

# A358 Taunton to Southfields Dualling Scheme

Preliminary Environmental Information Report - Appendix 12.1  
Health Determinants Evidence Review

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# 1 Health determinants evidence review

## 1.1 Introduction

1.1.1 This document sets out a brief literature review of each of the identified determinants of health in order to provide a sample of the evidence available to support the view that these factors are able to influence health outcomes of populations. This literature review should be read alongside Chapter 12 Population and human health.

## 1.2 Healthcare, community, recreational and education facilities

1.1.2 Services and social infrastructure such as healthcare, education, social networks and social interaction can impact on people's physical and mental health [1]. In 2012, five percent of adults in Great Britain reported feeling a sense of isolation due to difficulties accessing local shops and services [2].

1.1.3 Access to health facilities has a direct positive effect on health [3]. Access to healthcare is important for communities as healthcare services offer information, screening, prevention and treatments. Restricted access to healthcare services prevents patients gaining necessary treatments and information.

1.1.4 Access to healthcare services is affected by transport modes, availability of financial support for those on low incomes and the location of healthcare services. Groups impacted by disability, long-term illnesses and older people are more dependent on health and social care services [4], and are therefore more vulnerable if access to health and social care services becomes restricted.

1.1.5 Access to social infrastructure including leisure and cultural facilities is a determinant of health and wellbeing. According to research 'leisure activities can have a positive effect on people's physical, social, emotional and cognitive health through prevention, coping (adjustment, remediation, diversion), and transcendence' [5]. People participate in cultural activities for a number of reasons including personal growth and development, to learn new skills, enjoyment and entertainment and as a 'means of creative expression', or 'to meet new people' and to 'pass on cultural traditions' [6].

## 1.3 Transport and connectivity

1.1.6 Research indicates that public transit improvements and more transit-oriented development can provide large but often overlooked health benefits. People who live or work in communities with high quality public transportation tend to drive significantly less and rely more on alternative modes (walking, cycling and public transit) than they would in more automobile-oriented areas. This reduces traffic crashes and pollution emissions and increases physical fitness and mental health. These impacts are significant in magnitude compared with other planning objectives but are often overlooked or undervalued in conventional transport planning [7].

1.1.7 Active travel applies to modes of transport that require physical activity (i.e. cycling and walking), in contrast to modes that require little physical effort such as motor vehicles. It is therefore the physical activity associated with active travel that brings about health effects.

- 1.1.8 Active travel in areas with low pollution levels has been associated with increased physical activity among older adults. Where there is a perception that there is air pollution this appears to constitute a barrier to participating in outdoor physical activity and active transport [8].
- 1.1.9 The positive effects of physical activity on physical health were summarised in the Department of Health's 2011 report [9] which suggests that:
- 'Regular physical activity can reduce the risk of many chronic conditions including coronary heart disease, stroke, type 2 diabetes, cancer, obesity, mental health problems and musculoskeletal conditions. Even relatively small increases in physical activity are associated with some protection against chronic diseases and an improved quality of life.'*
- 1.1.10 An ever-growing body of research also provides consistent evidence of a relationship between physical activity and mental capacity, especially in older and elderly people. Longitudinal studies show not only that physical activity is associated with a reduced risk of age-related cognitive decline, but also that regular physical activity is linked to a lower risk of Alzheimer's disease and other forms of dementia [10]. Age UK's guidelines also outline examples of practical ways to promote older people to become more active, including Nordic walking, Tai-Chi sessions aimed at older people, walking groups, and an 'easy rider' scheme (using a fixed-wheel bike, tricycles and tandems to aid balance) [11].

## 1.4 Open/green space and nature

- 1.1.11 Access to open space, green space and nature has health benefits, in relation to increasing physical activity [12], as well as for mental wellbeing [13], [14].
- 1.1.12 A Forestry Commission [15] review identified the key health benefits of green space as:
- long and short-term physical benefits associated with obesity, life expectancy, heart rate and blood pressure
  - attention and cognitive benefits associated with restoration, mood and self-esteem
  - physical activity benefits associated with the use of green space
  - self-reported benefits in terms of health and life satisfaction
  - community cohesion benefits through social contact fostered by green space
- 1.1.13 Studies have found that the amount of green space and the walkability, connectivity and accessibility of the neighbourhood influence adult and children's mental health and physical health [14], [16]. The attractiveness or quality of green space is also an important determinant of use of green space [17].
- 1.1.14 Contact with nature has positive health benefits through its positive effects on blood pressure, cholesterol and stress reduction, with particular relevance to mental health and cardiovascular disease [18]. Green space can also provide spaces to promote social interaction and cohesion [14], and reduce social annoyances and crime, all of which can contribute to the mental health of individuals [19].
- 1.1.15 Vulnerable populations include the poorest people who often experience poorer quality outdoor environments and suffer disproportionately from a lack of equitable access to ecology and green spaces. Recent research has suggested

that there is a positive association between the percentage of green space in a person's residential area and their perceived general health and that this relationship is strongest for lower socio-economic groups [19].

## 1.5 Ambient air quality

- 1.1.16 Evidence on the links between road traffic emissions and respiratory health is well established, based on numerous research studies. The main health damaging pollutants released as emissions from road traffic are particulate matter (PM<sub>10</sub>) and nitrogen dioxide (NO<sub>2</sub>) [20]. It is generally accepted that particles greater than 10µm in diameter (PM<sub>10</sub>) do not penetrate the lungs to cause respiratory health problems. However, dust can cause eye, nose and throat irritation and lead to deposition on cars, windows and property [21].
- 1.1.17 Populations thought particularly vulnerable to the effects of PM<sub>10</sub> are those with pre-existing lung or heart disease, the elderly and children [22], [23].

## 1.6 Ambient noise

- 1.1.18 According to the World Health Organization (WHO), 'in some situations noise may adversely affect the health and wellbeing of individuals or populations'. The WHO recognises the health linkages between environmental noise and annoyance, sleep disturbance and physiological responses such as cardiovascular disease. There are a wide range of non-auditory health effects that may be associated with exposure to environmental noise. In the everyday environment, the response of an individual to noise is more likely to be behavioural or psychological (i.e. non-auditory) than physiological.
- 1.1.19 The WHO suggests that some people may be less able to cope with the impacts of noise exposure and be at greater risk of harmful effects, including the elderly, the physically ill, those with existing mental illness, people with hearing impairment and young children. Families with lower income tend to have lower mobility but greater exposure to adverse environmental conditions related to noise pollution [24] from the locations in which they live.

## 1.7 Landscape and visual amenity

- 1.1.20 Research into the effects of the visual and aesthetic environment on wellbeing is mainly focused on the psychological effects of 'natural' versus 'man-made' or urban views. In general, evidence shows a preference for views of natural over man-made scenes. These links are often tied in with each other, related issues such as opportunities for exercise and contact with nature. Open spaces and natural scenes can improve physical health, comfort, and mental wellbeing, as well as provide opportunities to improve people's quality of life and social interactions.
- 1.1.21 In 2013, a Position Statement by the Landscape Institute [25] looked at evidence linking the quality of places with health and wellbeing across a range of environmental, social and lifestyle determinants. This document cites evidence to suggest that health and wellbeing are influenced positively by factors such as the attractiveness, noise and other pollution, and the perceived safety of the environment.
- 1.1.22 A literature review by Abraham et al in 2010 of over 120 studies [26] identified a set of pathways that link landscape and health. The study found that:

*'Landscapes have the potential to promote mental wellbeing through attention restoration, stress reduction, and the evocation of positive emotions; physical wellbeing through the promotion of physical activity in daily life as well as leisure time and through walkable environments; and social wellbeing through social integration, social engagement and participation, and through social support and security.'*

## **1.8 Employment and economy**

- 1.1.23 The Marmot Review (2010) [27] looked at the differences in health and wellbeing between social groups. The review identified the importance of work for health: 'being in good employment is protective of health. Conversely, unemployment contributes to poor health.'
- 1.1.24 The documented linkages between access to work and health are often related to the negative impacts of unemployment, rather than the positive impacts of employment. However, it follows that employment is generally expected to be positive in health terms.
- 1.1.25 Employment is related to social and psychological wellbeing; a study commissioned by the Department of Work and Pensions [28] found that *'work meets important psychosocial needs in societies where employment is the norm'* and that *'work is central to individual identity, social roles and social status'*.
- 1.1.26 Training is a form of work involving the application of physical or mental effort to improve skills, knowledge or other personal resources, which can improve the chances of employment and career progression.

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