

### 3.2.7 Flooding

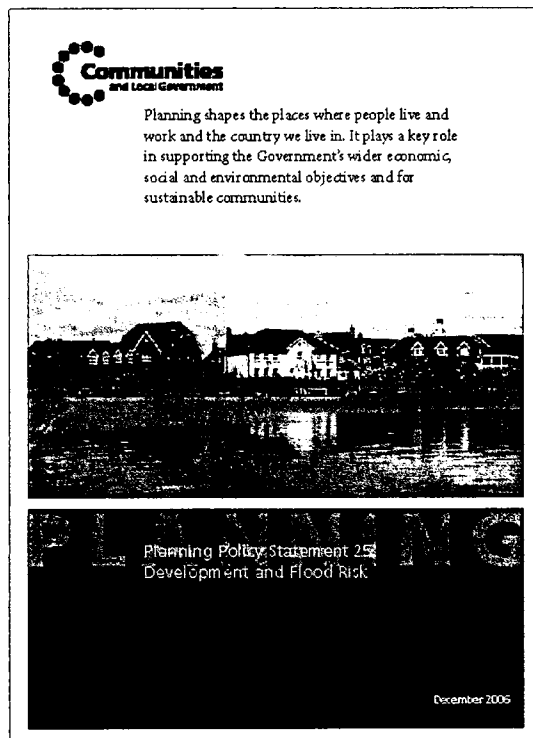
The health effects of flooding can be split into two areas: those associated with the immediate event (e.g. drowning) and those arising after the flood has subsided (i.e. related to exposure to flood waters, the clear up process or stress and anxiety). Mortality i.e. drowning and injuries occur during the flood event and are also possible post-event. Other health effects include respiratory symptoms arising from exposure to damp conditions and mental health problems arising from exposure to single and multiple flood events. The evidence linking flooding to the health effects described above is strong.

National Planning Policy on flooding is set out in PPS: 25<sup>44</sup> Development and Flood Risk *“The aims of planning policy on development and flood risk are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is, exceptionally, necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing risk overall.”*

PPS 25 advocates directing development away from areas at highest risk of flooding, as set out in the risk-based sequential approach.

Strategic decisions on the location of new development can be made at national (e.g. the Sustainable Communities Plan), regional (regional spatial strategies and sub-regional strategies) and local levels (local development documents including Area Action Plans). A Regional Flood Risk Assessment has been prepared for London which examines the nature and implication of flood risk in London and how the risk should be managed. This document is a consultation draft and is available on the GLA website.

New development in London should avoid areas of high flood risk as a first priority. However, where there is an overriding need for development in flood risk areas (e.g. as proposed in the Thames Gateway) good layout and design will be critical.



See Section 3.4 and Section 3.6 for more information on the implications of flooding.

## 3.2 MENTAL HEALTH

### Case study 4: Minimising Flood Risk: Queenborough and Rushenden Regeneration, Isle of Sheppey, Swale

This 165 hectare site lies within the Thames Gateway growth area, between the settlements of Queenborough and Rushenden and is currently a mix of brownfield and industrial land and greenfield farmland. The local area has been in economic decline since the 1960s, however the construction of the River Swale crossing presents a major opportunity for economic, social and environmental regeneration. The mixed use development will comprise approximately 2,000 homes, employment land and tourism opportunities with a focus on skills and enterprise.

The masterplanning process is being led by the South East of England Development Agency (SEEDA). A development framework was adopted in 2004 by Swale Borough Council and a draft masterplan was prepared by Rumney Design Associates (2005/6). Flood risk was one of the potential impacts on site – The Isle of Sheppey has a history of flooding and much of the land area is within the Environment Agency's Zone 2 flood risk, having a 1 in 100 or greater chance of flooding each year from the river. Climate change may exacerbate the likely flood risk.

The development site was planned in line with the sequential test (advocated by PPS 25). This ensured residential development was concentrated in a former industrial area already protected by western sea defences. The development masterplan included a number of interventions to address flood risk in the site layout and in individual buildings. These are illustrated overleaf.

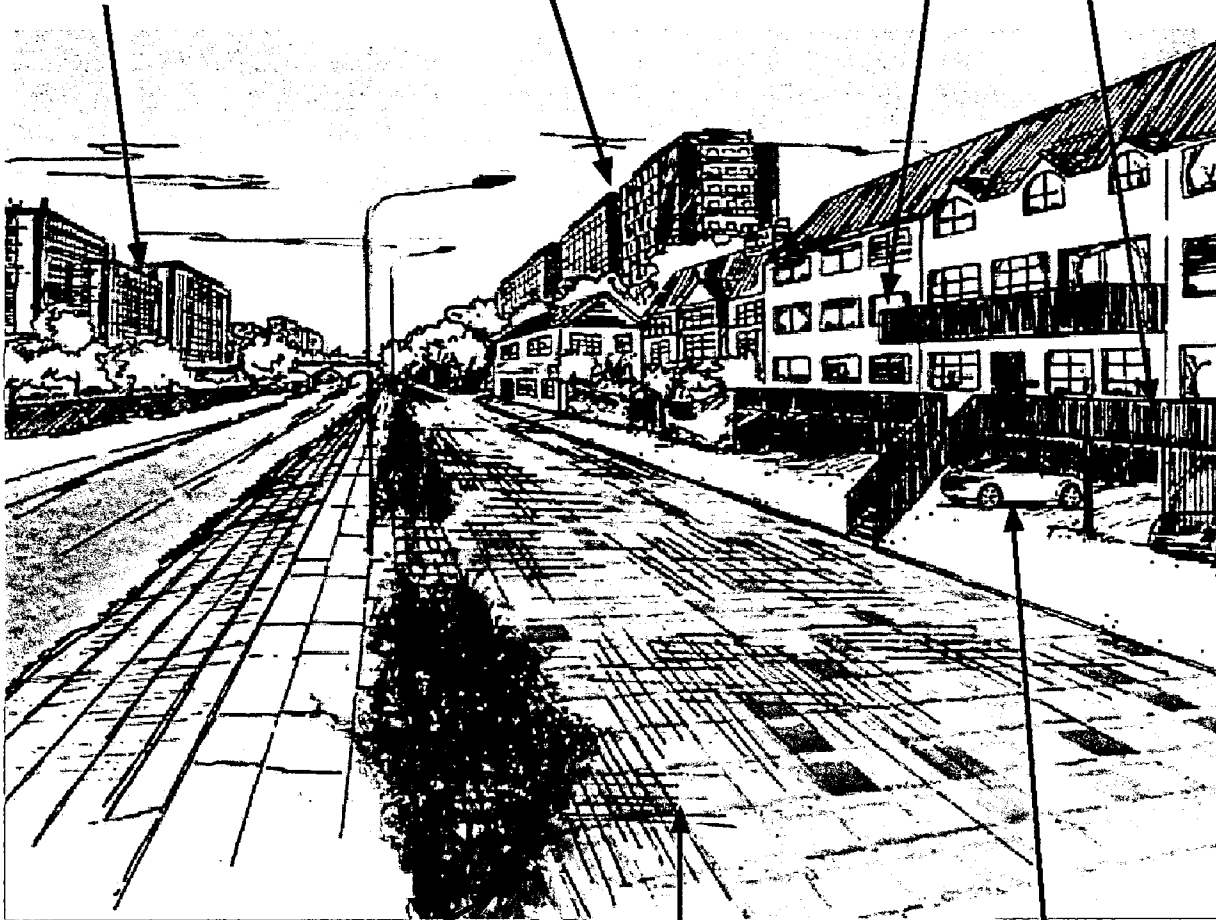


High density apartment blocks in the areas of lower flood risk

Development set back from existing flood defences to allow maintenance and improvement

Functional parts of properties and those less easily evacuated are kept above the likely flood level

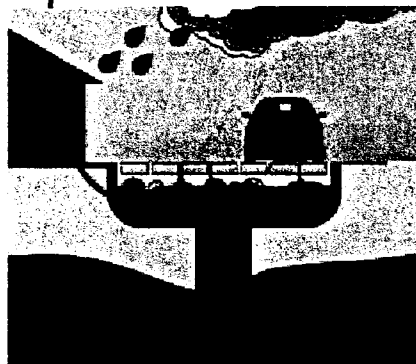
Ground floor levels raised to reduce the risk of flooding



Creation of watercourses throughout the site layout to help absorb floodwaters

Flood-compatible uses provided at ground floor level e.g. car parking

Inclusion of sustainable Urban drainage Systems (SuDs)



## 3.2 MENTAL HEALTH

© See [http://www.london.gov.uk/mayor/strategies/sds/sustainable\\_design.jsp](http://www.london.gov.uk/mayor/strategies/sds/sustainable_design.jsp)

### What are Sustainable Urban Drainage Systems (SuDs)?

SuDs provide a means to manage runoff from buildings and hardstanding. They reduce the total amount, flow and rate of surface water that runs directly to rivers through stormwater systems.

Information on types of SuDs are set out in the Mayor of London's SPG: Sustainable Design and Construction (2006). The mayor's SPG also provides a number of other interventions to create flood resistant development. ©

#### Win/Wins

- Designing development to minimise flood risk will help avoid direct and indirect health effects.
- SuDs create habitats of benefit to biodiversity and amenity and improve water quality – indirect health benefits.

#### Conflicts/Constraints

- Residents still living in a flood risk area which could increase anxiety and other mental health problems.
- High density housing can often exceed the capacity of SuDs.
- Increasing investment in flood defences and building in flood resilience will add to the cost of development.

## Case study 5: Mitigating existing flood risk problems: River Quaggy Flood Alleviation Scheme and Chinbrook Meadows

Queenborough and Rushenden provides an example of how to minimise flood risk in new developments or regeneration projects. The River Quaggy Flood Alleviation Scheme (FAS) provides possible solutions to deal with flood risk in existing development.

The FAS is a flood scheme in South East London. The River is known as Kyd Brook in its upper reaches and rises at Locksbottom, just west of Orpington. The river flows for 17 kilometres through the boroughs of Bromley, Greenwich and Lewisham before joining the River Ravensbourne in central Lewisham.



The river was channelised (engineered to flow straight) and sections of the river were put in underground channels in the 1960s to reduce flood risk to properties and businesses. This approach mirrored many early solutions to flood risk which aimed to “straighten” rivers and force the floodwater rapidly downstream. The channels created were often steep and deep and potentially dangerous to the public.

In the early 1990s proposals to extend the river channelisation were quashed – it was demonstrated that restoring the river to its natural shape i.e. reinstating the bends and the natural floodplain would be a more effective means to alleviate flood risk.

The river has been restored in phases and restoration is ongoing. This includes restoration in Chinbrook Meadows in 2002, in Sutcliffe Park and John Roan School Playing fields in 2003/04 and around Lewisham town centre in 2007.

At Chinbrook Meadows, approximately 300m of concrete channel was removed and the original function of the meadows as a floodplain restored. The Environment Agency measured usage of the meadows following restoration and found that this increased significantly (with 79% using the park more than once a week and 40% on a daily basis). Twenty percent of respondents reported fewer personal safety concerns following the restoration and respondents perceived there had been a reduction in various anti-social activities.

## 3.2 MENTAL HEALTH

At Sutcliffe Park, the river previously flowed in an underground culvert. The river was brought back above ground at this section and floodwaters were able to spill out on to the Park. Surveys following restoration of Sutcliffe Park found that usage of the park had increased significantly (by over 70%).

The ongoing restoration of this river provides an award-winning example of how existing flood risk can be managed in a positive way, re-creating natural river features and creating an environment of benefit to biodiversity, whilst reducing the risk of flooding to properties and businesses. The original recreational spaces at Chinbrook Meadows, Sutcliffe Park and John Road Playing Fields were uninspiring and underused. The river restoration enabled these spaces to be enhanced increasing their attractiveness to potential users.

### Win/Wins

- Positive planning can help reduce flood risk in existing developments and hence reduce anxiety and the likelihood of more direct health effects e.g. injuries.
- River restoration has multiple benefits – enhancing biodiversity and improving recreational spaces – this may indirectly benefit mental health and increase the likelihood of engaging in physical activity.
- Such flood management solutions are often cheaper than more conventional engineering options.
- Developer contributions can be used to fund restoration in regeneration schemes.
- River restoration could be tied to area-wide regeneration and help address environmental and social inequalities.

### Conflicts/Constraints

- River restoration will take time to implement and will not address flood risk in the short term.
- Requires large areas of undeveloped land to recreate flood storage areas – not always available in London.
- River restoration, although often cheaper than conventional engineering options, is still expensive.

## Recommendations: Planning for Mental Health

### Designing for health: Location

- New development should avoid areas of high flood risk as a priority at the outset in line with national policy.

### Designing to avoid flooding

- It is recognised that new development or regeneration projects may be located in flood risk areas. Layout and design should aim to address flood risk.
- Developers should take note of existing flood risk standards e.g. those proposed in the Code for Sustainable Homes and the Mayor's Sustainable Design and Construction SPD (2006).
- Flood problems in existing development can be managed in positive ways. This can have indirect health benefits e.g. by regenerating existing open spaces/recreational areas and encouraging people to become physically active.



## 3.3 OBESITY AND CARDIO-VASCULAR DISEASE

### 3.3.1 Evidence Base

One of today's biggest public health issues is the obesity epidemic, linked to rising incidence of diabetes<sup>22</sup>. Obesity and diabetes are risk factors for coronary heart disease. In England, 15% of children between 2 and 10 years of age are obese and the prevalence of children that are obese and overweight is increasing steadily<sup>23</sup>. Encouraging physical activity can help to arrest this trend.

Physical activity has strong links with addressing obesity and diabetes and reducing the risk of cardiovascular disease. Cardiovascular disease refers to diseases involving the heart and/or blood vessels. Cardiovascular disease is the major cause of death and the death rate was 389/100,000 in England<sup>24</sup>. There is evidence that physical activity such as brisk walking or cycling on most days of the week has a clear association with reduced risk of cardiovascular disease in middle aged and old people.

Physical activity does not need to be vigorous to achieve health benefits. Key factors that support physical activity include:

- 1) Walking and cycle ways to connect homes with schools, workplaces and shops;
- 2) Accessibility to playing in the park and sports facilities; and
- 3) Removal of environmental barriers to permit residents in poorer areas to become physically active.

There is evidence that creation or enhancement of these factors is effective in engaging people across the socio-economic and ethnic spectrum in levels of physical activity that improve their health.

**Spatial planning can encourage physical activity by promoting walking and cycling through well-designed paths and cycleways, improving accessibility to open and green spaces and sports facilities, and removing environmental barriers to allow residents in poorer areas to become physically active.**

Encouraging physical activity can result in substantial cost savings to the NHS. The costs of physical inactivity has been estimated at £8.2 billion per year, made up of £1.7 billion in direct health care costs for the NHS, £5.4 billion in earnings lost to sickness absence and £1 billion in earnings lost to premature mortality<sup>25</sup>. It is suggested that a 10% increase in adult physical activity could benefit England by £500 million a year and save 6,000 lives.

Evidently, obesity is also linked to a poor diet and access to a range of food at a reasonable price. Planning can provide facilities to buy food through mixed use developments and to grow food locally (e.g. through provision of allotments or garden spaces in new developments).

Further information on the evidence underpinning the links between obesity and cardiovascular disease and spatial planning is provided in Appendices 3.3 and 3.4.



### 3.3.2 Case studies

As indicated in the evidence base above, measures to effectively address obesity, diabetes and cardio-vascular disease focus on the promotion of a more active lifestyle. The guidance looks at two ways of promoting physical activity; provision of and improving access to open space, and to new and existing sport and leisure facilities.



### 3.3.3 Access to open space in new and existing developments/ regeneration projects for physical activity

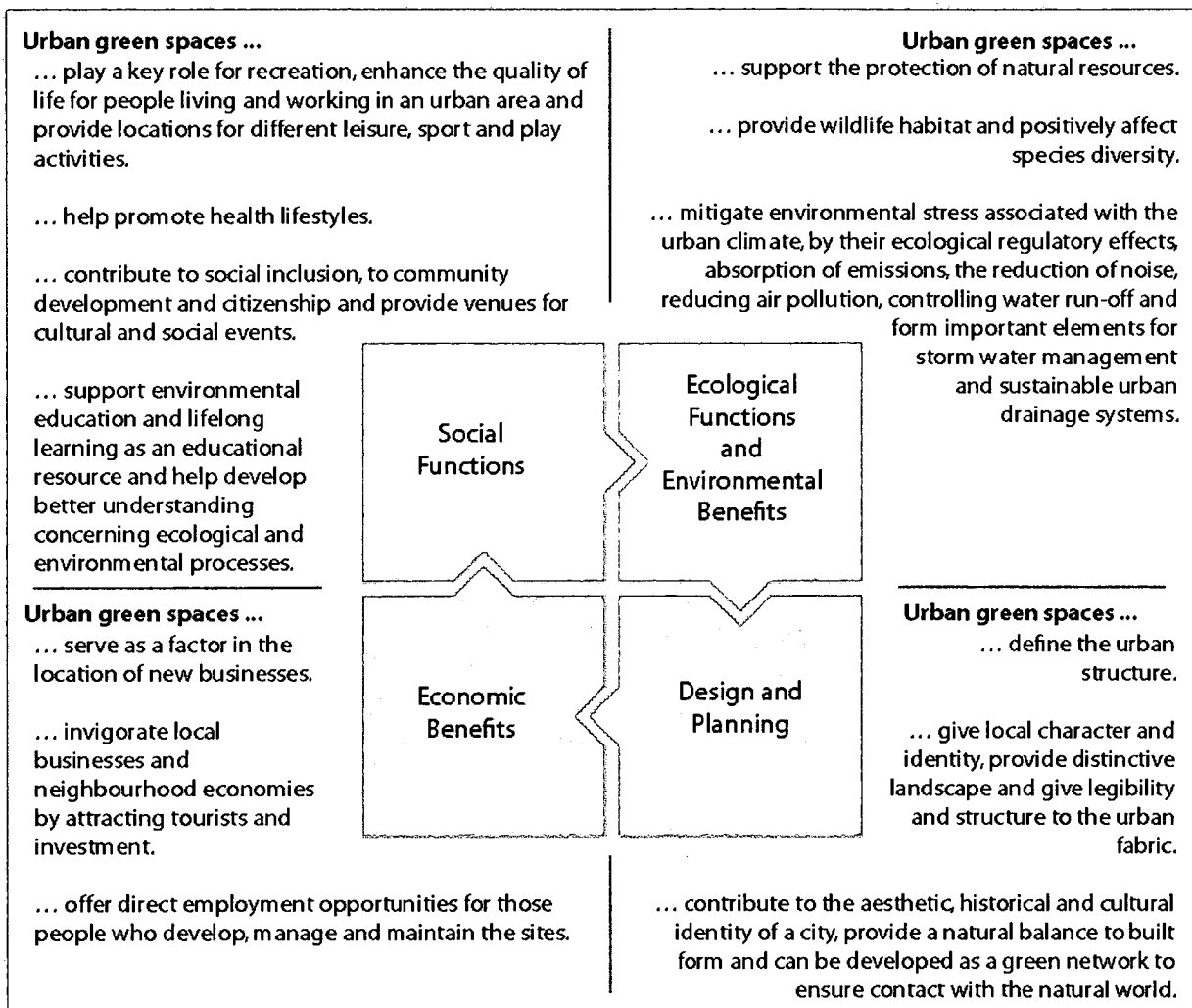
Increases in obesity are linked to ever more sedentary lifestyles and a reduction in outdoor activity. Evidence shows that adult patterns of exercise are set early on in life, so a lack of exercise when young can in turn create problems in adulthood<sup>11</sup>. Access to good quality, well-maintained open spaces can help to improve health and tackle obesity by providing opportunities for outdoor recreation, physical exercise and play. It has been estimated that some 7 percent of urban park users in England go there for sporting activities – that represents about 7.5 million visitors a year<sup>12</sup>.



In addition to tackling obesity, there are wider benefits associated with access to open spaces. These are summarised in the diagram over the page.

# 3.3 OBESITY AND CARDIO-VASCULAR DISEASE

## Potential Functions and Benefits of Urban Green Spaces




Adapted from URGF Project 2004. Making Greener Cities: A Practical Guide, p.12)<sup>25</sup>.

London's green spaces include parks, allotments, commons, woodlands, natural habitats, recreation grounds, playing fields, agricultural land, burial grounds, amenity space, children's play areas, and accessible countryside in the urban fringe. Civic squares such as squares, piazzas and market squares also form part of the open space network.




### Improving the green spaces for social housing

Of all our green and open spaces, those of social housing estates are generally some of the worst. The quality of open spaces within and around social housing estates has declined dramatically since their creation, leaving many under-used and in a state of neglect.

Neighbourhoods Green  is a project which seeks to improve the green spaces for social housing. It is led by Notting Hill Housing Trust and Peabody Trust, with Groundwork London managing elements of project delivery. Neighbourhoods Green aims to highlight the importance of green spaces for the residents of social housing, and to raise the quality of their design, management and safe-use within social housing providers. It provides guidance, support and tools for housing associations, local authority housing departments, tenants associations, and their partners.

## Encouraging the use of open spaces

Providing and maintaining open spaces has an important role to play in tackling obesity. However, health benefits can be further maximised by encouraging initiatives that promote the active enjoyment of these spaces. Examples of such initiatives include:


Walking the Way to Health Initiative (WHI)  which aims to get more people walking in their own communities, especially those who take little exercise or live in areas of poor health. WHI is an initiative of the British Heart Foundation and Natural England. It is estimated that since 2000, the WHI have encouraged over a million people to walk more.



See [www.neighbourhoodsgreen.org.uk/ng/](http://www.neighbourhoodsgreen.org.uk/ng/)

See [www.whi.org.uk/index.asp](http://www.whi.org.uk/index.asp)

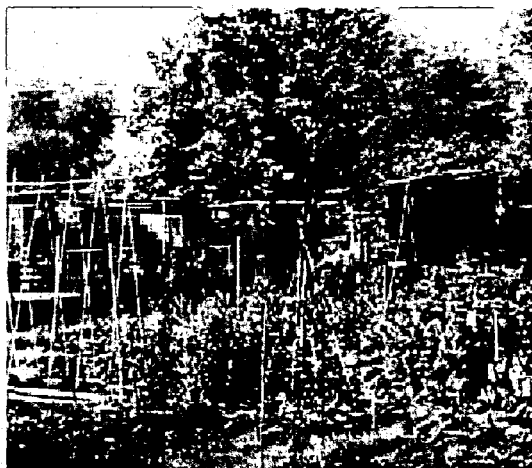
## 3.3 OBESITY AND CARDIO-VASCULAR DISEASE

The Green Gym  run by the British Trust for Conservation Volunteers (BTCV) is a scheme that seeks to inspire people to improve their health and the environment at the same time. It offers opportunities to work in open spaces through local and practical environmental and gardening work.

**Allotments:** Allotments provide a means of promoting physical activity at the same time as providing opportunities for local food growing. They also positively contribute to stress reduction, mental health, and encouraging social interaction and inclusion.

The role of allotments in providing a resource for healthy living has been identified in Seixal, Portugal where an allotment garden project has been initiated to provide a new resource for healthy urban development. The project was developed in response to Seixal joining the WHO City Action Group on Healthy Urban Planning in 1998. The invitation to Seixal to join this group arose from problems relating health to urban planning in the city. A number of innovative policies and projects were initiated in response to this membership, of which one was the allotment garden project.

The Mayor of London's Food Strategy (2006)<sup>56</sup> provides information on the role of allotments in London.



See Section 3.2.3 for more information on allotments, open and green spaces.

See <http://www2.btcv.org.uk/display/greengym>



## Case study 6: Tackling obesity and cardiovascular disease through the refurbishment of an urban park – Mile End Park, Tower Hamlets

Prior to refurbishment, Mile End Park was a bleak, fragmented and under-used open space in the centre of the London Borough of Tower Hamlets. Tower Hamlets has a large population but little good quality open space.

Refurbishment of the park included a number of measures which sought to encourage healthy lifestyles for those living and working in Tower Hamlets:

- Provision of safe and attractive pedestrian and cycle routes, e.g. the Pathway, which runs the length of the park, and the Green Bridge, which links two parts of the Park previously separated by a major road. These routes are likely to encourage walking and cycling as a recreation activity within the park itself and also encourage the use of sustainable modes of transport to access work or local services and facilities where they form part of wider pedestrian and cycle networks.
- The pathways have been designed to include careful grading, ensuring that the park and its facilities are accessible to all, including young children, older people and wheelchair users. Inclusive access and ease of use encourages the use of open spaces and leisure facilities and the promotion of active lifestyles for all groups of people.
- Provision of water sport, leisure, art and play facilities, e.g. the Play Arena, encouraging active outdoor exercise. These facilities are widely used by local residents, for example, in commenting on the refurbished park, one local resident commented that *'I usually come here with my mates to play football or cricket. It feels great to have a place like this'*<sup>1</sup>.

The health benefits associated with the refurbishment of Mile End Park could be further enhanced by providing people with clear information about the availability of safe and enjoyable opportunities to be active in the park. For example, 'active-living maps' could be designed illustrating facilities that offer physical activity facilities and setting out the location of pedestrian and cycle routes and where they link to wider walking and cycling networks.

Maintaining the long term quality of open spaces is crucial if their integrity is to be preserved and their use is to be encouraged. This was recognised by the project team redeveloping Mile End Park. To maintain the quality of this Park, rents from the shops bordering the Park go towards park maintenance and all revenue generated by park facilities is allocated to pay for park directors, rangers, events and general upkeep.

## 3.3 OBESITY AND CARDIO-VASCULAR DISEASE

See Section 2: Why Plan for Health?

There are a number of ways in which the quality of open spaces can be maintained. One example is through the use of Local Area Agreements (LAAs). Through the Safer and Stronger Communities LAA block, many LAAs have adopted an outcome to make public spaces cleaner, greener and safer. For example, Swindon's LAA has agreed such an outcome, focusing on cleanliness and the removal of litter, fly-tipping, graffiti and abandoned vehicles<sup>59</sup>.

### Win/wins of the Mile End Park refurbishment

In addition to incorporating measures to encourage more active and healthy lifestyles, the design of Mile End Park included other features which positively contribute to health, including:


- Being designed to create a sense of well-being for its users with pleasant routes and large trees. Surfaces on paths are comfortable for both pedestrians and cyclists and variations in height, planting and special features create continuous visual interest. This approach to design will help to provide a tranquil visual interlude in an otherwise heavily built up area, helping to reduce stress and anxiety for local residents and people who work in the area.
- Provision of extensive planting, including mature trees, helps to improve local air quality, absorb emissions and reduce noise, having positive effects on mental health, cardiorespiratory diseases and stress. In addition, trees and vegetation provide shade, helping to mitigate the urban heat island effect, ensuring the usability of the park in a changing climate.
- Opportunities to relax and contemplate are well catered for in the park through the positioning of well designed benches. There are also numerous opportunities for informal seating on walls and steps. Social spaces are likely to encourage participation and social inclusion, positively contributing to health.




### 3.3.4 Accessibility to new and existing sport and leisure facilities

The provision of good quality accessible public services, including sport and leisure facilities, has a direct positive effect on human health<sup>11</sup>. Sports and leisure facilities, such as leisure centres, swimming pools and outdoor sports grounds provide important opportunities to increase activity levels through exercise. A recent study found that creating or improving access to places for physical activity can result in a 25% increase in the percentage of people who exercise at least three times a week, especially when combined with the distribution of information about the benefits and opportunities for active living<sup>12</sup>.

In addition to helping to tackle obesity and cardiovascular disease, increasing the number of and access to these opportunities has a number of wider benefits, such as increasing public participation and community ownership, and minimising the need to travel (see Part 3.4 which illustrates the impact of reducing travel on respiratory disease). Sport and leisure facilities should therefore be provided for by boroughs in all areas where there is currently a deficit for the local community.

Sport England has set up a database of sports facilities throughout England. This enables individuals to search for facilities within their local area. Improving individual awareness of local sports facilities is a step towards more active lifestyles. 

Sport England has also recently prepared design guidelines on how to promote opportunities for sport and physical activity in the design and layout of development. 

Sport and leisure facilities should be integrated within the broader built environment so they are easily accessible to all groups of people in the local community. Such facilities are likely to be particularly effective in three key settings: schools, workplaces and healthcare centres. The health benefits associated with improving access to sport and leisure facilities are now considered through two case studies: provision of a sports facility for the local community, and the integration of leisure facilities within a healthcare centre.



## 3.3 OBESITY AND CARDIO-VASCULAR DISEASE

### Case study 7: Encouraging physical activity through refurbishment of a recreation ground - Lammas Park, Staines

Lammas Park is situated on the north bank of the River Thames to the west of Staines. Until recently, facilities for physical activity in the park were limited; it offered a paddling pool for younger children although this no longer met safety guidelines as set out by the Royal Society for the Prevention of Accidents (RoSPA).

Following engagement with the local community, new recreation facilities were provided, including a skateboard park and a spray-ground – a water feature with a series of touch pads that when jumped or trodden on release jets of water.

These facilities have dramatically increased usage of the park, which is now a major leisure attraction for the people of Spelthorne and the surrounding area. The popularity of the skate park has been demonstrated by the fact that it has had to be repainted after six months rather than the two or three years initially recommended by the contractors.

The park now aims to offer something for all groups of people from the very young to older people. In addition to the skateboard park and spray-ground, its facilities also include tennis, crazy golf, croquet, giant chess and draughts. This provides the resources to encourage physical activity in Spelthorne and the surrounding area, promoting healthy lifestyles and helping to address obesity and cardiovascular disease.



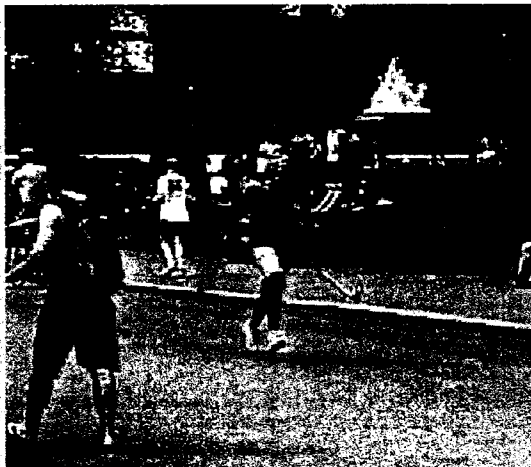


**Win/wins**

- There were problems in Staines town centre with anti-social behaviour. Young people with skateboards were causing a nuisance by using town gardens and benches as they had no dedicated space. Due to the success of the skateboard park, levels of anti-social behaviour in Staines town centre have diminished.
- A Skateboard forum had been created to develop designs for the new skateboard park. This helped to engage local people and build a closer community.
- Improving facilities at Lammas Park encourages local residents to visit the park even if they do not intend to use the facilities. This has a number of health and wider benefits.
- Lammas Park is located close to Staines town centre with its excellent transport links. Its facilities are therefore easily accessible by walking, cycling and public transport. These forms of transport have additional health benefits.

**Conflicts/constraints**

- Many communities report that young people playing ball games or skateboarding in a public open space are a nuisance. However, the recreation needs of children and young people need to be met alongside the needs of all other groups.



## 3.3 OBESITY AND CARDIO-VASCULAR DISEASE

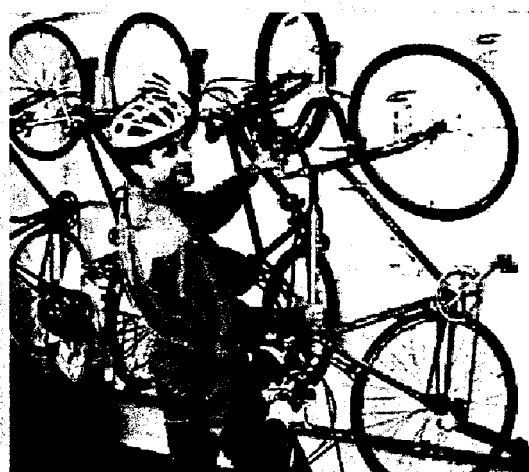
### Case study 8: Integrating leisure facilities within a healthcare centre - St. Peter's Integrated Health and Leisure Centre, Burnley

Community health centres, hospitals and long-term care facilities have an obligation to set an example by creating and improving opportunities for participation in physical activity<sup>14</sup>. Health professionals who work in these centres are credible spokespeople for the value and benefits of regular physical activity and are ideally placed to suggest interventions that motivate people to increase physical activity<sup>15</sup>.

The St. Peter's Centre, located in the heart of Burnley, is a combined leisure and primary care centre housed in one building. The project was initiated to raise the health and other needs of the local population. It provides health services integrated with leisure facilities, including a swimming pool, sports hall, squash courts and dance facilities. This integrated approach to healthcare sends a strong message to the residents of Burnley of the relationship between an active lifestyle and good health.

#### Encouraging healthy travelling to healthcare facilities

Sustrans, a charitable group promoting active transport, has produced a guide for health care organisations to promote healthy travel for staff and visitors. The guide encourages travel guidance to be set out in the healthiest order – starting with walking and cycling, then public transport (because there is usually a walk at each end of the journey) and finally car travel. Information about car driving and parking should be discussed last so that healthier ways to travel are most prominent. The guide also encourages choosing meeting rooms and venues according to healthy travel as well as access to people with disabilities<sup>16</sup>.



Source: BioRegional

**Win/wins**

- Encouraging an active lifestyle will help to address obesity and cardiovascular disease in addition to a number of other health-related issues, e.g. regaining health and vigour following an illness or injury, and mental health.
- Sports and recreation facilities along with community facilities help to contribute to the area's social capital through interactions with other members of the community.
- Promoting healthy travel to healthcare organisations for staff and visitors has wider benefits including reducing traffic volumes and congestion which have positive effects on respiratory disease by reducing air pollution.

See **Section 3.4** for information on the effect of healthy travel on respiratory disease.

## 3.3 OBESITY AND CARDIO-VASCULAR DISEASE

### Recommendations: Planning for Obesity and Cardiovascular Disease

#### Open and Green Space

- Create and develop green and open spaces in new developments.
- Integrate additional and protect existing opportunities for physical activity in parks and green spaces.
- All public spaces should offer inclusive access, ease of use and be affordable, providing opportunities for recreation for all groups of people.
- The provision/refurbishment of open spaces should contribute to a network of open spaces, by either improving linkages or contributing to areas of deficiency.
- Planning for open spaces in the future will need to consider the impacts of climate change.

#### Management and Maintenance

- Open spaces should be maintained to a high level of general quality. The quality of these facilities is key to how regularly they are used by those in the local community.
- Employ park attendants to make park users feel safe.

#### Sport and Recreation Facilities

- Plan and design for active living. Ensure that planning documents and guidelines address the impact on residents' ability to engage in physical activity.
- Provide people with clear information about the availability of safe and enjoyable opportunities to be active. Design and promote a community-wide active living map of parks, paths, cycle and pedestrian routes and facilities that offer physical activity programmes.
- DPD policies should protect and enhance facilities and access to facilities which enable young people to play within their local neighbourhoods.
- Ensure sports facilities are integrated in new developments and regeneration projects.
- Provide recreation and sport facilities that are accessible to all and are affordable.

#### Healthcare Provision

- Local planning authorities should collaborate with health and long-term care facilities to increase opportunities for active living and appropriate physical activity for their employees and patients/residents.
- Local planning authorities should encourage health professionals in primary care settings to promote active living and to motivate inactive people to begin appropriate moderate exercise.
- Promote healthy travel to healthcare organisations for staff and visitors.