Tall Buildings: Vision of the Future or Victims of the Past?

A report by the London School of Economics for Development Securities PLC
The study was carried out for Development Securities PLC by Ricky Burdett, Kathryn Firth, Tony Travers with Victoria Scalognne and Antonio Liptay of the LSE Cities Programme. It includes an analysis of five case studies - Berlin, Frankfurt, New York, Paris, London - and a review of the development of urban design guidelines for tall buildings. The report is based on interviews with users, designers and policymakers and a discussion seminar held at the LSE with key stakeholders.
In the UK, tall buildings are an important topic of debate and nowhere more so than in London. The capital is set to grow significantly over the next two decades. Soaring population and jobs growth will increase demands for the better use of residential and increasingly scarce commercial office space. This is a vital issue, as without a well-thought out response there is the danger of an exodus of households and companies from London. The challenge for developers is to provide the right type and quality of new space. Tall buildings could offer one solution to the capital's fresh expansion needs.

At Development Securities we have involved ourselves in a number of research studies over the last few years. And although we have no current plans for a tall buildings project, as a major developer in Central London, with developments spanning the capital, from Paddington in the west to Docklands in the east, we wanted to contribute to the discussion.

We commissioned this report, ‘Tall Buildings – Vision of the Future or Victims of the Past?’, from the highly-regarded Cities Programme at the London School of Economics to analyse the role and contribution tall buildings could make to London’s future.

The report is considered and wide-ranging. Detailed case studies have been compiled. Planning policies and attitudes to tall buildings in cities throughout the US and Europe have been examined. Lessons for London and other UK cities to learn are included. A key finding is that the capital is alone in having a purely reactive policy that simply dictates where tall buildings cannot be built, as opposed to the proactive zoning policies for tall buildings, which are used in the other cities covered in this report.

We are very pleased with the scope of the research and the intellectual rigour that has been applied to this work. I believe that the insights will provide an important contribution to the current thinking on tall buildings.

Hugh Jenkins CBE, Chairman of Development Securities PLC
Summary of Findings

‘Accommodate or die’
To remain a major ‘world city’ London must accommodate significant growth within its existing boundaries.

Victim of history - London should grow up
The cautious attitude to tall buildings in London is due to haphazard development and negative attitudes prompted by the dismal high-rises of the 1960s.

Transport system going nowhere
Capacity constraints on London’s transport system have prompted some development and regeneration in the capital. Without more there could be an exodus of companies and residents from London.

London can take it
London can accommodate greater densities of population within existing boundaries. There are ways to allow people to live and work closer together.

‘They wouldn’t build ‘em if they couldn’t fill ‘em’
Probably the most compelling evidence in favour of tall buildings is that developers are able consistently to fill their towers with tenants and command high premiums.

Europeans and Americans do it better
Of the cities considered in the US and Europe, London is alone in having a reactive policy that determines where tall buildings cannot be built.

Where should we put them?
Well-designed tall buildings should be located in strategic clusters and well served by public transport in London.

Coming out of the shadows
An effective tall buildings policy for London should take into account their impact on people and places – not only how they affect the skyline. How tall buildings meet the ground is as important as how they meet the sky.
Tall Buildings in London: Vision of the Future or Victims of the Past?
Greater London’s messy and organic urban structure sprawls over an area of 650 square miles, stretched along the River Thames.
London is set to grow over the next few decades - but in which direction?

According to the Mayor’s London Plan, the capital needs to accommodate up to 600,000 new jobs and 400,000 new households by 2016 in order to hold onto its ‘world city’ status. Most significantly, it must do so without expanding outwards into the lush Green Belt that surrounds it.

In other words, London faces a harsh but simple choice. Either prepare for future growth within its existing boundaries - or fall behind its global peers.

In a country where land is scarce, it is crucial that we make better use of our available resources. Our study confirms that London can respond to this challenge, but only if a clear policy on the quality and quantity of new building is developed.

Our analysis of London suggests that its loose, organic structure can accommodate growing demand for new housing and offices. However, this can only be achieved if urban land is developed more efficiently and transport is improved. This means ‘filling in the gaps’ offered by under-used urban locations and building well-designed environments at higher densities-including taller buildings.
above left  By comparison to the regular geometric layout of Paris, Barcelona and New York, London (far left) appears muddled and unplanned.

bottom left  London has developed as a series of separate town centres based around public transport hubs.

right  London’s evolving skyline from Blackfriars Bridge – in the 1950s, 1970s, and 1990s – shows that many tall buildings have been constructed despite attempts to curb office development.
More than 40 tall buildings have been built in London in the past 40 years. They are not alien to London's modern urban culture but many are of poor architectural quality.

London's skyline is ‘messy’ and unstructured, offering few positive ‘role models’ when it comes to tall buildings. Few exceptions from the 1960s fit into the ‘grain’ of London.

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<th>Building Name</th>
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<td>HSBC World Headquarters</td>
<td>199</td>
<td>Draper's Gardens</td>
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<td>London Hilton Hotel</td>
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<td>Tower 42 (NatWest Tower)</td>
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<td>Southwark Towers</td>
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<td>Marble Arch Tower</td>
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<td>Portland House</td>
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<td>The Economist Building</td>
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<td>Little Britain Tower</td>
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Unplanned growth has left London woefully weak in its ability to address big-city planning issues – and the question of tall buildings.

The capital is governed in an undeniably fragmented and complex fashion. As a result, London has grown in seemingly spontaneous spurts, randomly interrupted by government or local authority attempts to impose order on its expansion.

London is not unique in being a largely unplanned city, but its undisciplined growth is unusual for such a vast and established metropolis. Modern cities such as Tokyo, Mexico City or Istanbul are well known for their unplanned outward spread – but older urban centres, notably Paris and New York, are clearly the results of logical ‘top-down’ planning and co-ordinated development.

Paradoxically, London’s best-known planning success is the Green Belt – little more than a development exclusion zone outside the city’s built up area. Inner London’s policy on taller buildings is similarly ‘exclusionary’. Its ‘View Corridors’ define areas where buildings above a certain height cannot be built, at odds with the positive planning approach of other major US and European cities.

It is therefore hardly surprising that London looks the muddle it does today. The skyline – as much as any other aspect of the capital – reflects the haphazard and unplanned way in which the metropolis has developed. Some of London’s tall buildings are loved, but many are disliked. But there is no doubt that tall buildings are an element of the city’s landscape. No one is planning to demolish them and return London to a Paris-like low-rise capital.

So the question for the future is: could tall buildings, sensitively designed and located, contribute to the city’s need for more offices and homes? The history of London suggests they could, though immense care would have to be taken to avoid the mistakes of the past. A rational and widely-understood planning policy is now needed to ensure an effective and consistent approach in the future.
It would be difficult to exaggerate the problems facing transport in London. Years of under-investment have left the city with rail and underground systems that are poor and unreliable. There have been fewer new or extended lines than in Paris, the European city with which London is most easily compared. Proposals for re-building the train and underground systems have been fraught with political controversy.

Despite its transport problems, however, London has continued to grow. In fact, its transport ‘crisis’ has coincided with a huge up-turn in the city’s economy and population. Between 1985 and 2002, the resident population increased by over 600,000. Employment numbers also rose sharply, particularly in the city centre.

One explanation for this paradox lies in the re-intensified use of inner and central London. For many years after 1945, well-intentioned planners and politicians sought to reduce the capital’s residential densities – particularly in inner London – and to decentralise economic activity. Planners and politicians believed that London was overcrowded, and economic activity should be exported to poorer regions. Now freed of such constraints, the centre of the capital has once again been able to grow.

The regeneration of inner London has been another factor. Areas such as Docklands benefited from a new kind of pro-development policy and thus the population of the inner East End and other parts of down-at-heel inner London jumped upwards. Immigration further boosted the numbers living in the city. As a result, statistics show that distances travelled by people living in inner London have fallen during the past decade, while car use has dropped still further.

In other words, failures in the transport system have driven commuters back into the heart of the city.
An efficient public transport system is fundamental to London’s position as a world city.
London’s unique multi-centred structure provides significant opportunities for growth and change. The decline in the city’s industrial and trading activity, especially along the Thames, has left large gaps of disused ‘brownfield’ land close to previously active and well-connected centres. As London prepares for a sustained period of growth, these areas will increasingly become the focus for development.

London has already accommodated significant population and economic growth through effective use of land. New and bigger residential buildings, the re-use of ‘brown’ land and a willingness to live at higher densities have each played a part in allowing the city to develop without a proportionate rise in commuting.

Yet capacity constraints on the commuter railway and the Tube mean that London land must now be used even more intensively. The alternative would be to limit both employment and residential opportunities in the capital.

Tall buildings could certainly make an important contribution to the necessary new wave of redevelopment. Denser developments will make it possible for more people to live and work closer together, and proximity to existing transport facilities would allow better use of certain rail lines and bus services. Tall (or at least taller) buildings could therefore play a part in coping with the problems of its ageing and often sub-standard transport system.

In fact, London has a long way to go before population densities get anywhere close to the levels reached in other major world cities. New York City has a marginally larger population than London-yet living at over double the density. And while new planning policies and taller buildings may be required, giant skyscrapers may not. Notting Hill, Lancaster Gate and Earl’s Court—with five and six-storey houses arranged around communal gardens—are among the most densely populated neighbourhoods in the country, but prove that density can be achieved without very tall structures.
‘Accommodate or die?’ By 2016 London needs to absorb 400,000 more households and 600,000 new jobs within its existing boundaries. Building on available urban land at higher densities will ensure London remains sustainable, extending the tradition of some of its most successful residential and business environments.
London faces a substantial demand for more offices and houses. The British Council of Offices confirms that around 11 million square feet of extra office floor space will be required in the City of London by 2010, with demand growing at up to 2.5% every year. Other projections suggest that London will need five to seven times the amount of extra office space currently provided at Canary Wharf over the next 25 years. There is a similar steep growth in demand for housing, with the need to accommodate a population the size of Liverpool within London’s existing boundaries over the next 15 years.

London’s office market is further characterised by the demands of a growing number of very large organisations. Many of these businesses employ over 2,000 people, and therefore require more than 400,000 sq ft of high-quality space. While very tall buildings may not be a necessity in these instances, large amounts of floor area, strong internal communication and easy access certainly are. Such requirements can be accommodated either by large ‘groundscrapers’ (5-10 storey buildings that occupy a large area with potentially negative urban impact) or in taller buildings that offer both user flexibility and efficient use of land.

Perhaps the most compelling evidence about the “need” or “demand” for tall buildings in London and elsewhere is the capacity of those who develop them to find occupiers. All of the towers built in the capital are occupied – and command a high rent premium too.

Canary Wharf’s 10 million sq ft of new office accommodation built since the late 1980s has provided London with a large amount of new office stock – on a concentrated site including a number of tall buildings. It is difficult to see how London could have accommodated the companies that have taken space in the last 10 years without the sideways and upwards leap represented by the Canary Wharf towers. London’s economy and competitiveness would almost certainly have suffered without the high-density development in this area of Docklands, even though its single-use character fails to create the vibrancy of typical London communities.

The capital’s recent property developments have catered for businesses both large and small. Canary Wharf has been successful in building several pre-let towers, which does suggest a market demand for tall buildings among large organisations. Meanwhile, other tall buildings like Tower 42 respond to the need for small businesses to cluster in prestige locations – where they can create and feed off of a strong collective presence and share the benefits of a high quality environment.

A number of economic studies have provided evidence that clustering of industries such as financial and business services leads to productivity gains – and therefore to successful industrial concentrations. London has been very successful in generating such clusters, although there is no evidence to suggest that tall buildings themselves are needed to sustain clustering.
UK towers have a reputation for poor design - and a negative social connotation that has biased the debate about tall buildings in London, unlike many tall residential towers in New York.

Tower 42 allows small businesses to cluster and share the reflected glory of a prestige location in the city on London.

Most of the tall buildings in London are the result of negative planning control, creating a hostile environment at ground level.
above  Tokyo, London, New York - competing cities with different spatial cultures.
Tall buildings bring with them certain cost implications. In fact, the taller a building becomes, the greater the costs of construction, servicing and maintenance. Higher floors, however, bring in higher rents – and an increased income that will soon cover the elevated costs of building them. And while the occasional property developer may choose to sacrifice rental potential in the name of aesthetic achievement, it must be assumed that developers in general exist to make a profit.

Certain environmental costs may also be associated with tall buildings, although these are difficult to quantify. Many aspects of economic progress, such as car travel, air travel and some elements of food production make negative contributions to the environment – and it would be inconsistent to require tall buildings to account for their own environmental consequences.
London is not alone in its need for larger and taller buildings. The cities of major expanding economies have had to grapple with this issue for the last decades, balancing heritage and preservation against economic growth, image and competitiveness.

Barcelona, Europe’s densest, yet low-rise city, is promoting a new generation of taller buildings in major regeneration areas on the fringes of the old city. With much public debate, Berlin has allowed clusters of taller buildings in inner city areas devastated by war and political division. Frankfurt has established a ‘crown’ of high-rise buildings in and around the city centre, promoting sustainable and environmentally friendly design through clear design guidelines and policies. Paris and New York have developed their own planning policies that permit taller buildings in specific locations, respecting and contributing to each city’s unique architectural character and image.

These are examples of ‘proactive’ policies that reflect a common understanding and consensus as to how each city is set to grow, develop and change. London is alone among major cities in having a ‘reactive’ policy that defines where tall buildings cannot be built.

The protective View Corridors of St Paul’s and Westminster, which only came into effect in the late 1990s, are the last of a series of ad-hoc responses to control London’s growth. These have proved inadequate and out of touch with the realities of the capital’s 21st century urban landscape. The Mayor of London’s decision to review tall building policy is an opportunity to create a clear and positive planning vision for London’s future development – and to learn from other cities that have dealt with the issue more effectively.
In Paris, the tall buildings policy defines three distinct building height zones. In the old centre, buildings cannot exceed 6 storey building height - Paris Platfont. On the fringe, or in the Plan d’Occupation Desoles (POS), tall buildings are permitted provided they adhere to a set of specified guidelines. Finally, in the Zone d’Action Concert (ZAC), where La Défense is located, there are no height restrictions and the development is supported by good public transport.
Berlin’s tall building policy stipulates strict height zones within the old city centre (up to 30.5 metres) and designates special areas for tall buildings (up to 150 metres). Residential districts stand at 4-6 storeys.
In Berlin, two key zones – Potsdamerplatz and Alexanderplatz – are being developed according to strict guidelines that complement the city's fabric and allow high-rise towers to ‘grow’ out of traditional Berlin blocks.
New York City has historically attempted to control the configuration and siting of tall buildings through a range of mechanisms, leading to the city’s characteristic ‘valley’ skyline. However, over time developers have managed to find loopholes that have compromised the different policies. The Unified Bulk Programme Zoning Amendment (Packing the Tower) has most recently been proposed to limit the number of slender towers in high-value districts. Each district will have defined height limits and certain areas are completely exempt.
Frankfurt’s ‘Fingerplan’ designates building height zones that reinforce the city’s radial street system and increase density at traffic intersections. The policy promotes 3 high-rise cluster areas where tall buildings adhere to guidelines for ground floor retail, public space improvements and car parking.
London’s ‘negative’ tall buildings policy is based on protected ‘View Corridors’ of St Paul’s Cathedral and Westminster from strategic points across London - mainly to the north and west. The result of this exclusionary policy is a scattered skyline punctuated by taller buildings rather than a coherent urban composition.
London’s organic structure lends itself to clusters of higher density development. Well-designed taller buildings, which adhere to high quality design principles, could be located in strategic locations with good public transport provision (existing or planned). Such locations exist along the Thames Gateway (Canary Wharf, Stratford, Greenwich Peninsula), in parts of central and west London (Paddington, White City, Wembley), in Croydon, and within existing clusters in the City of London and its immediate fringe areas, including London Bridge and Bishopsgate.

In line with London’s evolution, the height and quantity of taller buildings should increase gradually over time, rather than radically transform the city’s unique character.
Coming out of the shadows

the successful tall building must adhere to a set of clear urban design guidelines

Urban environments, as we have seen in this study, can vary enormously in quality. Yet this has less to do with the height of the buildings than the manner in which they integrate with their setting. The way buildings meet the ground, how they engage with the street and how their impact is reduced by good design are the key factors that determine whether a tall building - or any building - makes a positive contribution to its environment.

Issues such as microclimate, light and shade certainly become more acute as a building becomes taller. But an over-emphasis on a tower’s height and its contribution to the skyline has often led to compromises at street level - and residual open spaces that contribute nothing to the public realm.

Above all, the successful tall building must adhere to a set of clear urban design guidelines that affect the following areas: edges, use, public space, urban integration and environmental factors (sun, shade and microclimate). It is our view that the next generation of tall buildings in London, whatever their location, must be of the highest design quality - and to achieve this must respect these guidelines, outlined as follows.
The urban environment is at its most attractive when it shows consistency. The relationship a building has to the street and to the edge of the pavement is critical and defines the public realm. A continuous building setback (the line to which a structure is built) helps provide a sense of enclosure and definition along our urban streets. The street, like a plaza or square, is essentially an outdoor room.

To increase the interaction of the building with the public realm and its contribution to street-level activity, it should have a minimum setback from the edge of the pavement. 33 Cavendish Square (upper right) demonstrates this.

Streetscape elements - trees, bollards, lighting and seating - may be used to define the street edge if the building does not follow the predominant setback line.
A tall building runs the risk of overpowering its environment. For this reason successful tall buildings are often those with podiums. The podium can help to bridge the difference in scale between the tall building and the surrounding buildings. The podium should respect the datum lines provided by adjacent buildings – e.g. building heights, roof and cornice lines. The Economist Building (1964) (upper left) provides a good model.

If a predominant characteristic of the street is that the buildings are all attached to one another or very closely spaced the tall building should be inserted in the same manner.

This montage of the Economist Building (right) along St. James Street demonstrates how the use of a podium can reduce the negative effects of a tower.

It should be recognised that the pedestrian is most aware of the lower five storeys of a building. The lower floors of Cavendish Square deflect from the fact that this building is taller than most in the area.

Both the horizontal and vertical rhythms of the adjacent buildings can provide clues as to how the new building can be incorporated without mimicry.
Centrepoint (1963) (left) neither respects the horizontal lines of the surrounding buildings, nor does it provide an edge to the street.

The public realm is compromised by a weak street edge along both the north and west sides of Centrepoint (upper right).
Ensuring that a building interacts with, or defines, the public realm is dependent not only on its setback but also its street level uses.

The blank walls along the building façade of New Zealand House (1960) (left) create an unpleasant pedestrian environment.

Communal entrances can have the detrimental effect of increasing the amount of blank façade, making the tower a desirable alternative to a single occupant ‘groundscraper’.

Frequent doors and windows provide relief along the building façade at pedestrian level, as shown along Linkstrasse in Potsdamerplatz, Berlin (right).

It is important that building entrances are visible and easily accessible.
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Buildings are increasingly blurring the inside/outside or private/public division by locating public areas in raised atriums or on the upper floor of buildings. This blurring helps to incorporate the building into the public realm. A mix of uses within a building helps provide round-the-clock surveillance. Positive examples of this are found at Battery Park City’s World Financial Centre (lower right) and Potsdamerplatz (upper right).

A consistent building line, in combination with ‘active edges’, is necessary to create a truly lively public realm. Canary Wharf certainly shows consistency, but the public realm suffers from the lack of active shop fronts (above left). Arcades that include shop fronts in Canary Wharf (far left) are far more successful.
Too often a tall building stands within its site without contributing to the residual open space around it. This space, inevitably, becomes shabby and unwelcoming. The undefined space between Centrepoint (upper & lower right) and the street is unsatisfactory as either a public space or an edge to the street.

Public space should be designed at the same time as the building itself to ensure that it is not just leftover space – as evident in Battery Park City (above left).

Active edges, such as shop fronts and cafés, can give a building a sense of ownership – of the space or a section of the street. ‘Overlook’ from upper floors, possible within a tall building, will also contribute to a sense of safety. The most successful public spaces tend to keep the building entrances and the space itself at the same level.
At Canary Wharf the public space is often on a different level to the building entrances (above left).

An overspill of public and semi-public activities onto the pavement cannot occur if different levels are present – as shown in the Financial District in New York City (above right).

At Canary Wharf, unfortunately, the highest level of public interaction occurs in an underground indoor mall (lower right).
An objective of the Foster & Partners’ Commerzbank (upper left & right) tower in Frankfurt was to encourage a pedestrian through-route on the ground floor; an indoor café/pub reinforces this.

Commerzbank presents, on one side, an inviting entry (lower right) and, on the other, a slightly daunting set of steps (lower left).
A public space that is situated on a different level from the surrounding building entrances can be successful if it is programmed space. At Rockefeller Centre in New York, (upper left) seasonal activities are provided.

Public space should incorporate well-designed street furniture - lighting, seating, litterbins, signage, public art, etc. - without creating clutter. The examples shown are from Potsdamerplatz (upper right) and Canary Wharf (lower).
It is critical that a tall building or a group of tall buildings are physically and perceptually integrated with the surrounding context. The tall building should not disrupt existing street networks and pedestrian flows. It must also be accessible and respect local patterns of movement, taking into consideration routes to key destinations such as public transport nodes and civic buildings.

Battery Park City (upper & lower left) provides physical, visual and perceptual integration with its surrounding context in Manhattan.

Tall buildings should be sited to enhance existing views and vistas.

Tall buildings should recognise their ability to provide new landmarks from the street level, as demonstrated by this view of Tower 42 (left) in the labyrinth of the City of London.
A building should be sited to avoid overshadowing of neighbouring buildings and land as much as possible (upper row). This is a particular challenge in an urban setting such as London, where sunlight is at a premium. Building configuration can be based on the building’s solar envelope so as not to overshadow the solar production potential of neighbouring sites. A podium supporting a tall building can increase the amount of sunlight reaching public spaces. In addition, public spaces should be located to take advantage of their relationship to the sun.

Tall buildings affect the microclimate of an area (lower row). To improve environmental conditions around buildings above 6 storeys it is best to avoid:

- large flank walls facing dominant wind. (a)
- funnel-like gaps between buildings.
- buildings pierced at ground level.
- long parallel rows of smooth-faced buildings such as exist at Canary Wharf.

The negative effect of wind is less of an issue where buildings are of a similar height and configuration. (b) A podium can limit downdraught at ground level, particularly if the long axis is oriented to the dominant wind. Protection from downdraughts caused by tall buildings should also be considered. Arcades, canopies, colonnades and awnings can all simultaneously provide shelter from the elements and mediate between the scale of the tall building and the public realm.
Conclusion

Taller buildings are sure to play an important role in the denser development of the capital, but they must integrate into the city’s fabric at both ground and sky level.

London has long suffered from a negative and erratic approach to planning, the legacy of which is clearly visible across the capital’s messy skyline and in the jumbled architecture of its streets. Tall buildings have also suffered, with the poorly designed tower blocks of the 1960s casting a dark shadow over their reputation – and significant doubts on their validity despite the existence of a small number of admired taller buildings.

The situation, however, is far from irreversible and the time for change is ripe. If London is to grow in terms of economy, population and world status, without spilling over into the protected Green Belt, it must build on its available resources – and quite literally so.

For despite past planning mistakes, the capital’s loose urban structure can now provide the solution to its own problems. Changing industrial trends have freed up many areas of ‘brown’ land, disused sites in central locations that offer clear opportunities for development.

Canary Wharf and similar Dockland regeneration programmes have already established a model for such development: well-designed, densely populated complexes – including a number of tall buildings – that are easily accessible by public transport. And their popularity, among residents and businesses alike, speaks for itself. Yet, more must be done to turn the tide.

A new wave of positive planning is thus required to move the capital forward into the new millennium. Concentrating development in inner London – and around the transport hubs of its many centres – will allow more Londoners to live closer to their jobs, and in turn help to unburden the overloaded Tube and commuter network.

Finally, the success of London’s architectural future demands a detailed and coordinated approach. Taller buildings are sure to play an important role in the denser development of the capital, but they must integrate into the city’s fabric at both ground and sky level. This calls for high quality design principles and careful observation of specific guidelines. If followed, these will allow a more visually coherent and efficient London to grow within its boundaries – and renew its capacity to compete with the world’s most effective urban networks.
Copies of the full research report are available from Development Securities PLC (Tel: 0207 828 4777) at £150.