (3) (5) has opportunities to influence the food environment by:-

- Avoiding over-concentration of hot food takeaways in town centres or high streets, particularly in areas of deprivation
- Understanding the density of hot food takeaways across Cardiff and its communities and influence policy, if appropriate, to restrict any increase
- Supporting access to retail outlets selling healthier foods and decrease exposure to unhealthy food environments
- Ensuring shops/markets that sell a diverse offer of food choices are easy to access by walking, cycling or public transport
- Enhancing opportunities for food growing and prevent the loss of food growing spaces in developments
- Providing households with access to space to grow food – for example, gardens, roof or communal gardens, allotments.

8.3 ENABLING ACCESS TO GREEN INFRASTRUCTURE, OPEN SPACES AND BLUE SPACES⁴

Access to green infrastructure, open spaces and blue spaces impacts on physical and mental health and well-being, social contact, cohesion and integration, crime levels and education. Cardiff has the highest percentage in Wales in terms of those who find it easy to walk to their local green space (20); 19% of the city is publicly accessible parks and green spaces (52).

However, proximity and equal access to green space varies across the city with parts of South and East Cardiff not having good access to urban green space (see Environmental Inequalities section).

The link between green space and well-being is well established (5). Access to, and engagement with, the natural environment is associated with positive health outcomes including improved physical and mental health and reduced risk of cardiovascular disease, risk of mortality and other chronic conditions. Additionally, living near green spaces can improve health, regardless of social class and access to recreational infrastructure, such as parks and playgrounds, is associated with reduced risk of obesity among adolescents and increase in physical activity. For children and older adults, improving the appearance of parks can increase usage and increase physical activity rates of both groups.

⁴ Parks, open spaces, playing fields, woodlands, wetlands, road verges, allotments and private gardens are examples of green infrastructure while sustainable drainage systems, swales, wetlands, rivers and canals and their banks and other watercourses are often referred to as blue infrastructure (3)

Improving access to green infrastructure and spaces also contributes to reducing exposure to environmental hazards and air pollution, improving air quality, reducing the impact of climate change, protecting against flooding and erosion, and increasing social participation among older adults (3). Green and blue infrastructure and the choice of trees can also mitigate the extent of heat stress during heatwaves experienced by residents (53).

Spatial planning provides opportunities to improve access to green infrastructure, open spaces and blue spaces by

- Protecting and enhancing access
- Including access to green infrastructure, open spaces and blue spaces in development and regeneration plans
- Monitoring levels of, and maintenance of, green infrastructure, open spaces and blue spaces

8.4 HOUSING

In the UK, people spend approximately 66% of their time in their homes and more vulnerable people (such as the young, the elderly and those with long-term conditions) might spend up to 100% of their time indoors (54).

Poor quality housing, including issues such as mould, lack of warmth, energy inefficiency, noise and lack of access to green spaces is linked to physical and mental ill-health (5). Just over half of all households in the UK are living in energy inefficient housing (34). Living in cold homes increases blood pressure, the risk of a heart attack, and the risk of developing winter infections, and respiratory problems. Arthritis, grip strength and sickle cell anaemia can all be made worse by living in cold conditions and a reduction in dexterity leads to an increased risk of falls in the home. Additionally, those who are living with Dementia and Alzheimer's disease have a high risk of mortality in the winter (34).

Children's lung function and brain development can be negatively impacted by living in a cold home, resulting in impaired cognitive development and lower school attainment (34). Poor housing also results in decreased job prospects, estimating to cost £18.5 billion per annum (in England) (55).

The cost to the NHS in Wales (56) of poor quality housing is estimated to be around £95 million per year, and £1 billion cost to society (distress, economy, welfare, finances).

Good quality, warm, well maintained and affordable housing is associated with numerous positive health and well-being outcomes (57). Insulated, warm, naturally lit and well-ventilated homes and buildings can help improve general health and well-being, reduce respiratory conditions, improve mental health and reduce health inequalities (5). Provision of diverse forms and types of housing has been associated with increased physical activity. The provision of mixed land use and affordable housing is strongly associated with improved safety perceptions in the neighbourhood, particularly among individuals from low income groups. Homes that have adequate kitchen facilities, cycle storage and access to outdoor spaces also contribute to overall well-being (58).

Spatial planning (3) (5) has opportunities to ensure housing design and construction improves health and well-being by

- Ensuring the provision of warm, affordable, energy efficient homes
- Ensuring natural lighting and good ventilation is provided
- Ensuring the provision of safe, accessible housing for those with sensory or physical impairments and/or limited mobility and with consideration of dementia friendly environments
- Ensuring new homes are linked to the walking and cycling infrastructure
- Maximising green infrastructure opportunities
- Providing cycle parking/storage

8.5 AIR QUALITY

Cardiff has the highest Nitrogen Dioxide and Particulate Matter (PM2.5 and PM10) pollution levels in Wales (20). Air pollution is a major cause of avoidable ill health and deaths with the people most at risk from poor air quality being the very young, the very old and those already suffering with ill health.

Analyses of local air pollution, multiple deprivation and health data in Wales has found that air pollution concentrations (notably NO₂) are highest in the most deprived areas exacerbating health inequalities and contributing to an increased prevalence of pollution-related health problems, such as lung disease and lung cancer, heart disease and stroke both for people living in these areas and those travelling through them (59). It has been estimated that approximately 66% of carcinogenic chemicals emitted into the air are released in the 10% most deprived wards (4). Poor air quality is also linked to an increased risk of developing neonatal complications, of poor birth outcomes and childhood mortality (5).

The cost to society from air pollution has been estimated to be around £1bn per year (59).

Evidence indicates that living in an area with clean air can lead to positive changes in people's health behaviour. Improved air quality is associated with increased physical activity among older adults (5).

Air quality can be improved through (60):

- Retaining and establishing green infrastructure
- Promoting active travel and sustainable transport
- Providing a fully integrated transport system
- Developing well-connected, active and social communities
- Reducing traffic congestion and emissions
- Introducing clean air zones and 20mph zones.

8.6 ACCESS TO COMMUNITY, HEALTH AND SOCIAL CARE SERVICES FROM LOCAL FACILITIES

Access to and availability of services delivered in good quality local facilities promotes health and reduces health inequalities, in addition to being essential for economic, social, cultural and environmental sustainability. Health and social services, libraries, shops, schools and arts, leisure and community activities provided from well-positioned and well-designed facilities can result in positive impacts on health and well-being (58).

Building and regenerating complete and compact neighbourhoods with local services at the centre also contributes to increasing physical activity levels, safer roads and enhanced social participation (5).

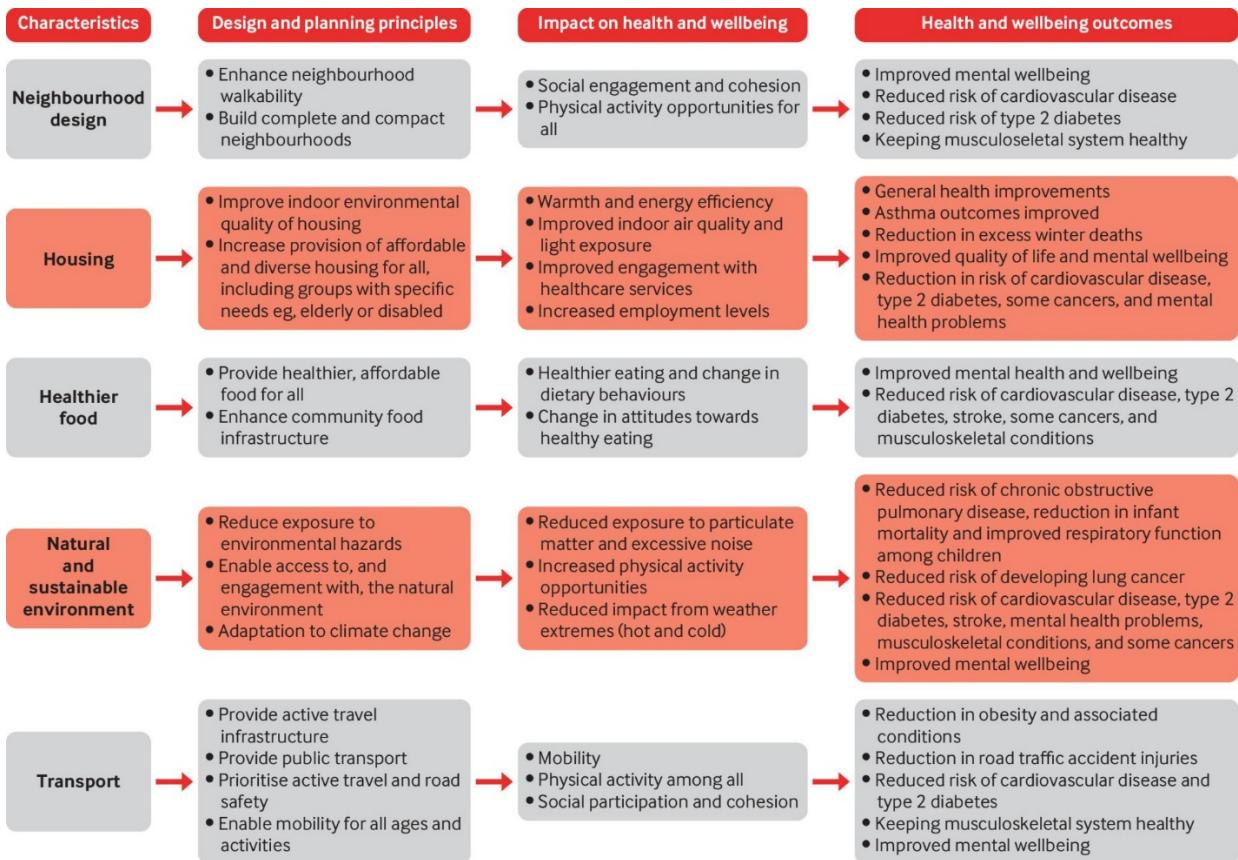
Spatial planning (3) (5) has opportunities to improve access to services by:-

- Ensuring provision of local facilities for the delivery of community, health and social services
- Providing community facilities that are easy to get to by walking, cycling and public transport
- Providing community facilities at an early stage within new developments to help people feel connected
- Work with services to deliver appropriate and accessible facilities.

9 SUMMARY

Spatial planning has a role to play in ensuring the built and natural environment supports health and well-being and reduces health inequalities. Figure 5 summarises some of the design principles and their links to health and wellbeing.

Figure 5: Associations between design and planning principles and health and well-being



Source: Associations between design and planning principles and health and well-being. Adapted by McKinnon et al (54) from Public Health England's *Spatial planning for health* (5)

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