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PARTNERSHIP

Linking environment and health

A resource for policy and decision makers working on Joint Strategic Needs Assessment

November 2012

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Contents

1. The Leadership Challenge

"The Joint Strategic Needs Assessment and Health and Wellbeing Boards are key to putting localism into action".

Paul Burstow MP Minister of State, Department of Health

Purpose of the Report

This straight-forward report is designed to help Health and Wellbeing Boards, Directors of Public Health, Health Watch and Local Authority Environment Leads to address the interface between health and wellbeing, population health and environmental change. It is about how the strategic challenges involved can be addressed and what practical steps can be taken to increase the health and resilience of communities.

Our health and wellbeing is influenced by a wide range of factors, many of which lie outside the remit of health and social care services. These include economic issues, the quality of the local environment and of housing, and connections to wider society. There is a clear need for an effective local strategy on health and wellbeing to place emphasis on prevention, promote self-care and drive services upstream. Sustainability from both a financial and environmental perspective – as well as a health and wellbeing perspective – can be improved by providing services to patients in timely and effective ways.

Given the importance of the Joint Strategic Needs Assessment (JSNA) in shaping priorities for health and social care investment it is essential that a proper assessment of such environmental factors, which impact on population health and health inequalities, are given real attention and emphasis. Health and Wellbeing Boards and the Boards of health and care providers will also want to take full account of environmental issues and community capacity when addressing quality and finance challenges.

The main focus of this report is to strengthen action on the impact of these environmental issues on health and wellbeing in London. But what has also become clear from work on its preparation is that there is a broader, more strategic leadership challenge.

The Leadership Challenge for Heath and Wellbeing Boards

Firstly the Leadership Challenge can be seen as being about how to gain traction and connection between environmental change and health in the face of competing priorities, and about how to create greater momentum across London which improves the ability of services to adapt to changing (and potentially adverse) services. The new systems in health and social care as Primary Care Trusts (PCTS) hand over to Clinical Commissioning Groups, as LINks hand over to Healthwatch and health and Wellbeing Boards are established will take time to bed down. However, there is a recognition amongst many of the players that these are issues that will need to be addressed. So at one level the challenge is about how to improve joint working between agencies, and between agencies and the public, to secure changes of real impact. This looks like largely an extension of existing activity, aimed at linking health and environmental expertise better, fusing together agendas to greater effect and increasing public engagement.

Secondly, the Leadership Challenge can be seen as being about how to develop the resilience of communities and social preparedness and how to stimulate behaviour change within communities themselves. This seems from what we have seen as being more

1. The Leadership Challenge

^ *TFL Images – Martin Breschinski*

complex, requiring a compelling vision and narrative which places resilience centre stage. It raises a question about whether community preparedness is a shared currency with sufficient ownership and bite and whether this actually requires less emphasis on service change and adaptations.

The impact of environmental change and the need, as a result, for a genuinely strategic and holistic approach to action is recognised in key policy and strategy documents. But is there enough evidence of real prioritisation of both elements of the Leadership Challenge in the face of competing priorities and short-term objectives?

There is a lot of interesting work already underway both in London and further afield on environmental change and health. This practical resource is designed to make a contribution to the Leadership Challenge by setting out how such exemplary practice might be developed further and used to track progress over time.

However, a more profound resilience will rely on all the right levers being pulled to address community preparedness. This will require an appreciation on what needs to be done to stimulate and support public behaviour changes, on which a more profound resilience depends. There are obvious barriers to making progress:

- the sheer scale of climate change tests the assumptions and processes of joint planning;
- the fragmentation of responsibilities between agencies and their different cultures, accountabilities and agendas, restrict Integration and coordination;
- the demands of short-term delivery undermine longer-term focus – exacerbated by a lack of appreciation of the benefits of short-term delivery actions;
- the impact of different environmental policies and levels of buy-in between boroughs creates different investment decisions between neighbouring boroughs.

These are of course perennial problems which affect any planning and social change processes, but they are particularly problematic where shared purpose is needed to address the more difficult elements of the Leadership Challenge. The creation of Health and Wellbeing Boards, (HWBs) and the related changes to the positioning of public health, provide an opportunity to gain new traction on some of these deeper issues. Health and Wellbeing Boards will have the opportunity to influence the Local Development Framework and Supplementary Planning Documents. The LB of Hackney produced a guide to promoting health and wellbeing through the spatial planning process and this is set out in Figure 1.

1. The Leadership Challenge

Figure 1: London Borough of Hackney JSNA

Promoting health and wellbeing through spatial planning

The following framework for promoting health and wellbeing through effective planning and place-making was developed to inform the assessment of the health impacts of the development of the Olympic Site.

Housing quality and design

Does the proposal encourage and promote housing quality?

Consider:

- Using design codes such as those advocated by CABE (now the Design Council) to ensure consistent design quality;
- applying the principles of Lifetime Homes to ensure long-term adaptability for older and disabled people;
- incorporating generous internal space standards including sufficient storage space and separate kitchen and living spaces; and
- employing modular housing design to allow for future changes in housing demand.

Access to public services

Does the proposal encourage and promote access to good public services?

Consider:

- The provision of all forms of social infrastructure, including education, health and community facilities:
- opportunities for the co-location of services should be explored; and
- the medium- and long-term requirements of healthcare infrastructure, including floor space, accessible locations, the need for temporary facilities, and funding and delivery options. New health facilities should address the impact of the development proposal, the needs of the wider area, and the cumulative impact of development on the wider area.

Active design and access to open spaces

Does the proposal enable people to be physically active in their immediate surroundings?

Consider:

- Ensuring that stairwells are attractive and welcoming;
- the provision of a range of different types of open spaces including informal and formal public spaces, play areas, and sports and games areas;
- maximising the value of open spaces for all members of the community through the sensitive integration of different functions such as relaxation, games and play; and
- the integration of open spaces with an attractive and welcoming streetscene.

1. The Leadership Challenge

Accessibility and active travel

Is the proposal accessible and connected to the surrounding area by walking and cycling routes?

Consider:

- Ensuring that all dwellings are within walking distance of shops, key public services and public transport;
- prioritising pedestrian and cycle routes over other modes of transport within the design of the public realm;
- the effective integration of the development with wider cycle and walking networks and the Green Grid;
- the use of traffic management and calming to minimise risks and obstacles to pedestrians, runners and cyclists; and
- incorporation of cycle parking in the public realm and cycle storage in dwellings.

Air quality, noise and neighbourhood amenity

Does the proposal manage and promote good air quality, protect occupiers from excessive noise and disturbance and provide an attractive environment for living and working?

Consider:

- Designing settlements to minimise exposure of occupants to air, noise and light pollution;
- reducing the impacts of motor vehicle traffic on residential areas through reduced car parking and effective traffic management, especially of larger vehicles;
- incorporating trees to buffer noise and absorb pollution; and
- minimising adverse impacts on existing dwellings during construction.

Crime reduction and community safety

Does the proposal promote community safety and address the fear of crime?

Consider:

- Ensuring natural surveillance and appropriate lighting of the entire public realm;
- designing attractive, multi-use open spaces where people will mix and build trust; and
- employing the principles of 'Secured by Design', 'Designing out Crime' and 'Safer Places'; but avoiding solutions which restrict access to open space and inhibit community interaction.

1. The Leadership Challenge

Access to healthy food

Does the proposal encourage and promote easy access to healthy and affordable food?

Consider:

- Encouraging the provision of shops selling fresh food, including social enterprises;
- restricting numbers of new A5 takeaway outlets;
- allocating space for community gardens, allotments and micro-allotments;
- generous provision of private gardens;
- incorporating green roofs; and
- incorporating fruit trees within the design of the public realm.

Access to work

Does the proposal encourage and promote access to local employment opportunities?

Consider:

- Maximising opportunities for local employment and training;
- incorporating adequate provision of childcare facilities; and
- ensuring accessible routes to public transport for people with physical and sensory disabilities.

Social cohesion and social capital

Does the proposal encourage and promote social cohesion and social capital?

Consider:

- Applying the principles of Lifetime Neighbourhoods;
- Incorporating appropriate provision of community facilities to enable communities to meet, interact and work together;
- designing the public realm to maximise opportunities for social interaction, with clear social foci where people can meet informally, and minimise barriers created by transport routes; and
- including a range of housing types and sizes to provide for the diversity of local housing needs.

1. The Leadership Challenge

Climate change

Does the proposal seek to both mitigate and adapt to climate change?

Consider:

- Designing houses with minimum energy loads including passive cooling strategies in the summer, taking account of the likely increase in summer temperatures of the lifetime of the development;
- using water-efficient design principles to reduce water demand, including rainwater use where appropriate;
- creating a public realm in which walking and cycling are safe, attractive and unobstructed; Reducing waste by ensuring that facilities for recycling and composting are integrated into dwelling and settlement design, and by employing waste minimisation strategies during construction;
- reducing flood risk through effective management of surface water and the use of permeable surfaces; and
- reducing overheating risk at a development level by incorporating extensive vegetation in both the public and private realm and minimising the number of hard surfaces exposed to solar radiation.

Source: The City and Hackney Health and Wellbeing Profile: our joint strategic needs assessment, 2011/12.

Conclusion to section one

However, the immediate priorities for the HWBs are likely to be the biggest causes of ill-health and mortality such as Coronary Heart Disease, COPD and Cancer accompanied by issues such as smoking, obesity, immunisation or mental health as well as the need simply to establish an effective modus operandi and presence in a changed and changing operational landscape. It will be some time before some of the wider determinants will be prioritised.

Environmental issues can of course be effectively incorporated into these priorities even within such a context, but this is most likely to be around an already established currency of component elements – environmental quality, air quality, food, green space, flood risk, fuel poverty and overheating – rather than engagement with environmental change in a more holistic and strategic way. This pragmatic approach is reflected in the way this practical resource has been developed. We return to the broader Leadership Challenge in the Conclusion.

1. The Leadership Challenge

Case Study – Transforming Urban Health

^ *Transforming Urban Health – TFL Images, Ian Bell*

Progress on environmental change and health inevitably has to engage with how best to improve overall health outcomes in urban settings. A recent two-year Lancet Commission, drawing on an assessment of the Healthy Cities Movement and looking at the connection between urban planning and health, provides a conceptual framework for transforming urban health which is built on insights around the "multiplicity of associations" that shape such outcomes. It emphasises the self-awareness which those involved with urban health and environmental policy need to display and brings out the critical roles of experimentation, assessment and community dialogue in mediating and shaping forward momentum. In doing so it explicitly challenges both well-entrenched professional behaviours and the value of linear, evidence-based practice in planning and health.

In terms of changes in behaviour it recommends "city governments should work with a wide range of stakeholders to build a political alliance for urban health. Such stakeholders should include all those able to deliver urban change for health in active dialogue. In particular, health officials and practitioners need to be in dialogue with urban planners and managers at all levels." This is especially relevant to environmental change and health.

Secondly it emphasises the key role of community representation in forums of policy making and planning for urban health. This recognises cities as "networks with emergent properties" and suggests much greater attention should be paid to supporting less well organised sections of the urban population.

It also argues for planning frameworks which explicitly incorporate urban health goals and policies and link them to actions. Critically it urges policy makers at national and urban levels to embrace complexity analysis to understand the relations between interventions that affect the urban environment and urban health outcomes. It suggests this analysis will identify the complex interplay of causality, feedback loops and tensions between objectives, and bring out, more than usually is the case, the unintended consequences of policies.

Its final conclusion is worth quoting directly – "progress towards effective action on urban health will be best achieved through local experimentation in a range of projects, supported by assessment of their practices and decision-making processes by practitioners. Such efforts should include practitioners and communities in active dialogue and mutual learning. Interventions such as impact evaluation and indicator sets should be used judiciously to strengthen such assessment."

Source: Shaping cities for health: complexity and the planning of urban environments in the 21st century The Lancet: Volume 379, Number 9831, 2 June 2012.

2. Introducing the JSNA, Joint Health and Wellbeing Boards and the Public Health Outcomes Framework

This Section identifies roles, responsibilities and accountabilities in the new health and local authority structures and the opportunities provided for a more holistic approach to health and wellbeing, population health and environmental change.

The challenge of persistent health inequalities or complex needs groups cannot be satisfactorily addressed by any single agency alone and solutions lie beyond the scope of health agencies. Partnership and integration is the only workable solution to the big challenges that we face, whether they are reduced investment, demographic change or environmental factors.

Moving forward, local authorities will be given the role of pulling together commissioning across the NHS, social care, public health and any other services that the HWBs agrees have a direct influence in health and wellbeing, in order to secure better health and wellbeing outcomes for their whole population, better quality of care for users of health and social care services, and better value for the taxpayer.

Health and Wellbeing Boards

The Coalition Government believes that the NHS and local government have made progress on the development of Joint Strategic Needs Assessments (JSNA) since they were introduced in 2007. Now, Health and Wellbeing Boards have been given the task of leading Joint Health and Wellbeing Strategies (JHWS) with the purpose of:

i) Bringing together local government (including public health) and the Clinical Commissioning Groups as the main commissioners of local public services and help local leadership to decide on priorities in a more joined-up, effective and efficient way.

ii) Including those from housing, economic development, spatial planning and the community and voluntary sector to make a contribution to promoting health and wellbeing.

ii) Offering a real opportunity to develop a much stronger relationship with the people in local communities who, in turn, can shape the balance of services. A strong JSNA will strike the right balance between facts and figures about local health and wellbeing, and local views about what should be done[1].

1 DH (2011) Health and wellbeing boards www.dh.gov.uk/health/2011/10/health-and-wellbeing-boards/

2. Introducing

They will do this through Health and Wellbeing boards (HWBs), which will be a statutory requirement in every upper tier authority. The Boards will provide the platform for NHS, public health and local authority leaders and commissioners to work together on a geographical basis, both within and between local authority areas. The HWBs will also be the vehicle for the production of the new joint health and wellbeing strategies (JHWS).

The JHWS is intended to provide the overarching framework for the development of the commissioning plans agreed by the HWB for local NHS, social care, public health and other services. The JHWS could include wider health determinants such as housing and education.

The Joint Strategic Needs Assessment

A Joint Strategic Needs Assessment is the product of a process that identifies current and future health and wellbeing needs and assets, looks at the current range of services and then uses evidence of effectiveness to inform future service planning[2]. It identifies "the big picture" in terms of the health and wellbeing needs and inequalities of a local population. Local authorities, the community and voluntary sector, service users and NHS partners, research and agree a comprehensive local picture of health and wellbeing needs that are then mediated by the health and wellbeing board[3].

That way decision-makers can coordinate joint actions effectively and identify what the most important investments are for today or tomorrow. There is a danger that partners simply 'treat the symptoms and do not provide a cure', with each working independently from their separate perspectives. Without shared priorities based on JSNA, the same problems will come up again and again[4].

The HWBs will be able to look at the totality of resources available for health and wellbeing in their local area, and decide how to make best use of the flexibilities at their disposal, such as pooled budgets. Using JSNA to inform the JHWS, they will be able to consider how prioritising health improvement and prevention, the management of long-term conditions and the provision of rehabilitation, recovery and re-ablement services will best deliver reductions in demand for health services and wider benefits for the health and wellbeing of the local population.

2 Harding, E (2011) Joint Strategic Needs Assessments: A Springboard for Action. LGID: London. www.local.gov.uk/c/document_library/get_file?uuid=83c91c20-3f1b-4c43-8ca7-b2b9b5c0ad16&groupId=10171
3 DH (2011) The JSNA and JHWBS Explained – Commissioning for Populations. SO: London.
4 Harding, E (2011) Joint Strategic Needs Assessments: A Springboard for Action. LGID: London. www.local.gov.uk/c/document_library/get_file?uuid=83c91c20-3f1b-4c43-8ca7-b2b9b5c0ad16&groupId=10171

2. Introducing

Joint Health and Wellbeing Strategies

For Joint Health and Wellbeing Strategies, risk, performance and sustainability have become inseparable because the long-term survival of organisations is no longer only affected by economic factors, but also by social and environmental ones. Good governance is essentially about effective leadership. Such leadership is characterised by the ethical values of responsibility, accountability, fairness and transparency. Responsible leaders direct company strategies and operations with a view to achieving sustainable economic, social and environmental performance[5].

The HWBs will be responsible for reporting against a number of outcomes relating to public health, adult social and the NHS. The JSNA will be used by HWBs to inform the Joint Health and Wellbeing Strategy. The purpose of the Joint Health and Wellbeing Strategy is to encourage coherent commissioning across the NHS, social care, public health and other local partners. These have been designed to interlink so they work together towards shared outcomes and goals[6] (see Figure 2).

Public Health Outcomes Framework

One of the reasons given for integrating pubic health with local government is to ensure that all the factors that impact someone's health over the course of a lifetime are acted upon and that services are planned and delivered in the context of the wider determinants of health such as poverty, education, housing, employment and crime and pollution[7].

The Public Health Outcomes Framework (see Figure 3) consists of two overarching outcomes that set the vision for the whole public health system of what we all want to achieve for the public's health. The outcomes are:

- Increased healthy life expectancy, i.e. taking account of the health quality as well as the length of life.
- Reduced differences in life expectancy and healthy life expectancy between communities (through greater improvements in more disadvantaged communities)[8].

It is proposed that these outcomes are delivered through improvements across a broad range of public health indicators grouped into four domains: health protection, health improvement, and healthcare public health (and preventing premature mortality); and improving the wider determinants of health.

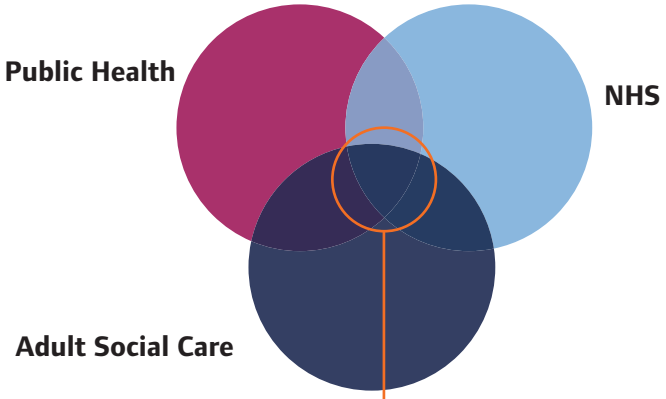
5 King M (2009) Report on Governance for South Africa: The King Committee on Governance. IODSA.
6 Appleton S *et al.* (2011) Practical Mental Health Commissioning. Royal College of Psychologists: London. www.rcpych.ac.uk/pdf/JCP-MH%20Vol%200ne%20(web%20copy%2011_04_05).pdf
7 Department of Health (2010). Healthy Lives, Healthy People: Transparency in Outcomes. Proposals for a Public Health Outcomes Framework. A consultation document. London: Department of Health.
8 DH (2011) Joint Strategic Needs Assessments Explained www.dh.gov.uk/health/2011/12/jsnas-strategies-explained/

2. Introducing

Figure 2: Interface between the NHS, social care and public health outcomes frameworks

Adult Social Care and Public Health:
Maintaining good health and wellbeing. Preventing avoidable ill health or injury, including through re-ablement or intermediate care services and early intervention

NHS and Public Health:
Preventing ill health and lifestyle diseases, and tackling their determinants



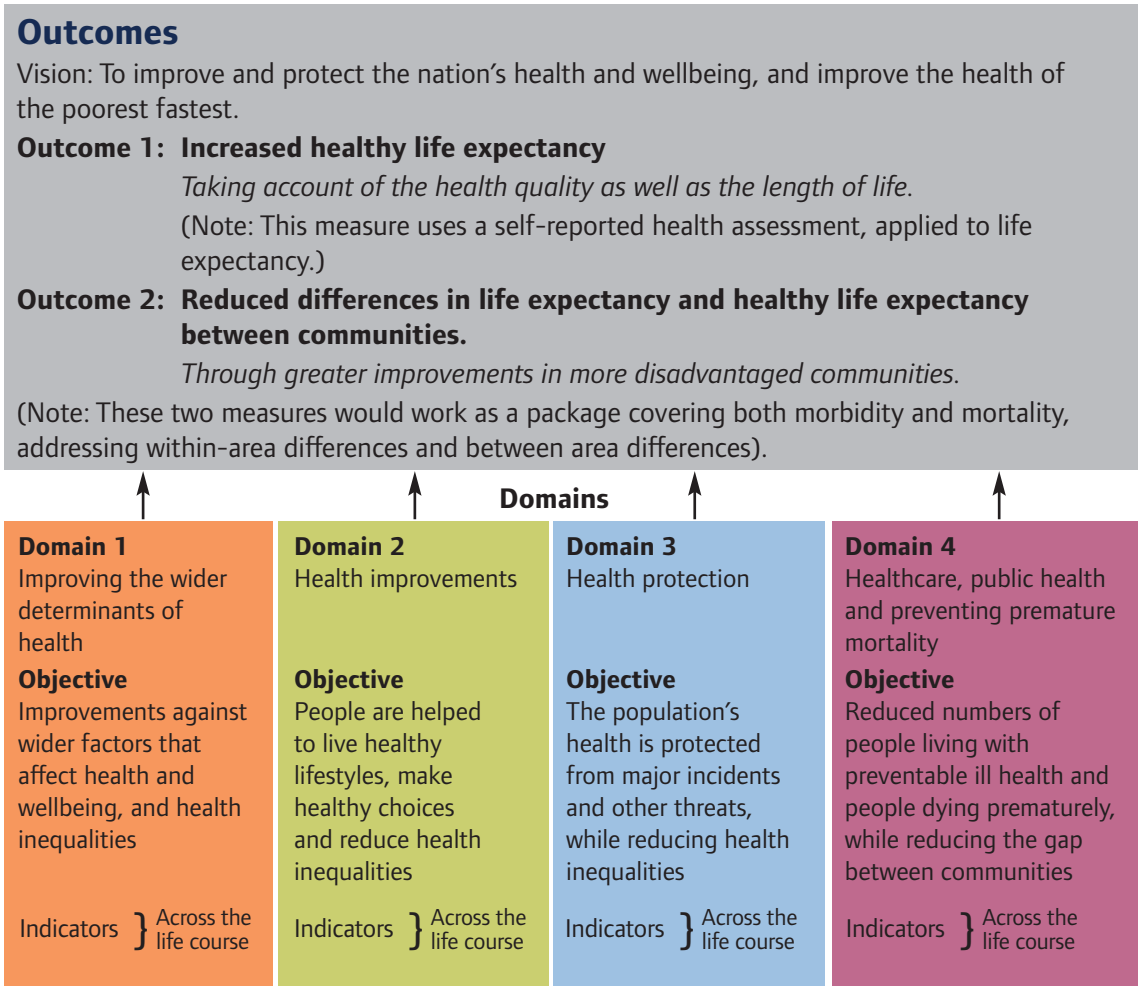
ASC, NHS and Public Health:
The focus of Joint Strategic Needs Assessment; shared local health and wellbeing issues for joint approaches

Adult Social Care and NHS:
Supporting discharge from NHS to Social Care. Impact of re-ablement or intermediate care services on reducing repeat emergency admissions. Supporting carers and involved in care planning.

Source: Appleton (2011) Adapted from Healthy Lives, Healthy People: Transparency in Outcomes. Proposals for a Public Health Outcomes Framework. A consultation document. Department of Health. December 2010.

2. Introducing

Figure 3: Public Health Outcomes Framework



2. Introducing

Each of the domains has a link to environmental issues. Under each domain we have set out some of the ways in which an increased focus on environmental issues can help deliver the outcomes.

Domain 1: Improving the wider determinants of health

Objective: Improvements against wider factors that affect health and wellbeing, and health inequalities.

Recognises the significance of accessible green space as a wider determinant of public health. There is strong evidence to suggest that green spaces have a beneficial impact on physical and mental wellbeing[9] and cognitive function through both physical access and usage – especially walking, running and cycling[10]. They reduce the risk of flooding and absorb air borne pollutants. Shading needs to be provided to reduce risk of people over heating and sun-burn.

Recognises that the drivers of fuel poverty (low income, poor energy efficiency and energy prices) are strongly linked to living at low temperatures[11] and that low temperatures are strongly linked to a range of negative health outcomes[12]. It is estimated that fuel poverty is the cause of 10% of excess winter deaths. This equates to 2,700 people per year, more than die on the roads each year[13]. Children living in cold homes are twice as likely to suffer from chest problems, asthma and bronchitis[14].

Domain 2: Health improvement

Objective: People are helped to live healthy lifestyles, make healthy choices and reduce health inequalities.

Encouraging cycling would have the biggest single impact on all cause mortality and reduce levels of pollution[15],[16] – in turn reduces risks of dementia and respiratory disease[17]. Accessible green space is important to encourage more physical activity and its impact on mental wellbeing and cognitive function through both physical access and usage – reducing risk of CHD, COPD and Cancers. Shading needs to be provided to reduce risk of cancer and over-heating.

9 Morris N (2003) Health, well-being and Openspace. www.openspace.eca.ac.uk/pdf/appendixf/OPENspacewebsite_APPENDIX_F_resource_31.pdf
10 Faculty of Public Health (2010) Great Outdoors: How Our Natural Health Service Uses Green Space to Improve Health and Well-being. www.fph.org.uk/uploads/r_great_outdoors.pdf
11 (Wilkinson *et al.* 2001) Cold Comfort: The Social and Environmental Determinants of Excess Winter Death in England, 1986-1996. Bristol: The Policy Press.
12 Marmot, M., Allen, J., Goldblatt, P., Boyce, T., McNeish, D., Grady, M., and Geddes, I. Fair society, healthy lives. Strategic review of health inequalities in England post 2010 (Marmot Review). 2010. Available at www.ucl.ac.uk/gheg/marmotreview
13 Hills J (2012) Getting the measure of fuel poverty: final report of the Fuel Poverty Review. www.decc.gov.uk/hillsfuelpovertyreview/
14 Barnes *et al.* (2008) What Happens to Children in Persistently Bad Housing? M. Barnes *et al.*, National Centre for Social Research, 2008
15 Oja, P., S. Titze, *et al.* (2011). "Health benefits of cycling: a systematic review." Scand J Med Sci Sports
16 Cavill, N and Buckland, J (2012) Investigating the potential health benefits of increasing cycling in the Cycling City and Towns. Department for Transport. SO: London.
17 Khaw, K. T., R. Jakes, *et al.* (2006). "Work and leisure time physical activity assessed using a simple, pragmatic, validated questionnaire and incident cardiovascular disease and all-cause mortality in men and women: The European Prospective Investigation into Cancer in Norfolk prospective population study." Int J Epidemiol 35(4): 1034-1043.

2. Introducing

Domain 3: Health protection

Objective: The population's health is protected from major incidents and other threats, while reducing health inequalities.

Poor indoor and outdoor air quality, measured as 'the mortality effect of anthropogenic particulate air pollution (measured as fine particulate matter, PM2.5) per 100,000 population. The current burden of particulate air pollution in London is estimated to reduce life expectancy by 9 months[18] and is worse in socially deprived neighbourhoods[19]. Flooding has long term effects on health and well-being leading to damage or loss of home, lost school work days, infectious diseases and longer term psychological impacts[20].

Domain 4: Healthcare public health and preventing premature mortality

Objective: Reduced numbers of people living with preventable ill health and people dying prematurely, while reducing the gap between communities.

Excess winter deaths and summer deaths are a major cause of mortality and ill health, particularly amongst older people and those on low incomes. Both extreme cold and extreme hot weather exacerbates minor and pre-existing medical conditions, and mental health is negatively affected by fuel poverty and cold and hot housing. The indicator is the ratio of extra deaths from all causes that occur in the winter months compared to the expected number of deaths, based on the average of the number of non-winter deaths. However, increased summer mortality due to urban heat island effect is also an issue that needs to be tackled.

Conclusion to section two

In the reformed system, far greater emphasis is placed on the process and outputs of JSNAs and JHWSs, than has been attributed to the development of JSNAs to date. CCGs, the NHS Commissioning Board and local authorities are obliged to have regard to the relevant JSNA and joint health and wellbeing strategy in exercising their functions[21] and CCGs have a duty to each relevant health and wellbeing board when preparing its commissioning plan or revising it[22].

Sustainability is the primary moral and economic imperative of the 21st Century. It is one of the most important sources of opportunity and risk for any enterprise. Nature, society and business are interconnected in a complex way that needs to be understood by all decision makers. Most importantly, current incremental changes towards sustainability are not sufficient – we need a fundamental shift in the way enterprise and directors behave[23]. This is explored more fully in the next section.

18 COMEAP (2010) The Mortality Effects of Long-Term Exposure to Particulate Air Pollution in the United Kingdom.
19 Goodman A, Wilkinson P, Stafford M, Tonne C, Characterising socio-economic inequalities in exposure to air pollution: A comparison of socio-economic markers and scales of measurement. Health & Place 2011;17:767-774.
20 Stanwell-Smith, R. Climate change and its health implications. Issue 1. Version 2. 2008 Chartered Institute of Environmental Health. Available at www.cieh.org/policy/climate_change_health_implications.html
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23 King M (2009) Report on Governance for South Africa: The King Committee on Governance. IODSA.

3. Linking Environment and Health

This Section identifies the key links between environmental issues and health, and highlights the practical steps that HWBs and their partners might want to consider taking, using illustrative case studies.

An increase in the use of public transport, cycling, and walking, as alternatives to more energy intensive private vehicles, will increase physical activity, reduce obesity, and stimulate social contacts[24].

Linking Environment and Health

There is now a widespread recognition by the wider health community of the important links between health and the environment, and the need to develop environmental strategies as a way of taking a more holistic view of health and wellbeing. Procuring hospital food from local producers, for example, not only reduces the carbon emissions and costs associated with air and road freight but also contributes to community wellbeing and cohesion by boosting the local economy[25].

The warmer winters we are expecting may bring health benefits to some, at least in the early stages of the process. Milder winters may reduce cold weather related deaths from Illness such as influenza or cardiovascular disease. However, overall, the balance of health impacts of climate change, however, is anticipated to be substantially, and increasingly, negative. These negative effects are mediated not only through progressive changes in average climatic conditions, as temperatures rise and precipitation patterns change, but also through changes in regional weather patterns or their stability. Unpredictable weather (sudden cold, hot, wet, or dry spells) and extreme weather events (such as heatwaves, floods, and droughts) will become more common[26].

These climatic changes affect health through mechanisms that may have:

- Direct impacts on health and health inequalities.
- Indirect impacts on health, affecting the wider determinants of health and health inequalities.
- Deferred and diffuse risks.
- Direct effects on the delivery of health and social care services, including those working within the health sector, and the buildings and infrastructure required to deliver these services.

The Quality/Finance Challenge

By and large the changes needed to improve environmental sustainability are the same as those needed to deliver quality improvements and financial sustainability[27]. Sustainability means more than merely lasting or surviving. It means designing and delivering health care that uses resources in ways that do not prejudice future health and wellbeing. These are set out in Figure 4.

24 McMichael A (2012) Health Risks Present and Future from Global Climate Change. BMJ 2012; 344: e 1359.
25 NHS Confederation (2007).
26 McMichael A (2012) Health Risks Present and Future from Global Climate Change. BMJ 2012; 344: e 1359.
27 Naylor C and Appleby J (2012) Sustainable Health and Social Care: Connecting environmental and financial performance. King's Fund: London.

3. Linking Environment and Health

Figure 4: Demonstrating the Link Between Environmental, Financial and Health Benefits

There are a number of synergies between the actions necessary to deliver better health outcomes at lower cost and efforts to minimise environmental impacts:

Health	Actions to reduce environmental impacts can also improve public health e.g. promoting walking or cycling instead of driving.
Quality	Actions to transform health and social care services and reduce environmental impacts and improve quality of patient experience. E.g. reducing journeys, bringing care closer to home and removing redundant interventions.
Finance	Environmentally sustainable delivery of health and social care reduces direct costs. And climate change mitigations can reduce costs through prevention of admissions etc. For e.g. Through reduction of utility costs and better resource use and indirect costs through the preventative health benefits of activities such as cycling and physical exercise.

Adapted from: Naylor C and Appleby J (2012) Sustainable health and Social Care.

The physical locations where health and social care services are delivered are at varying risk of being directly affected by extreme weather events. Some could be rendered temporarily or permanently useless. Whilst the contribution of some climate change risks may be less predictable (vulnerability to strong wind, for example), the distribution of others, such as tidal or surface water flooding, can be mapped relatively accurately with a range of probabilities used to predict the extent or severity.

For example, the provision of flood resistance measures for individual acute sites has been historically considered to be excessively costly, a situation which could conceivably change subject to future increases in flood risk. Whilst urban density and form play a role in the prevalence of urban heat islands, facilities need to be close to major centres of population and therefore best practice in heat island mitigation will play a vital role in combating excessive heat, including biomimicry (learning from nature), urban greening (including living roofs) and the provision of new green space including accessible, shading windows and encouraging behaviour change to reduce heat as well as safe water features and drinking water fountains.

Why this matters to London

As a major city, many reports and studies have identified the impact of extreme weather events on London, and on the health of Londoners. Extreme weather events have been shown to have extensive health impacts on Londoners and on health inequalities. This is both because it will have a disproportionately negative impact on those already experiencing poorer wider determinants of health, because these same groups are less likely to be able to take advantage of the health-related opportunities presented by these changes to our weather[28] and because of the difficulty of getting services to vulnerable people. Figure 5 gives examples of the known health effects of extreme weather.

3. Linking Environment and Health

Figure 5: Health Effects of Extreme Weather

Health outcome	Known effects of weather/climate
Heat stress, cold stress	Deaths from heart- and lung-related diseases increase with hotter and colder temperatures. Heat-related illnesses (heat cramps, heat exhaustion and heat stroke) and death increase during heatwaves.
Air pollution related morbidity and mortality	Weather affects air pollution concentrations with impact on those with respiratory disease, asthma or hayfever, bronchitis, emphysema, COPD, heart disease or angina. Weather affects the distribution, seasonality and production of air-transported allergens.
Flooding related morbidity and mortality	Floods cause direct effects (deaths and injuries), infectious diseases, long-term mental health problems, and (temporary) problems access to health services.
Vector-borne diseases	Higher temperatures shorten the development time of pathogens in vectors and increase the potential transmission to humans.
Water- and food-borne diseases	Survival of important bacterial pathogens is related to temperature. Increases in drought conditions may affect water availability and water quality due to extreme low flows. Extreme rainfall can affect transport of disease organisms into water supply.
Cataracts, skin cancers and sunburn	More cloud-free days and higher temperatures may encourage potential risk of overexposure to UV radiation.

Source: Kovats et al. (2005) Climate Change and Human Health in Europe

Heat-related mortality currently accounts for around 1,100 premature deaths per year in the UK, with London being the area worst affected. In our future climate, heat-related mortality and morbidity may increase more in large urban areas. This is partly as a result of the urban heat island effect. Heat is also estimated to cause over 100,000 patient-days in hospital per year. However, these figures can increase noticeably for exceptionally hot years such as was experienced in 2003 and 2006, which may be the norm by the 2050s[29].

Issues for Joint Health and Wellbeing Strategies

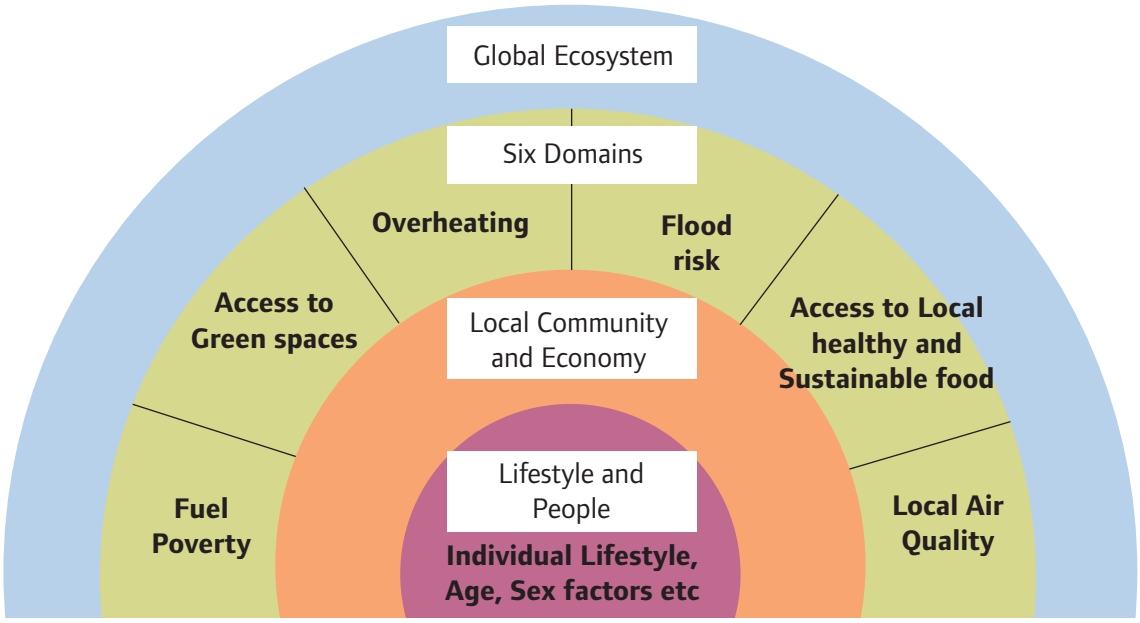
Co-benefits for health of environmental measures as well as increased efficiency can be increased by:

- promoting self-sufficiency of communities and local facilities;
- implementation of low-tech solutions; and,
- prioritising green space, green walls and roofs, water conservation, passive cooling[30].

29 UK Government Climate Change Risk Assessment (2012) Summary of Climate Change Risks for London
30 Naylor C and Appleby J (2012) Sustainable health and Social Care. Kings Fund: London.

3. Linking Environment and Health

It is necessary, when developing policies and proposals to improve the quality of life of Londoners, to consider a wide range of factors that are collectively referred to as the 'wider determinants of health'. Modifying the classic model shows how environmental issues relate to peoples' health:



Adapted from Dahlgren and Whitehead[31] *and Barton and Grant,*[32]

This diagram shows one way in which these links can be articulated. There are many ways in which environmental issues impact on peoples' health. Here we have tried to indicate

i) direct Impacts such as overheating, flooding and poor air quality;

ii) indirect impacts such as fuel poverty or access to green space; and

iii) disruption to services and access to services[33] such as healthy food.

In Figure 6 we show how the City of London has shown the links in their current JSNA.

31 Dahlgren, G. and Whitehead, M. (1991) Policies and strategies to promote social equity in health. Stockholm, Institute for Future Studies.

32 Barton, H. and Grant, M. (2006) A health map for the local human habitat. The Journal for the Royal Society for the Promotion of Health, 126 (6). pp. 252-253. ISSN 1466-4240.
We recommend you cite the published version. The publisher's URL is http://dx.doi.org/10.1177/1466424006070466

33 Confalonieri *et al.* (2007) Contribution of Working Group II to the Fourth Assessment Panel on Climate Change. CUP: Cambridge. www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_wg2_report_impacts_adaptation_and_vulnerability.htm

3. Linking Environment and Health

Figure 6: Health impacts of taking action on climate change

More active travel

Reducing the use of cars, and shifting to more walking and cycling will:

- Lower carbon emissions.
- Increase physical activity – which will help lower blood pressure and reduce obesity, heart disease, strokes, diabetes, osteoporosis (and associated injuries such as fractures) and cancer.
- Reduce traffic-related injuries and deaths.
- Result in less air pollution which can lead to less respiratory disease, such as asthma and chronic obstructive pulmonary disease.
- Reduce noise which will help protect from hearing loss and reduce stress.
- Reduce depression and improve social cohesion.

Healthier, sustainable eating

Eating less processed food will reduce intake of saturated fats, added sugar and salt, lowering the risk of obesity, heart disease, stroke, diabetes, and colon and breast cancers.

- Eat more locally produced, fresh, seasonal food. It has been estimated that the environmental, social and economic costs of 'food miles' – including greenhouse gas emissions, air pollution, congestion and accidents – is over £9 billion. The UK is increasingly dependent on imported food. Our self-sufficiency has fallen by nearly 30 per cent since 1990, and by seven per cent since 2002.
- Reducing consumption of animal products (meat and dairy foods), and eating more vegetables instead, will reduce CO2 and methane emissions. Livestock farming is one of the biggest producers of methane due to the digestive processes of the animals.
- Reducing meat consumption would reduce emissions as there would be less farmed livestock. The World Health Organization suggests that industrialised countries need to reduce their meat consumption from the current 224g/person/day to 90g/person/day which would have a positive effect on both carbon levels and health.

3. Linking Environment and Health

Improved urban design

Increasing green space in urban environments:

- Provides shade during heat waves.
- Aids flood absorption.
- Improves air quality and reduces CO_2.
- Improves mental wellbeing.
- Provides space for more physical activity, thus reducing obesity.
- Reduces inequalities in health.

Improving the built environment:

- Improves public transport infrastructure, pavements and paths, reducing the need to use the car and therefore reducing CO_2 emissions.
- Increases social mobility and cohesion.
- Improves public safety (e.g. well-lit streets) which encourages more people to walk or cycle and improves accessibility (to facilities and amenities).

Better insulation in homes

- Reduces CO_2 emissions through reduced energy requirements.
- Reduces fuel poverty and saves money in the long term.
- Improves resilience to both cold and hot weather.
- Reduces excess seasonal deaths and health inequalities.
- Promotes health and wellbeing.

Reduced material consumption

Reduces waste (and therefore environmental impacts e.g. from landfill).

Source: www.cityoflondon.gov.uk/NR/rdonlyres/CC44FE34-51D2-4E9B-8F1E-6D5BE3063283/0/BC_RS_H_WPH_CFINAL200110.pdf adapted from the Health Effects of Climate Change in the UK 2008: an update of the Department of Health report 2001/2001.
www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_080702

4. Issues for Joint Health and Wellbeing Strategies and JSNAs

Adaptation and Mitigation

The importance of adaptation and mitigation to services also seems to have been accepted as a sensible focus for joint effort[34]. In addition to reducing its impact on the environment (commonly referred to as mitigation), the health and social care sector needs to ensure that it can function in a changing natural environment (adaptation). In this section we look at some of the key areas that HWBs will need to be conscious of as they tackle the big issues that impact on peoples' health. In the following sections we will look at:

Adaptation Issues	Flood Risk Overheating
Mitigation Issues	Fuel Poverty
Related Issues	Local Air Quality Urban Greening Food

Flood risk

London is vulnerable to flooding from five sources – tidal, fluvial (from rivers and tributaries), surface (from rainfall), sewer and groundwater flooding. Fifteen per cent of London is in flood plain, protected by flood defences. Much of this area is well defended, but the western end of the Thames and many of the tributaries to the Thames have low standards of protection.

Flooding is accompanied by a range of potential immediate, short-term and long terms direct and indirect effects[35]. Flooding can have an immediate impact from drowning, injury, damage to property, exposure to toxins and pathogens and infections from an inability to maintain good hygiene – especially for vulnerable groups[36].

While the immediate effects of a flood are apparent, the latent after-effects are less obvious. Studies of the effects of single and multiple flood events have shown that there can be long-term mental health impacts on people affected by these events. In some instances flooding can hasten mortality among older people and the chronically sick. Figure 7 indicates the way in which flooding impacts on peoples' health.

Flooding can also lead to damage to health and care facilities, restricted access for staff and contractors, failure of key services such as heating, cooling or water supplies, water contamination and supply-chain interruption. All essential health facilities at flood risk should have an emergency plan that considers how they would manage during a flood, how patients would be evacuated and how the services they provide would be delivered if that asset were affected, or closed[37]. So, JHWBs will want to be sighted on the location of vulnerable households mapped against tidal, fluvial, drainage, and rainwater flood risks to identify local areas that are particularly at risk from flooding and the risk to health and social care facilities of flood.

34 Pencheon D (2011) Does sustainability have a future? Health Services Journal. 25 August, pp 29-29.
35 Max C *et al.* (2011) In Sickness and In Health. LCCP: London.
36 Stanwell-Smith R (2008) Climate Change and its health implications. Issue 1. Version 2. www.cieh.org/policy/climate_change_health_implications.html
37 London Regional Flood Risk Appraisal.

4. Issues for JHWBs and JSNAs

Figure 7: Effects of Flooding on Health

Immediate	Short Term	Long Term
Drowning Injuries from debris, and from damage to property Heart Attack Exposure to chemicals/toxic gases Exposure to pathogens Impaired Capacity Damage to property Infections due to overcrowding/Poor facilities/reduced ability to maintain good hygiene Lost school and work days Displacement and anxiety	Mental Ill Health Exposure to pathogens Malnutrition Dehydration	Mental Ill-Health Relationship breakdown Long-term displacement from homes Physical Ill-Health

Source: Stanwell Smith as adapted by Max et al. (2011).

Case Study – London Borough of Sutton

The London Borough of Sutton has prepared a range of innovative spatial planning policies that seek to ensure future development within Sutton is fully adapted to the impacts of climate change. Whilst impacts such as temperature rise and occurrence of heat waves are also covered by these policies, this case study focuses on how spatial planning policies have been developed to address the risk of all forms of flooding to and from new developments, and to promote the role of sustainable urban drainage systems in managing surface water runoff. Flooding has already caused significant damage in parts of the borough, and climate change is projected to further increase the frequency and intensity of flood events. The case of Sutton offers valuable lessons on the development of planning policies targeting adaptation to flooding. These include the use of a robust evidence base to develop policy, and the engagement of local stakeholders and residents in the planning process.

www.grabs-eu.org/membersArea/files/sutton.pdf

4. Issues for JHWBs and JSNAs

Overheating

Summer overheating potentially contributes to heat-related health problems. Higher temperatures also increase the risk of dehydration. Older people and the young are particularly at risk, as, for example, the thirst response in older people decreases with age, and younger people require more water to maintain their growth and energy demands. Many diseases are exacerbated by heat such as diabetes, skin disease and infections. Heat waves especially affect:

- Older people especially those over 75 years old living on their own or in institutional care;
- people suffering from mental ill health or dementia and those who need assistance with day-to–day activities;
- people who already have a high temperature from an infection;
- people who are bed-bound or with mobility problems;
- people taking certain types of medication;
- people with a serious chronic conditions, e.g.,breathing or heart problems;
- people who use alcohol or illegal drugs;
- babies and children under 4 years of age; and
- physically active people such as manual workers, sportsmen or women[38].

The NHS has detailed arrangements in place to both deal with the effects of heat waves, and to encourage the NHS to work with other agencies to tackle overheating. Each NHS organization is required to produce a Heat wave Plan setting out what should happen before and during periods of severe heat, and the preparations both individuals and organisations can make to reduce health risks and includes specific measures to protect at-risk groups.

There is increased risk of power outages reducing the availability of power for demands currently seen as non-essential such as cooling and ICT. Indoor mechanical ventilation can spread infectious diseases with increased risk of poor water sanitation and food contamination as well as the potential loss of staff to illness.

Modern green roofs have largely developed in the last 50 years, with increasing sophistication to meet a growing range of needs. The main benefits of green roofs are seen as being:

i) reduced storm water runoff, (and hence potential savings to developers, as the number of drainage outlets required on a building can be reduced);

ii) reduced urban heat island effect (by reducing building heat loss and increasing evapotranspiration);

iii) creating natural green spaces in urban areas;

38 DH (2010) What to do in case of a heat wave. www.dh.gov.uk/en/Aboutus/MinistersandDepartmentalleaders/ChiefMedicalOfficer/CMOtopics/DH_4135398

4. Issues for JHWBs and JSNAs

iv) reduced energy consumption and fuel costs, since green roofs provide cooling in summer and thermal insulation in winter;

v) reduced air pollution; and

vi) extended roof life, since the green roof protects the roof's waterproofing membrane, almost doubling its life expectancy. Over recent years the City of London Corporation has encouraged developers to include extensive green roofs in their building designs, and several are now under construction.

JHWBs will want to be aware of the amount of shade for buildings and open spaces by trees and shaded areas, to have mapped vulnerable households and overlay dwelling with poor SAP ratings and to be aware of the availability of portable air conditioning units to the most vulnerable.

Fuel Poverty

Fuel poverty is the term used to describe a lack of household income to adequately heat a home. Despite having a relatively mild climate, the excess winter mortality ratio is high in Britain, compared with countries with similar or colder climates. In London 3,000 pensioners died of cold-related illnesses in the winter of 2004/05.

An increase in summer temperatures may lead to the creation of summer 'cool poverty', where the design, construction and overcrowding of housing may cause internal temperatures to become uncomfortable and unhealthy. Unlike individual responses during cold weather, wearing less clothing is only marginally effective. Thus there is a need to work to prevent fuel poverty from happening and to build adaptive capacity to reduce risk.

Case Study – 150 Cheapside

Located at the corner of Cheapside and St Martin's le Grand, 150 Cheapside is in the foreground of St Paul's Cathedral. This development has a large greened sedum area with minimal plant equipment present on the roof. In addition to this photovoltaics cover the lift run off. A lower paved terrace area acts as an entertainment amenity for the clients and offers additional space for planters. It has a total roof area of 1990 m^2 of which 79% is greened by a sedum blanket on the main roof and planters on the lower terrace level.

150 Cheapside is clearly visible from the viewing balcony of the Stone Gallery at St Paul's Cathedral meaning additional attention was paid towards the appearance of the roofscape.

The benefits of the green roof are that the appearance of the roof is improved; it encourages innovative design to make roof plant less obtrusive or to completely remove plant from the roof. Green roofs also offer a chance for biodiversity to flourish in an area that is very densely built up. The extra layers of material added to the roof help to prolong the life of the roof membrane and act as thermal insulation.

www.cityoflondon.gov.uk/NR/rdonlyres/7CF707A5-0E1D-45C0-9F2F-EC11A12EAD32/0/DP_PL_CombinedDocument28Nov11.pdf

4. Issues for JHWBs and JSNAs

JHWBs will want to know where the vulnerable households – single parent families, older persons, disabled persons or the long-term sick – are, how the map correlate to income distribution and benefit receipt in the area on the one hand and poor quality buildings as defined by the SAP rating, the uptake of energy-related benefits, heating and insulation support, the % of households with access to gas as a source of heat, and the correlation between vulnerable people and buildings with low SAP rating.

Case Study – London Borough of Barking and Dagenham – Smart Metering in Colne and Mersea

It is government policy that smart metering is to be implemented in all homes by 2020. In the course of refurbishing two housing blocks in Colne and Mersea, the LB of Barking and Dagenham undertook an integrated retrofitting programme that included wall cladding, triple glazing with integrated blinds and flood defences. The project used LCCP's 'Your Home in a Changing Climate' publication as a brief for the climate adaptation work and the project received 50% funding from the Greater London Authority (GLA)[39].

^ *Colne & Mersea – LB Barking & Dagenham*

Smart metering was included in the specification for the refurbishment because studies have shown that metering reduces energy consumption compared to paying via a service charge, and secondly that displaying energy consumption instantaneously on a home display unit further reduces energy consumption.

The Smart Meters that are installed for heat, electricity, mains water and tank water offer the residents many advantages. Payments for all energy needs will be simplified. Payments can be made by direct debit, or cash at any regularity to suit the tenant or leaseholder. Pre-payments can also be made through using the same meter.

A home display unit enables tenants to see how much credit is left on their meters from within their home, and monitoring of consumption to suit available funds. This enables tenants and leaseholders to be much more in control of their consumption and their expenditure.

39 The LCCP will be publishing a practical report on the findings and costs of implementing these measures in Autumn 2012.

4. Issues for JHWBs and JSNAs

LBBD have set a level of what is termed 'friendly credit'. This will allow energy to continue to be supplied after credit has run out. The debt that this creates is recovered by increasing the unit cost of future energy for all tenants and leaseholders. The level of friendly credit needs to be set carefully so that this is seen to be fair to all tenants and residents.

To inform strategic commissioning across the local area, JSNAs and joint and health and wellbeing strategies will need to consider all relevant needs, and the factors that influence them, including:

- Health needs including mental health, health protection, and prevention of poor health.
- Care needs including universal advice and the needs of carers.
- Information needs and support to understand information as well wider social, environmental and economic factors that impact on health and wellbeing, such as opportunities for physical activity, housing type, community safety and working conditions.
- How needs can interact or overlap for certain groups both within and across service areas.

Local Air Quality

Health impact

Air pollution can have serious consequences for both human health and the environment. Despite significant improvements in recent decades, on average a child born in London in 2008 will lose nine months off their life expectancy as a result of long-term exposure to poor air quality. There is growing evidence that high levels of pollution can cause damage to the airways and lungs, cause heart attacks and affect disproportionately those with long term conditions. Air pollution can trigger attacks for those who already suffer from Asthma with long term exposure to air pollution shortens life expectancy and can lead to increased risk of cancer and dementia.

In 2010, the Mayor's Air Quality Strategy quantified for the first time the number of equivalent deaths each year as a result of long-term exposure to PM2.5. this was 4,267 deaths. It is unrealistic to believe that the estimated attributable deaths represent a subset of deaths solely caused by PM2.5, while all the remaining deaths were unaffected by pollution. Since everyone breathes the air where they are, a more realistic interpretation is that the risks are distributed across the whole population, with a total mortality impact of the concentrations equivalent to that number of deaths.

Consequently, pollution episodes will have the greatest impacts on certain groups – particularly older people and those with pre-existing respiratory conditions (those that

4. Issues for JHWBs and JSNAs

are most vulnerable to the effects of poor air quality). It also affects those living in areas that experience the poorest levels of air quality, such as those living near major roads and airports. People living in these locations are more likely to be from lower socio-economic groups.

EU limit values

The EU has established limit values, which are based on WHO guidelines, and are legally binding. For particulate matter (PM10 and PM2.5) London broadly meets EU limit values. However, changing weather patterns are affecting the number of air pollution episodes where external pollution combines with locally emitted pollution to cause exceedences of these limit values. For nitrogen dioxide (NO2) London does not meet the EU limit values at many sites and the GLA has identified 187 areas where high concentrations combine with particularly high levels of human exposure.

Impact of the weather

Higher temperatures, less rainfall and less cloud cover are projected to increase the formation of ground level ozone, NO2 and other pollutants. Periods of little or no wind usually associated with heat waves may mean that pollution in the city – including those particulates that are most harmful to health – will be less easily dispersed.

Taking action

To reduce concentrations of air pollutants it is important action is taken to reduce local emissions. Targeted action also needs to be taken at the 187 focus areas where human exposure is greatest and – given London's boroughs are best placed to lead this – JHWBs have an important part to role in promoting and supporting such action.

It is also important that adaptation, especially for at risk and vulnerable groups, is promoted. JHWBs and the broader public health system have a central role to play in this process. Options include raising awareness about air quality and what individuals can do to reduce their own "air quality footprint" and their exposure (e.g. cycling route). Tools such as airTEXT are already available and can be promoted to at risk groups. The new Air Quality Index links levels of pollution to specific health advice. (See Figure 8).

Link to JSNAs

Poor air quality is thought to have contributed to the high death toll during the 2003 heat wave. Air pollution episodes will have the greatest impacts on certain groups – particularly older people and those with pre-existing respiratory conditions (those that are most vulnerable to the effects of poor air quality). It also affects those living in areas that experience the poorest levels of air quality, such as those living near major roads and airports. People living in these locations are more likely to be from lower socio-economic groups.

JHWBs will want to know:

i) current concentrations of the key air pollutants (PM10 and PM2.5 and nitrogen dioxide NO2);

4. Issues for JHWBs and JSNAs

Figure 8: Health Advice Related to Poor Air Quality

Air Pollution Banding	Value	Accompanying health messages for at-risk groups and the general population	
		At-risk individuals	General population
Low	1-3	Enjoy your usual outdoor activities	Enjoy your usual outdoor activities.
Moderate	4-6	Adults and children with lung problems, and adults with heart problems, who experience symptoms, should consider reducing strenuous physical activity, particularly outdoors.	Enjoy your usual outdoor activities.
High	7-9	Adults and children with lung problems, and adults with heart problems, should reduce strenuous physical exertion, particularly outdoors, and particularly if they experience symptoms. People with asthma may find they need to use their reliever inhaler more often. Older people should also reduce physical exertion.	Anyone experiencing discomfort such as sore eyes, cough or sore throat should consider reducing activity, particularly outdoors.
Very High	10	Adults and children with lung problems, adults with heart problems, and older people, should avoid strenuous physical activity. People with asthma may find they need to use their reliever inhaler more often.	Reduce physical exertion, particularly outdoors, especially if you experience symptoms such as cough or sore throat.

Source: http://uk-air.defra.gov.uk/air-pollution/daqi

ii) projected changes in those concentrations over the coming years;

iii) the location of any focus areas and the action being taken at those locations to reduce human exposure;

iv) the action being taken to inform vulnerable residents about the health effects of exposure to air pollution;

v) how many residents are signed up to airTEXT or to the London Air service; and

vi) to understand if there are any differences in levels of exposure or uptake of services between different ethnic groups.

Given the strong correlation between poor air quality and transport and the broader health benefits of walking and cycling, the JHWBs may seek to promote public and more sustainable forms of transport. In order to do this JHWBs may also want to know:

i) how many journeys a year are undertaken by what mode of transport;

ii) what percentage (compared to London average) of journeys are by bicycle; and

iii) what the public transport accessibility level is.

4. Issues for JHWBs and JSNAs

Case Study – AirTEXT

In 2005 the London Borough of Croydon worked with the European Space Agency and Cambridge Environment Research Consultants to develop an air quality forecasting service called airTEXT. This service provided information on the level of pollution in the borough using "low", "moderate" and "high" bandings. Whenever moderate or high levels of pollution are expected subscribers to the airTEXT service would receive a text message, call or voicemail. This would enable the recipient to determine what action they may need to take in order to prepare themselves for the expected level of pollution, e.g. taking a different route/mode of transport to work, keeping their medication with them or not exercising outside on certain days.

After a successful trial the airTEXT service was rolled out across London with funding from the Mayor of London and Defra. In 2012 a new app was developed which provides information on four health-relevant alerts: UV, pollen, air quality and temperature.

Currently around 10,000 people use the airTEXT service through text, Twitter or their website. The service was promoted during the Olympics and airTEXT is keen to work with JHWBs to support further uptake of its service.

Source: http://www.airtext.info/

Case Study – Green Wall at Edgeware Road Station

A 200 square metre green wall on a central London Tube station wall designed to trap pollution on one of London's busiest roads has been installed at Edgware Road Station. It features a total of 15 plant varieties crafted into a multi-coloured and patterned design.

The green wall is one of a range of innovations being introduced by the GLA to deliver cleaner air in London at places where particulate matter (PM10) pollution is highest. This includes a programme of green infrastructure designed to trap pollution.

The initiatives are part of the London Clean Air Fund financed by the Department for Transport (DfT) at the Mayor's request. The Clean Air Fund measures have been designed to reduce levels of PM10 (a pollutant coming mostly from traffic emissions) by between 10 and 20 per cent where applied.

4. Issues for JHWBs and JSNAs

^ *Edgeware Road –TFL Images, Luca Marino*

The plants that have been used for the wall have been grown in 'Grodan' (a peat-free substrate). Grodan has achieved the European Ecolabel for sustainability and is chemically inert. The structure that supports the plants includes 'Ecosheet' (a waterproof backing material) which is manufactured in the UK from recycled material. The Edgware Road green wall has been designed, manufactured and installed by Biotecture Ltd.

Studies across Europe and the USA have shown the potential of vegetation, including trees and plants, to trap PM10. The air quality benefits of this wall will be monitored by Imperial College London.

Source: www.ltoa.org.uk/news/154-stunning-green-wall-unveiled-at-edgware-road-tube-station-to-deliver-cleaner-air

4. Issues for JHWBs and JSNAs

Eco System	Green Roofs	Street Trees	Wetland	River Corridors	Woodland	Grassland
Reduce Flood Risk	✓✓	✓	✓✓✓	✓✓✓	✓✓	✓✓
Offset Urban Heat Island	✓✓	✓✓	✓✓	✓✓	✓✓✓	✓
Reduce Energy Demand	✓✓	✓✓			✓	
Reduce Noise/ Air Pollution		✓✓			✓✓	
Support Biodiversity	✓✓	✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Recreation Leisure	✓		✓	✓✓	✓✓✓	✓✓✓

Urban Green

London's green spaces (private gardens, public parks, wild spaces, urban forest, river and transport corridors) perform a range of functions that improve the quality of life in London. These include providing places for recreational and leisure activities that improve health. They moderate the temperature by off-setting the urban heat island effect (the creation of areas that are hotter than the surrounding areas due to the retention of heat by building materials) and help to reduce noise and pollution. They also reduce flood risk by absorbing and temporarily retaining rainfall. They are especially important in Boroughs that have a high population density. Installation of green roofs and walls can reduce energy requirements of air conditioning by 75%. The design and management of the landscape and vegetation can help to reduce unwanted noise intrusion and support positive soundscapes, such as birdsong and the sound of running water[40].

Green spaces in an urban environment play a vital role in encouraging people to take more exercise and hence to improved health and wellbeing and a reduction in obesity and cancers. However, it also important that shaded areas are available. The Department of Health Heat wave plan[41] outlines the need for more trees as they change summer urban micro-climates for the better by creating shade and allowing cooler air to accumulate and circulate at ground level. Planting trees and vegetation and the creation of green spaces to enhance evaporation and shading are other options, as temperatures in and around green spaces can be several degrees lower than their surroundings. Studies suggest that air-conditioning demand can be reduced by up to 30 per cent through the effects of well-placed trees. Trees reduce urban heat islands, reduce pollution, reduce flooding and noise. JHWBs will want to know that the level of green space increasing year on year, how many have achieved Green Flag status and how well used they are.

40 GLA (2011) Draft Supplementary Planning Guidance: The All-London Green Grid. GLA: London.
41 DH (2012) Heatwave Plan for England 2012 www.dh.gov.uk/health/2012/05/heatwave-plan/

4. Issues for JHWBs and JSNAs

Case Study – Mayesbrook Park

Mayesbrook Park was opened in the 1930s and had been a much loved green space in Barking and Dagenham. However, the park design was never completed and there was a need to bring the park into the 21st Century.

The Mayesbrook Climate Change Park was born when a group of partner organisations agreed to undertake a demonstration project of urban river restoration within the existing park. A range of partners agreed to fund the project including RSA Insurance who contributed £300,000 and the Mayor of London who contributed £400,000.

The project includes new signage and footpaths, natural play areas, a rolling park landscape, a 'free to use' outdoor gym, new seating and picnic benches, new sports pitches and a new sports arena which is being used as a training venue for the Olympics. Key to the development has been to help the park to be more resilient to a changing climate with more winter floods and summer droughts predicted for the future.

^ *Mayesbrook Park – Matthew Dear*

The Mayes Brook has been brought back into the park within a widened meandering river channel creating an attractive river landscape. This new river system, with a gravel river bed and banks, provides an ideal wetland habitat for wildlife and at times of high rainfall it is able to rise in a controlled and natural way within a newly created floodplain.

More trees have been planted to provide shade in hotter drier summers, and to filter airborne pollution. In many places the grass has been left longer to give it more chance of surviving hot, dry summers.

Source: www.lbbd.gov.uk/LeisureArtsAndLibraries/Parksandcountryside/Documents/MayesbrookParkLeaflet.pdf

4. Issues for JHWBs and JSNAs

Case Study – Redbridge Walk to Health

Redbridge Walk to Health is a programme of weekly walks in various parks across the London Borough of Redbridge. The walks are open to everyone regardless of current fitness levels. The walks are free and are led by trained and committed walk leaders who are also fully qualified First Aiders. The programme recognizes the contribution that walking at a brisk speed regularly for sufficient periods improves, sustains and develops physical fitness. It also recognizes that regular walking can help to:

^ *Walk Redbridge – TFL Images, Ingrid Rasmussen*

- Speed up your metabolism, increases energy expenditure and burns off those unwanted calories.
- Improve the efficiency of your heart and help your blood circulation or as a way of easing back into exercise after a heart attack or if you suffer from Chronic Respiratory Disease.
- Prevent heart disease, the treatment of high blood pressure and musculoskeletal disorders.
- Offset anxiety and mild depression. It's enjoyable and promotes a general feeling of wellbeing.

The walks are of differing lengths, so people can choose the one that best suits their needs. However, it is recommended that everyone should aim to walk at a brisk pace for at least thirty minutes a day, five days a week. People are encouraged to walk at a pace that makes them warm and makes them breathe a little faster, while still allowing them to talk.

For those who are interested in walking, but would prefer not to join the groups, self-walk maps are available.

www.walkingforhealth.org.uk/sites/default/files/Redbridge%20Walk%20to%20Health%20leaflet.pdf

4. Issues for JHWBs and JSNAs

Food

The availability of locally produced, fresh food can encourage the adoption of healthier eating habits with the health benefits that flow from that in terms reduced risks of cancer, diabetes and CHD. This is provided that it is affordable and people feel confident about storage and preparation – and the space in which to store and cook. Extreme weather is likely to affect what food is available, when and what can be grown in the UK over the long term. Warmer winters may extend the growing season of some fruit and vegetables, so increasing the diversity and availability of locally grown produce. Hotter summers may also increase the availability and diversity of locally grown produce. However, changes to weather patterns, the increased risk of extreme weather events, including flooding, and the increasing frequency and length of droughts could have contrary effects, such as temporary shortages and price volatility[42].

Higher temperatures will have an impact on food safety and hygiene. Higher temperatures are expected to increase:

- The risk of bacterial enteric infections such as Salmonella and E.coli.
- Contact between food and pests, especially flies, rodents and cockroaches (house and blow-fly activity is largely driven by temperature).
- Temperature-related changes in food preparation and eating practices, with increased likelihood of food being not properly stored, cooked or transported[43].

There is increasing interest in local growing of, and collection of food, which can reduce carbon footprint, and support community development. The Department of Communities and Local Government has produced a guide to community orchards, which outlines a number of examples and their benefits. In London there are a growing number of these, and the London orchard project have planted 37 community orchards including in public parks in Haringey, Islington, Lambeth Southwark, and Hackney. Fruitful Schools is part of a campaign – the children's orchard -to help children, schools and families across the UK to plant fruit trees and to enjoy picking and eating what they grow.

42 GLA (2012) Mayor's Climate Change Adaptation Strategy. GLA: London. www.london.gov.uk/climatechange/strategy
43 Department of Health (2008) Health effects of climate change in the UK 2008: an update of the Department of Health report 2001/2002

4. Issues for JHWBs and JSNAs

Case Study – Royal Borough of Kensington and Chelsea Capital Growth

In the Royal Borough of Kensington and Chelsea Capital growth has converted an old disused tennis court site into a new food growing garden, with 48 raised bed plots. Over 100 local residents have been allocated a share of a plot. The project is being run by the Royal Borough of Kensington and Chelsea and local residents and was developed in partnership with NHS Kensington and Chelsea which owned the tennis court and was keen to work with the Council to see it put to healthy use.

^ *Capital Growth*

A community led gardening club is currently being set up to manage the project over the long term. Regular and on-going training and support is being provided by Groundwork London. The site is fully accessible for wheelchair users, elderly people and children, the wooden plots are raised at various heights.

Along side the initiative RBKC are running Cook and Taste sessions to help local people develop confidence around cooking and how to cook for a family on a limited budget.

Conclusion to section four

Health and Wellbeing Boards can make a significant difference through mapping the links between environmental issues, health and wellbeing and environmental health at a local level, increasing awareness amongst partners and focusing on both immediate and long-terms actions. It is clear that such connections can helpfully complement a more traditional JSNA analysis and provide a potential focus on higher impact activities which address many of the main elements of the Leadership Challenge identified in Section 1.

It is clear that this is already happening on some environmental issues in some areas but there is no evidence that this is being done systematically across all the key environmental issues or being coordinated on issues which clearly have impact beyond electoral and geographical areas. A purely local focus is therefore both a potential strength and a weakness.

Some form of capturing progress on actions to mitigate the effects of climate change is clearly worth HWBs considering with partners so as to ensure the links are made between analysis and action across organizational boundaries with progress being able to be documented and shred publicly over time.

5. Conclusion

This report is designed in part to bring out the practical steps that can be taken in mainstreaming core environmental change issues into the JSNA and measuring progress over time.

The aim of such an approach is to address the most immediately achievable aspects of the Leadership Challenge – those relating to gaining momentum behind service change.

But as discussed earlier this is only part of the Leadership Challenge. It is too much to expect HWBs in their early form to act as true agents of change in the territory of community resilience? And what is actually stopping HWBs taking a conscious decision to adopt a longer-term focus on and advocacy for social preparedness, the resilience of communities and the public behaviour changes needed to underpin such resilience?

It is beyond the remit of this report to recommend what might be needed to address the Leadership Challenge at a more fundamental level, but it is clear from preparing this report that such work still needs to be done urgently, if a genuinely holistic engagement with the environment is to be achieved in London.

The real danger currently is that strategic engagement with community resilience and public behaviour change will begin, if at all, by the time it is too late – possible in the wake of catastrophic events.

The suggestion here is that addressing the broader Leadership Challenge needs to be prioritised and to address the need to:

- **Grow wider understanding of the critical importance of community resilience and social preparedness amongst professionals and the public.**
- **Gear up a number of different advocates and agents of change with the shared aim of changing public behaviour in relation to environmental change.**
- **Develop shared models for engagement, service change and community resilience and of data capture, progress tracking and accountability.**
- **Increase integration of leadership, planning and expertise at Borough level and pan-London around a compelling definition of what constitutes social preparedness.**

6. Sources of Information and Advice

London Climate Change Partnership
www.climatelondon.org

The London Plan 2011
www.london.gov.uk/shaping-london/london-plan/

The Mayor's Climate Change Adaptation Strategy 2012
www.london.gov.uk/climatechange/strategy

London's changing climate 'In sickness and in health' 2011
www.climatelondon.org/publications/in-sickness-and-in-health/

Mayor's Air Quality Strategy 2010
http://www.london.gov.uk/publication/mayors-air-quality-strategy

Mayor's Ambient Noise Strategy
static.london.gov.uk/mayor/strategies/noise/

Mayor's Transport Strategy 2010
www.london.gov.uk/publication/mayors-transport-strategy

The Mayor's Biodiversity Strategy
legacy.london.gov.uk/mayor/strategies/biodiversity/index.jsp

The Mayor's Waste Management Strategies 2011
www.london.gov.uk/priorities/environment/vision-strategy/waste

London Food Strategy 2011
www.london.gov.uk/london-food/general/london-food

Mayor's Inequalities Strategy 2011
www.london.gov.uk/who-runs-london/mayor/publications/health/health-inequalities-strategy

UK Government Climate Change Risk Assessment 2012
www.defra.gov.uk/environment/climate/government/risk-assessment/

The Heatwave Plan for England. Department of Health 2012
www.nhs.uk/Livewell/Summerhealth/.../dh_HeatwavePlan2011.pdf

Health and Social Care Act 2012
www.legislation.gov.uk/ukpga/2012/7/contents/enacted

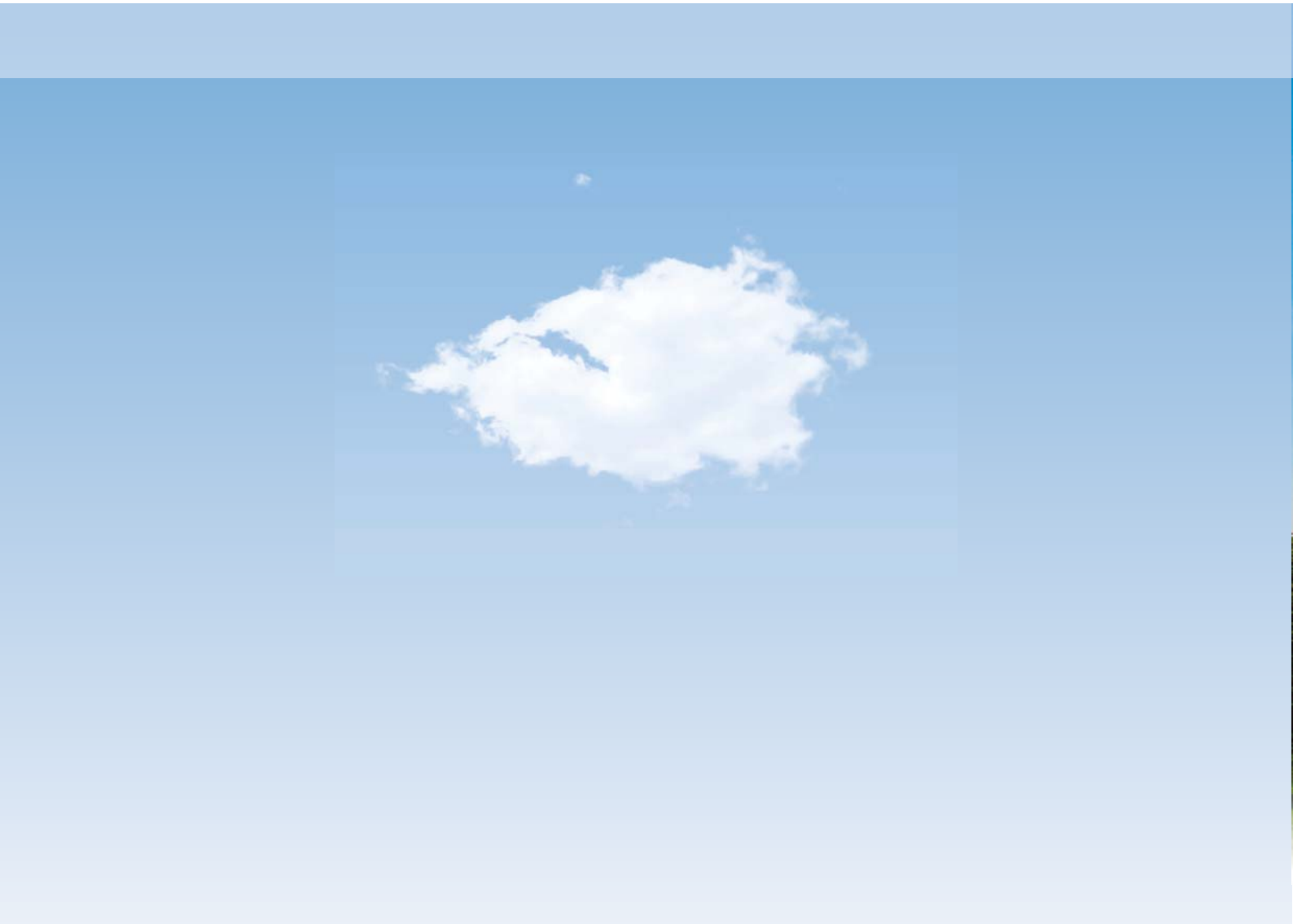
Joint Strategic Needs Assessments and Joint Health and Wellbeing Boards – Draft Guidance
www.dh.gov.uk/publications

Department of Health (2008) Health effects of climate change in the UK 2008: an update of the Department of Health report 2001/2002

Healthy Lives, Healthy People: Improving Outcomes and Supporting Transparency or a Public Health Outcomes Framework. 2012.
www.dh.gov.uk › Home › Publications

Linking environment and health

A resource for policy and decision makers working on Joint Strategic Needs Assessment



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