



## Better buildings through sustainable development

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**This keynote speech was given by Peter Head at the Better Building Summit hosted by the DTI in October 2003. In it he outlines the work being carried out by the London Sustainable Development Commission in developing a practical approach to improving waste and emissions reduction, take-up of renewables and water efficiency.**

### 1. INTRODUCTION

I have spent a lot of my career in consulting engineering working on regeneration projects and have learned at first hand the difference between a short term fix which can store up problems for the future and a deep rooted sustainable solution. To use an organic analogy, the difference between a weed that grows very quickly drawing heavily on nutrients, looks impressive, but then falls over and the planting of a redwood tree that lives in elaborate synergy with all the species around it, makes more prudent use of resources and is much more sustainable. Many of us recognise the importance of developing synergies inside government and across our fractured industry so that we have the conditions that enable the private sector to work with the public sector to achieve success from the redwood forest approach.

To be frank we know we need to change but are worn down with initiatives going in different directions. What we are looking for is a stable consistent framework within which we can help the UK to thrive with a prudent use of resources. We warmly welcome the joined up approach that this summit offers and my task is to set the scene on how we might go forward.

I will do this by sharing with you the substantial progress we are making in London in creating a practical approach to sustainable development and regeneration—turning the S-word into something meaningful and valuable. I will describe this top down approach, which addresses the problems that the region has now and the population growth that is forecast. In particular I will tell you about the work of the London Sustainable Development Commission and the Framework we have produced. I will then take you through a project that I have initiated as Commissioner, in which we will write and put into use a voluntary code of practice for sustainable development. I will conclude with some feedback on a year of work on this project and summarise how I believe it may point the way forward.

London is a complex metabolism driven by 7.5 million people making decisions on where to live and work, what and where to buy and so on. Better buildings that are desirable to use and respect the environment will undoubtedly improve quality of life and increase the region's competitiveness. These buildings can be in many different environments ranging from the dense urban fabric to rural fringes on the edge of the metropolis (Fig. 1).

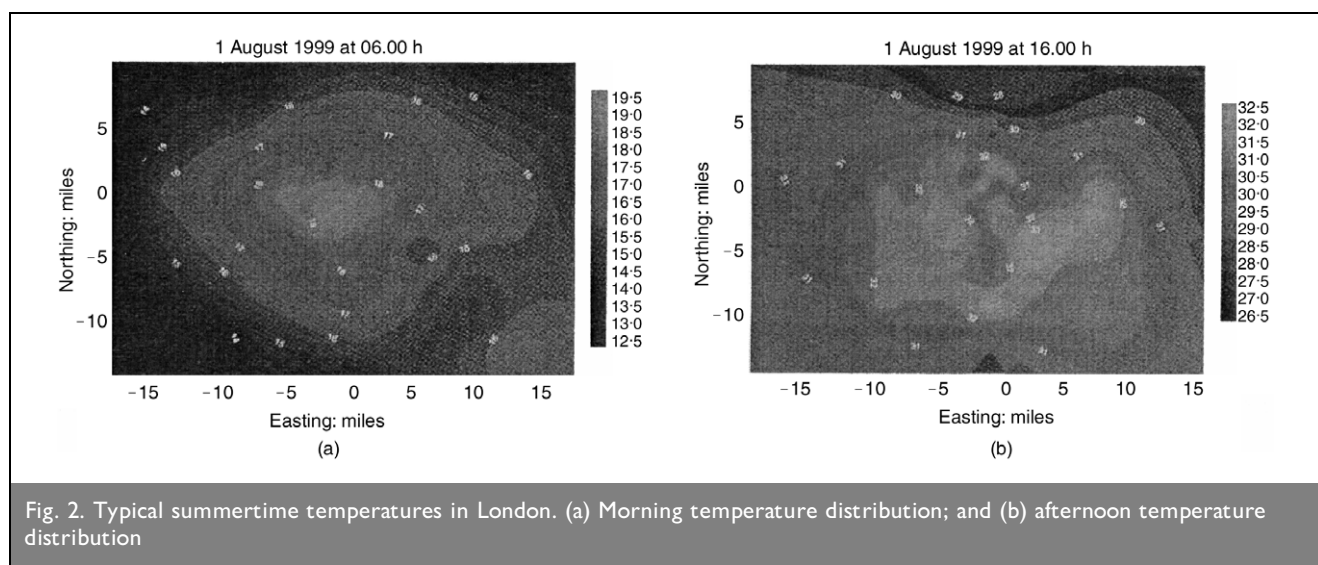
London is burning fossil fuels and pouring heat into the atmosphere as the infrared image taken from space in the early morning shows (Fig. 2(a)). Servicing of buildings produces about half of the total carbon emissions and we know that if we really tackled this using existing technology we could reduce these by 20 to 50%. At midday (Fig. 2(b)) energy is not being gathered like it is in the surrounding countryside and is being wastefully reflected back into space. This energy could be gathered and used to further offset the burning of fossil fuels. Natural systems like the redwood forests are brilliant at this.

Recent scientific research has shown that natural selection over billions of years has come up with winning strategies adopted by all successful complex systems like redwood forests. Buried within these strategies are powerful virtuous circles of efficiency and regeneration, which are perfect for better buildings

- using waste as a resource
- diversify and cooperate
- gather and use energy efficiently
- optimise not maximise



Fig. 1. London's dense urban fabric and rural fringes



- use materials sparingly
- do not pollute
- don't draw down resources
- remain in balance with the biosphere
- run on information
- shop locally.

These are a familiar and powerful set of performance objectives. All we need to add are the social drivers in our society.

A simple way of illustrating the power of outstanding building design to drive social benefit and desirability is this quote that I heard from a young Russian ballet dancer at the 2003 Sterling Award ceremony. He said, when asked about dancing at Herzog de Meuron's Laban: 'Dancing there made me feel as if I had

|      | Average earnings:<br>£/year | Average rent:<br>£/m <sup>2</sup> | Ratio |
|------|-----------------------------|-----------------------------------|-------|
| 1983 | 13 655                      | 2.36                              | 538   |
| 2003 | 64 930                      | 4.18                              | 1443  |

Table 1. A three-fold increase in business value compared with building value over 20 years, commercial development, London

|           | Total investment need:<br>£billion | Public:<br>£billion | Private:<br>£billion |
|-----------|------------------------------------|---------------------|----------------------|
| Transport | 62                                 | 30                  | 32                   |
| Housing   | 30                                 | 10                  | 20                   |
| Education | 10                                 | 4                   | 6                    |
| Health    | 8                                  | 6                   | 2                    |
| Total     | 110                                | 50                  | 60                   |

Historical investment by private sector since 1992 is a total of £4 billion.  
Need for skills management and land.  
London's Investment Needs up to 2016 (London First).  
Population growth from 7.4 million to 8.1 million.  
GDP generated is £118.5 billion per annum (£16 000 per head).

Table 2. Sustainable development—investment needs

grown wings'. Think of the inspiration that will flow out to audiences as dancers trained there go out and perform to new levels. The same will be true of people inspired by better schools, offices, sports facilities and so on. Let's look at what creates desirability and how this can drive commercial success, using some recent headlines.

A new survey by Savills Research has shown that mixed-use developments in major cities in the UK have significantly better total investment returns (over 1% more) in recent years than single-use properties. A quick look at the 'ten commandments' will show how well designed mixed-use developments have all the right ingredients—diversity, accessibility, local services and land efficiency. Add a waterside location for that sense of balance and you get an additional 2% of total return. These are relatively short term too.

The news from CABI is that 5000 hectares of wasted space is attached to derelict buildings (Fig. 3(a)), a good deal of which is found on docks and canal sides so there is lots of opportunity. Derelict land next to a property reduces the value by 15%, while living near a well-maintained park or open countryside (e.g. Fig. 3(b)) increases the value by 6% on average. We see commercial gains from lack of pollution, connection to the natural world and accessibility. This also confirms the critical point that the quality of public realm spaces around buildings and the intensity with which they are used is critical to achieving better buildings. We should not overlook this today.

Now let's look at how to use these ideas to improve environmental performance in existing commercial developments in London, which are causing so much emissions. Over the last 20 years the ratio between average earnings and average rent for city office space has risen by a factor of three (Table 3).

In the next 50 years a lot of these buildings will have been replaced or refurbished and so the opportunity can be taken to improve environmental performance and productivity at the same time. If in the refurbishment the productivity of people using the building is increased by 5% and half of this value is shared with the building owner, this now amounts to an effective increase in rent of 20%. This can be coupled with



(a)



(b)

Fig. 3. Derelict land (a) next to a property reduces the value by 15%, while living in open countryside (b) increases the value by 6% on average

| Sectors               | Development stages           |
|-----------------------|------------------------------|
| 1. Health             | 1. Financing                 |
| 2. Education          | 2. Plannings                 |
| 3. Commercial         | 3. Design                    |
| 4. Housing            | 4. Construction              |
| 5. Public buildings   | 5. Operation and maintenance |
| 6. Industrial         | 6. Decommissioning           |
| 7. Prisons            |                              |
| 8. Utilities          |                              |
| 9. Highways and roads | Clause sections              |
| 10. Railways          | ● Firm requirements          |
| 11. Rivers and canals | ● Guidance                   |
| 12. Public realm      | ● Requirements of tender     |
| 13. Airports          | ● Submission                 |

Table 3. Sustainable Development in London: the code structure, refurbishment and new build

ways of increasing the useable floor plate to further increase revenue. So with creative investment models and better building design it is feasible to set ambitious targets for improved environmental performance and for everyone to win.

## 2. LONDON SUSTAINABLE DEVELOPMENT COMMISSION

Now I would like to move on to describe the top down

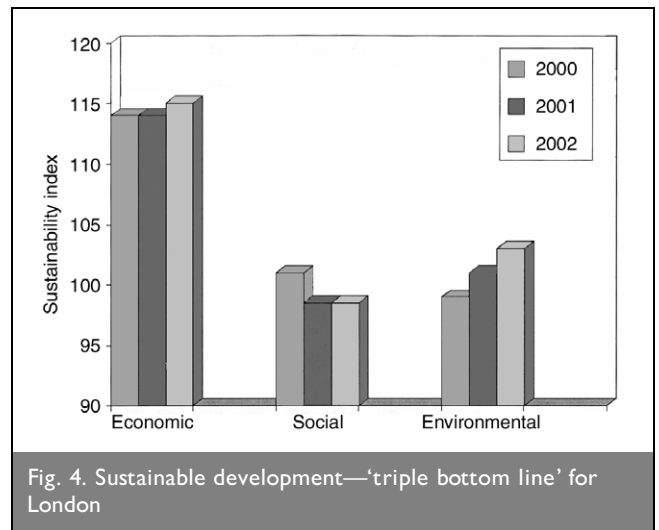


Fig. 4. Sustainable development—'triple bottom line' for London

approach we are using to apply these ideas to guide development in London.

The Mayor appointed the Independent Commission for Sustainable Development in 2002 with 22 commissioners drawn from all walks of life—another example of joined up thinking.

Where we are starting from is difficult—London has its problems. Fig. 4 shows an annual survey of London's sustainability, expressed as a triple bottom line index. The three blocks from left to right are economic, social and environmental indices where higher is better. Although economic and environmental improvements are taking place, the social conditions in the middle are worsening. The acute housing shortage has driven up prices making them unaffordable, driving key workers out and putting pressure on pay. Crime is increasing and child poverty is at unacceptably high levels. There is a desperate need for affordable housing.

London First carried out a study to look at the investment that was needed in public services up to 2016 to reverse this decline. Table 2 shows the large investments needed in housing, schools and health care and how much is needed from the private sector. This spend rate of £7 billion per year is some £2 billion higher than current spend rates.

It is clear that we have very little option but to find smarter, more efficient ways of taking the city forward and the only way to do this is to make the buildings we have work more efficiently and to invest more wisely in new ones. We need to plan for the skills and the efficient supply chains needed and build what communities need at an affordable cost—all of this is a smart approach to better buildings.

## 3. A FRAMEWORK FOR SUSTAINABLE DEVELOPMENT

The Commission's first task was to produce the Sustainable Development Framework, the basis for this smarter approach, which was launched in June 2003.

Figure 5 shows a summary of the detailed objectives in the Framework, which include all the natural principles discussed earlier combined with social factors like security and employment. You can see a route-map here, moving from 'taking

*Taking responsibility*

Wider impact, information, knowledge and motivation, creativity, civic participation

*Development respect*

Culture of tolerance, fairness, diversity, embracing nature, rights of others, enjoyment, free from threat

*Using resources responsibly*

Ecosystems, biodiversity, land, pollution, energy, materials, water, waste

*Getting results*

Economic progress, ethical standards, new solutions, triple bottom line, employment, health, accessibility, culture, sport and leisure

Fig. 5. London Sustainable Development Framework

responsibility' to 'developing respect' to 'using resources responsibly' to 'getting results', an approach that could equally be applied to the output from this summit.

The framework is written so that it can be used for large master-plans, small developments or individual building extensions.

Commissioners were asked to initiate projects that would enable the objectives of the Draft London Plan and Strategies to be realised in practice on the ground using the Framework. I initiated the London Sustainable Construction Project a year ago with the aim of creating a voluntary code of practice for sustainable development, which would be built around the Framework. The Mayor's plan and strategies for energy and waste include targets, which aim to progressively reduce London's footprint. Implementing these through the code requirements will achieve benefits in waste and emissions reduction, take up of renewables and water efficiency.

- Save 1 m tonnes of construction waste a year.
- Save up to 300 000 tonnes of CO<sub>2</sub> emissions a year.
- Increase renewable energy to 100 times current levels.
- Conserve water resources.

The energy strategy aims to reduce CO<sub>2</sub> emissions by 20% between 1990 and 2010 in line with government targets, which is really tough bearing in mind the large investment programme. In order to achieve this we have found we will need to raise performance expectations higher and not allow a fall back to the minimum levels specified, even in the revised Part L of the Building Regulations.

The introduction of building labelling legislation for differentiation between buildings will be helpful to encourage specifiers to aim for better performance for both new building and refurbishment.

The benefits listed above will not just felt at the project level but will lead to an increase in London's productivity, which will be modelled in the project. New businesses and jobs will be created and resource flows in and out will fall as London turns more to its own internal resources, becoming more like a redwood forest.

#### 4. LONDON SUSTAINABLE CONSTRUCTION PROJECT

The project now has a dedicated team, some funding and a direction. The aim is to create an information resource for everyone through the London Sustainability Exchange as well as the voluntary code. The plan is that the Boroughs will ask for the code to be used for all planning applications and an independent support service will be set up to help guide and assess these. The code aims to clarify many issues that arise at enquiries, provide a level playing field for requirements and speed up the planning process by removing delays caused by lack of clarity and poor communication. We also plan to back all this with research to underpin the best practice feedback. The project is summarised below.

- Will cover the Greater London geographic area.
- Will be an information resource.
- Will have a voluntary Code of Practice with performance specifications.
- Will have implementation support.
- Will be implemented in 2004 when the London Plan is published.

The voluntary code outlined in Table 3 will have a separate volume for each sector and each of these will cover the cradle-to-cradle life cycle of investment and planning through to decommissioning. They will all be addressed using the Framework objectives. Much of the background work for different sectors such as housing has been done by organisations all over the UK and the project is really pulling all this together into a very comprehensive set of documents. The guidance to each clause will pull in the relevant local Supplementary Planning Guidance on sustainable construction.

The project is being implemented by CIRIA, Forum for the Future, LSX and FBE with myself as Chairman. BAA, Thames Water, Development Securities, the Environment Agency and the Corporation of London are funding the current work and there is some funding from DTI on aggregates sourcing and recycling issues. We are currently seeking the main funding from LDA and the UK Government.

I would like to conclude with some feedback from our work. Firstly, everyone involved in the built environment, particularly in buildings, says there is an urgent need for performance-based specifications. They say at the moment everyone is reinventing the wheel in every planning authority at a time when resources are under very real pressure. Sustainability is a complex new subject that planners have not been trained to cope with. There are not enough training resources and planners and environmental teams are wasting time on numerous well-intentioned overlapping initiatives. As a result the interpretations of sustainable development are uneven and unpredictable at planning enquiries, which is creating delays and concern among investors.

The project has been warmly welcomed and stakeholders have said they want to get involved and support the project with in-kind help. In particular the project has been welcomed by key industry organisations as well as the public sector in London.

A possible way forward has emerged.

A number of stakeholders have said it would be good if the project could produce a national template into which regional frameworks, strategy targets and guidance could be fed. We believe this would be possible with the pilot in London. Local independent assessment support could be provided by existing local equivalents to LSX in the regions. This idea has the support of CABE and so I will leave you with the thought that it

really is possible to imagine having for the first time a consistent framework for better buildings and infrastructure that will help drive the national, regional and community needs in a joined up and more efficient way. I would finally return to the Ministers and ask that you consider making this event an annual one to help foster this togetherness in a sustained way.

Please email, fax or post your discussion contributions to the secretary by 1 June 2004: email: [kathleen.hollow@ice.org.uk](mailto:kathleen.hollow@ice.org.uk); fax: +44 (0)20 7799 1325; or post to Kathleen Hollow, Journals Department, Institution of Civil Engineers, 1-7 Great George Street, London SW1P 3AA.