Transport for London

Land & Property Value Study

Assessing the Change in Land & Property Values Attributable to the Jubilee Line Extension

Pilot Study
Southwark & Canary Wharf

20/02/04



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EXECUTIVE SUMMARY

This is the second report issued in response to a brief from Transport for London (TfL) to assess the impact of the Jubilee Line Extension (JLE) on land and property values.

Our Methodology Report was issued on 8th May 2003 and has been approved by the steering committee responsible for the project.

This report addresses a pilot study applying the proposed methodology to two of the ten station areas on the JLE; Southwark and Canary Wharf.

Analysis has proceeded with regular contact and discussion with TfL throughout. Our findings were presented and discussed at a meeting of the steering group on 25th June 2003, and this report elaborates on that presentation.

Our methodology is set out in full in the earlier Methodology Report. Briefly it involves using property market evidence to assess value, applying this value appropriately to the property stock in defined study areas, and then estimating the effect of the JLE by comparison with controls not materially affected by it.

We adjusted the methodology slightly during the course of the pilot study. We found that the area based controls we had proposed in our methodology report were too volatile and yielded counter intuitive results. We adopted instead controls based on indices covering large parts of London. These have the defect of potentially underestimating the impact of the JLE because they include, in some cases, the area affected by the JLE. However, in the absence of any appropriate substitute, we considered this would not of itself have an unacceptable impact on the results.

Our findings are presented as estimates which vary in a wide range. These estimates are highly sensitive to the substantial assumptions and judgements made in our analysis. These assumptions relate to both property stock and value, because of the nature of the data available, and the need for interpretation in the application of this data. The whole exercise revolves around a hypothetical situation in which the JLE does not exist, and this is clearly impossible to model with verifiable accuracy. For these reasons the exercise is one of estimate and judgement, not calculation.

The impact of the JLE on property market values (the JLE "uplift" in this report) was considered to have two likely dimensions: the impact on value per unit area (eg rent per m^2) and the impact caused by accelerated development – i.e. changes in the built stock in the study area. An attempt would need to be made to control for both of these.

The study period adopted and agreed with the steering group after considerable discussion runs from 1992 to 2002, as per our original proposal. The results of the pilot study are in fact highly sensitive to the start and end dates chosen, and any different period adopted would give a markedly different result.

The brief required analysis of value impacts on land and property. We have adopted the RICS definitions used in their Appraisal and Valuation Standards as follows:

Land: Land is a solid part of the surface of the earth which may hold the potential for a range of uses including the construction of buildings.

Property: Property comprises all rights and interests in land with buildings where they exist.

An important implication of these definitions is that property value incorporates land value – the two cannot be added together.

During the study period we assessed:

- The absolute capital value change in land and property;
- The amount of this figure estimated to be attributed to the JLE ("JLE Uplift").

We found that the JLE appears to have had a positive impact on property market values in the pilot study areas. Our key findings are summarised in the table, commentary and notes on interpretation below.

"JLE Uplift" - Land

The assessment of land value is particularly sensitive to assumptions, and to the character of the property market at the start of the study period, and these estimates should be treated with greater caution than those for property.

The range for land value has been generated by applying a sensitivity analysis to the key inputs used in residual calculations of land value. The results vary widely because of the extreme sensitivity of land value estimates to such inputs. In the case of Canary Wharf land value is also strongly affected by the opinion one forms about the role of the JLE in stimulating potential development of additional stock. However, our best estimate of uplift within each range is as follows:

- **At Southwark our best estimate of JLE Uplift for land is in the region of £800m (in the range zero to £1.45bn);**

- **At Canary Wharf our best estimate of the JLE Uplift for land is in the region of £2bn (in the range £300m to £2.7bn).**

"JLE Uplift" - Property

- **At Southwark our assessment is that uplift to property values will be towards the bottom of our estimated range of £150m to £650m;**

- **At Canary Wharf our assessment of JLE uplift is towards the top of our estimated range of £755m to £1.9bn.**

These estimates are subject to the notes on interpretation below, and accord with the hypotheses established in our Methodology Report:

- That improved perceived accessibility should result in increased value, other things being equal;

- That those areas where the JLE made the greatest incremental change to perceived accessibility (e.g. Canary Wharf) would be expected to show a greater change than

those where the JLE was simply adding to an area already perceived to be relatively well served (i.e. Southwark).

A detailed note on these findings and the relationship between land value, property value, "JLE Uplift" and capital change is found at section 7 of this report.

Interpretation

Any interpretation of these findings needs to take into account the following:

- The figures given are estimates based on the assumptions and judgements described in the report and appendices. The multiplicity of factors at play in the analysis means that there is room for a wide range of different estimates of both the gross value change and the impact of the JLE.

- Some of the key areas where judgement and assumptions come into play include variables familiar to property valuers such as the assessment of benchmark levels of value at a given time, and the wide variety of inputs needed to generate residual land values. We have applied the knowledge acquired from our active role in the relevant property markets at the time to inform these judgements.

However other areas requiring judgement are more unique to this analysis, including for example:

- Identifying the nature and quantum of the property stock in the study areas. There is no readily available accurate means of identifying property stock in a given area in the UK at present. This exercise has made significant use of two specific previous studies relating to the JLE undertaken by ourselves and the JLE Impact Study Unit which would not be of any use to anyone seeking to replicate such an exercise in another part of London.

- Identifying controls that fully replicate the study areas, save for the impact of the JLE, is not possible with complete accuracy. It has not been possible to control for example for the unique factors resulting in the renaissance of the South Bank during the study period. Moreover, the outcome of the analysis is highly sensitive to the controls used.

- Judgement is also required in "controlling for stock", for example in identifying how much of the new development at Canary Wharf could be said to have happened only because of the JLE. In this case the answer is likely to lie more in questions of transport capacity than property market value parameters.

- In estimating land value ranges a series of sensitivity analyses were performed, varying key inputs to the model by 5-10% which together with the other assumptions and judgements identified informed the range of values given in the table below.

Given these factors impacting on their interpretation, the table below summarizes the key findings of the pilot study:

"JLE Uplift"	**Southwark**	**Canary Wharf**
Property	£150m to £650m	£755m to £1.9bn
Land	£0m to £1.45bn	£300m to £2.7bn
Capital Value Change over the study period		
Property	£2bn	£3.9bn
Land value	£822m to £1.68bn	£1.82bn to £2.84bn

This table should not be considered without reference to the detailed notes in Chapter 7, setting out our conclusions, their interpretation and implications.

In moving forwards from this pilot study, the following should be noted.

This pilot study has been a highly labour intensive analysis because of the imperfect data available. Although we have used a 'cocktail' of data in achieving an answer, nonetheless we have still had to make substantial assumptions and judgements with regard to the nature of stock and value. The lack of availability of VOA data gave one less consistent source by which to 'triangulate' value and JLE uplift estimates.

The results generated vary in a wide range because of the estimation, judgements and assumptions required. Any extension of the study to the whole JLE would have similar characteristics, although the pilot study has identified some methodological best practise. Any transfer of this methodology to another part of London would be subject to the same issues of estimation, assumption and judgement and would be additionally handicapped by shortage of available information about property stock, where the JLE corridor has a special advantage because of previous studies which have made this data available.

1.0 INTRODUCTION

1.1 The Brief

Your requirement is to quantify:

- The change in land and property values along the Jubilee Line Extension (JLE) corridor - a global figure (referred to in this report as "capital value growth");
- The amount of this change that can be attributed to the JLE - referred to in this report as "JLE uplift".

We understand that you require quantification of two related aspects of value:

Property value. This we describe as the capital value of buildings (which incorporates the land on which they stand). The Royal Institution of Chartered Surveyors in their Appraisal and Valuation Standards define property as being all rights and interests in land with buildings where they exist.

Land value. This is the value of the land underlying buildings, together with any undeveloped land. Land is defined by the RICS as a solid part of the surface of the earth which may hold the potential for a range of uses including the construction of buildings. The highest land value at any one time may relate to an alternative use to that for which the site is currently used.

An important implication of these definitions is that property value incorporates land value – the two cannot be added together.

We understand you require not only *"a before and after"* calculation, but also if possible the tracking of changes during the period, and our approach is designed to do this. The study is to cover all types of property, both commercial and residential.

1.2 Study Objectives

The objective of the study is to inform the case for funding future transport schemes. Ultimately, you are considering the opportunity of taxation based on property and land value increases associated with transport infrastructure development, but taxation issues do not form part of the brief. You therefore require an approach that is defensible, auditable, and capable of transfer to other situations.

1.3 Purpose of this Report

You have divided the brief into three stages:

- A Methodology report that incorporated a literature review. We delivered this in March 2003 and provided updates, as requested by the steering group, which has now approved it;
- A pilot study of Southwark and Canary Wharf Stations, which is covered by this report;
- Potentially a full study of the JLE corridor from Waterloo to Stratford (or even north from Waterloo if the results of the pilot suggest this is appropriate) to follow.

The purpose of this report is therefore to test the approach outlined in our methodology report, and to identify any changes, lessons or conclusions relevant to its application to a full study.

1.4 Approach

Our proposed approach is outlined in full in the Methodology Report. In summary the approach involves:

- Study areas based on a radius of 500m (commercial) and 750m (residential);
- Control areas against which to compare value performance in the study areas;
- Estimation of the uplift due to the JLE by reference to this comparison of values;
- Addressing the anticipated challenges of poor quality data for both stock and value by using a wide-ranging "cocktail" of data sources;
- Recognition that any impact on global value could be generated by changes in two variables - the value per unit area, and changes in the quantum and nature of the built stock itself.

The pilot study proceeded at all times in close co-operation with TfL via fortnightly meetings and regular contact by phone and email.

1.5 Study Period

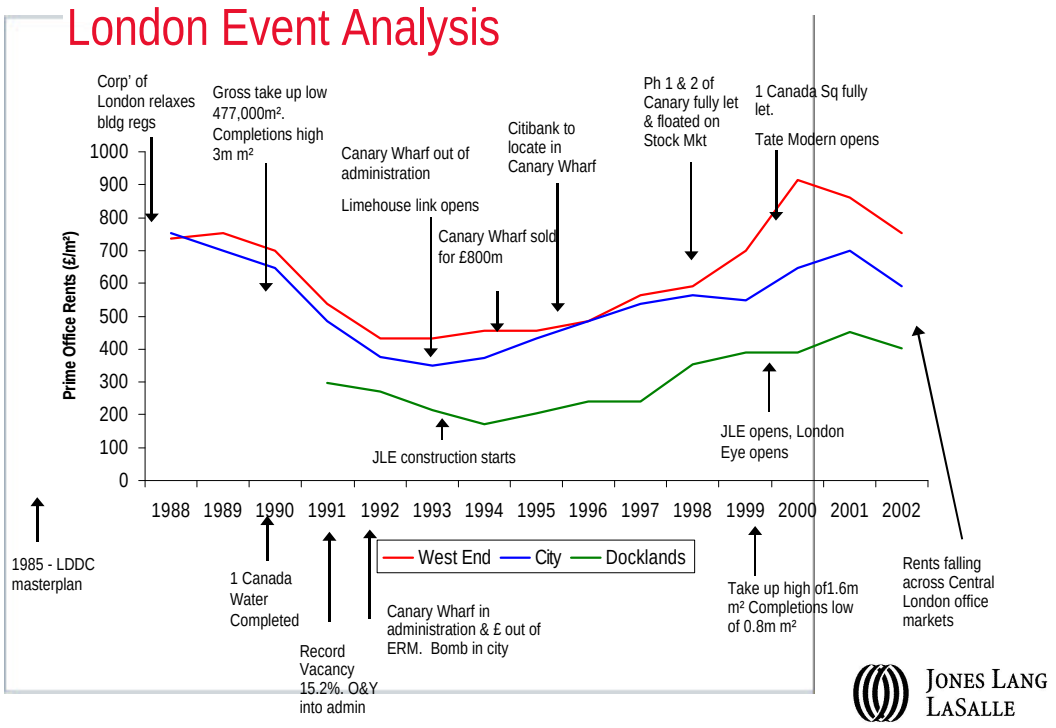
We debated at some length with TfL and the steering group the appropriate time period to be used, in particular the start date for the exercise. The date proposed in our methodology report and tender was 1992, and this was the date agreed after some debate. The alternative debated was 1989, and this was rejected for reasons including:

- The limited number of transactions, and therefore data, in the period from 1989-92, due to the extremely poor state of the property market at this time;
- The little data available is of poor quality because the market was effectively in free fall with many deals done in a false market, and irrationally;
- The incentives offered heavily mask value making transactions difficult to analyse;
- Many of the well established continuous data sources now available were not set up at this time, compounding these difficulties.

To provide some context for the study, and to illuminate the chapters that follow, Slide 1 summarises some of the key events influencing the property markets in the period in question, and the two pilot study areas in particular.

It should be noted that the outputs of an exercise such as this are highly sensitive to the start and finish dates used. Using different dates would generate substantially differing results because of the volatile nature of the property market and land values in particular.

Slide 1

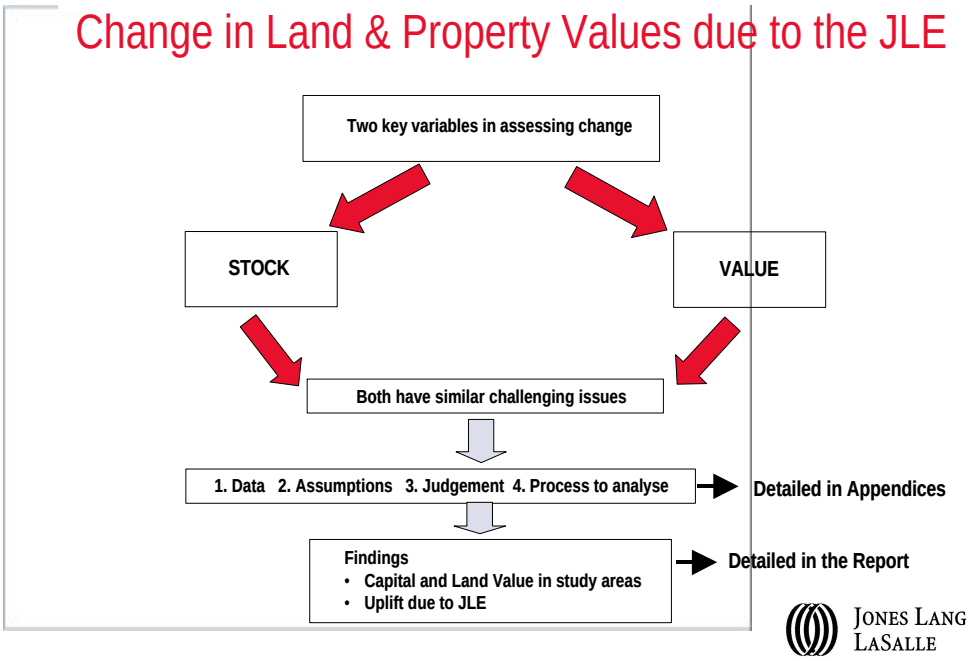


1.6 Report Structure

The following chapters detail our findings in relation to stock and value in each of the study areas, followed by an assessment of our approach to controlling for stock and value. Chapter 6 outlines the estimation of the "JLE uplift", and is followed by our interpretation of these results, conclusions and the implications of the pilot study for any future analysis of the JLE as a whole. The data used, the assumptions made, and the methodological issues are discussed in the Appendices.

Slide 2 summarises the process we have undertaken.

Slide 2


Change in Land & Property Values due to the JLE
Two key variables in assessing change
STOCK
VALUE
Both have similar challenging issues
1. Data 2. Assumptions 3. Judgement 4. Process to analyse
Detailed in Appendices
Findings
• Capital and Land Value in study areas
• Uplift due to JLE
Detailed in the Report
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2.0 ISSUES FROM METHODOLOGY REPORT (AND SUBSEQUENT DISCUSSIONS)

We anticipated various issues in our Methodology Report and others emerged during the course of the pilot study. Undertaking the Pilot Study has brought these to life. Below we set out these issues and our response in light of the lessons learned, together with implications for the extension of the assessment to the whole JLE. The key point is that we have used a cocktail of data but have still had to make substantial assumptions and judgments with regard to the nature of stock and value.

2.1 Issues

Any approach to the challenge posed by your brief is affected by the data available. The property market in the UK is characterized by imperfect information – it is not a transparent market. Particular features are:

- No readily available accurate way of identifying stock, either for total quantum or split between uses or quality;
- Value – market evidence data is not fully available for all transactions;
- Value data that is available needs interpreting, for example with regard to incentives;
- In its application to the Pilot Study areas it needs judgment to ensure appropriate values are applied to appropriate stock;
- Data is inconsistently available over time. This is a fundamental problem since consistent measurement is vital to any assessment of change.

2.2 Response

The challenges in this particular project are to an extent those that face property valuers, that is how to interpret market evidence of value and apply the appropriate values to the appropriate stock.

However, certain complications arise which are unique to this project.

2.2.1 Stock and Value

- First the stock to which the value is to be applied is unclear. There is no accurate and readily available method for ascertaining built stock in a defined area of the city in the UK. This applies both to quantum, and to some extent to use and quality.

- Second we are required to examine historic values, and historic stock, in order to generate the global value changes required. Data is significantly less readily available for the beginning of our study period than it is at the end, as discussed in our methodology report.

Happily, however, the impact of the JLE on property markets and values has been of enduring interest, and there are two specific data sources which are available over and above those that are found generally in London or elsewhere.

These are:

- First the report Jones Lang LaSalle undertook for the European Investment Bank in 1992 that attempted to assess the likely future value impact of the JLE;

- Second, the JLE Impact Study Unit undertook a very detailed land use study in 1997 of each of the catchment areas of the JLE.

Each of these provides estimates of stock that would not be available elsewhere in London, but can be used as benchmarks in this case. There are clear implications here for the replication of this methodology to any other part of London in the future.

2.2.2 Value

We have also used for the pilot study areas, data from our ongoing monitoring of these areas since these are parts of the established central London commercial property market. Data availability will be significantly weaker for many remaining stations on the JLE (e.g. Canning Town, Canada Water, Bermondsey etc).

However, the biggest challenge we discovered was not only identifying benchmark levels of value but applying these accurately to the stock in the study area which requires judgments and assumptions to be made as to the quality and nature of the stock. This is less of an issue for Canary Wharf where stock is well known and dominated by a single owned estate, but this is a unique situation not replicated elsewhere on the JLE or frequently anywhere else in London.

2.2.3 Controls

We proposed using area-based controls in our Methodology Report. In practice we found these generated volatile and counter intuitive responses, so we switched to using London wide indices as described in chapter 5.

The pilot study highlighted how critically dependant the outcome of any analysis is on the controls that are used. However, it is also clear that attaining a perfect control which fully and only isolates the impact of the JLE is impossible given the multiplicity of factors driving property value.

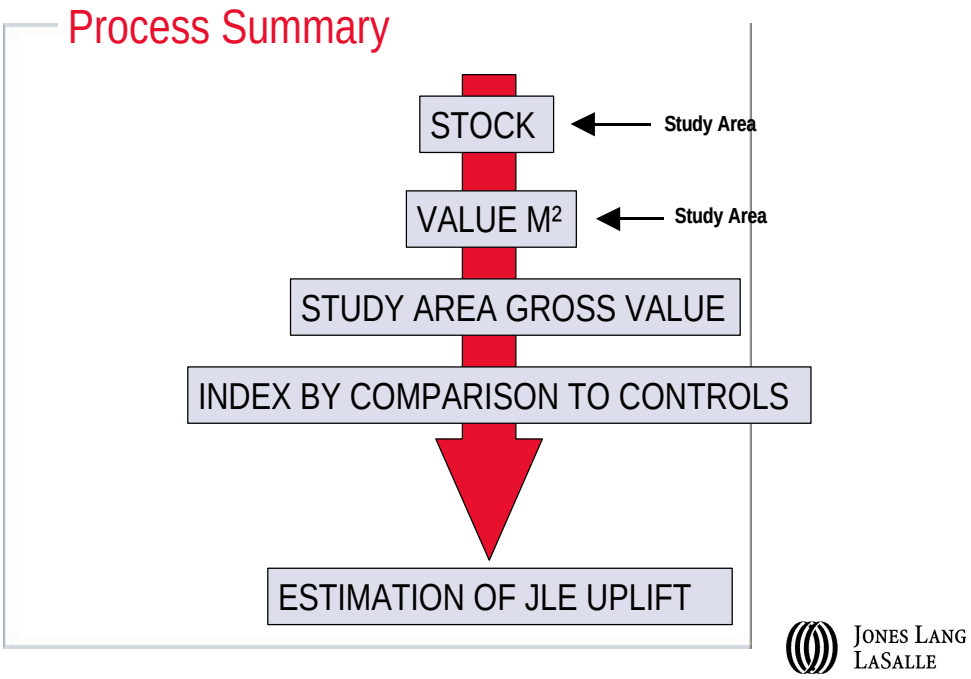
2.2.4 Cost

During discussions when our draft findings were presented, a new issue was raised. The question was that where stock has changed significantly, such as at Canary Wharf, should this study not take into account the cost of delivering the new buildings. We have carefully considered this point and concluded that an assessment of impact on property market value should not take cost into account. Cost is not a component of property market value, but it may be a factor in a full econometric analysis of the impact of the JLE that is beyond the terms of this brief.

2.3 Summary

In summary any assessment of value uplift due to the JLE will be an estimate based on judgement and assumptions. What follows uses best data and market based views to form an opinion, but clearly the estimates generated can range widely according to these inputs. The appendices set out clearly the key assumptions and judgements made in our analysis. Slide 3 summarises our work process.

Slide 3



The following chapters examines each study area in more detail before looking at the issue of controls and estimation of the JLE uplift.

3.0 SOUTHWARK STUDY AREA

3.1 Study Area Character

Core themes to emerge include:

- Large office space located on core arterial roads and to the north of the study area – Blackfriars Bridge Road, Southwark Street, Stamford Street and Union Street;
- Greater amount of workshop and industrial space towards the south of the study area;
  - railway arches being converted into workshop space
- Significant residential infill that is characterised by a combination of:
  - Public sector inter war and post second world war estates
  - Peabody Housing Association estates
  - Recently developed private sector flats
- Very limited retail provision.

3.2 Factors for Change

Our analysis is seeking to identify the impact of a single change in the environment – the JLE. For Southwark in particular the study period is characterised by a multiplicity of changes illustrated by slide 4 that might be described as the renaissance of the South Bank. We found that in practice controlling for these unique changes was extremely difficult.

Slide 4



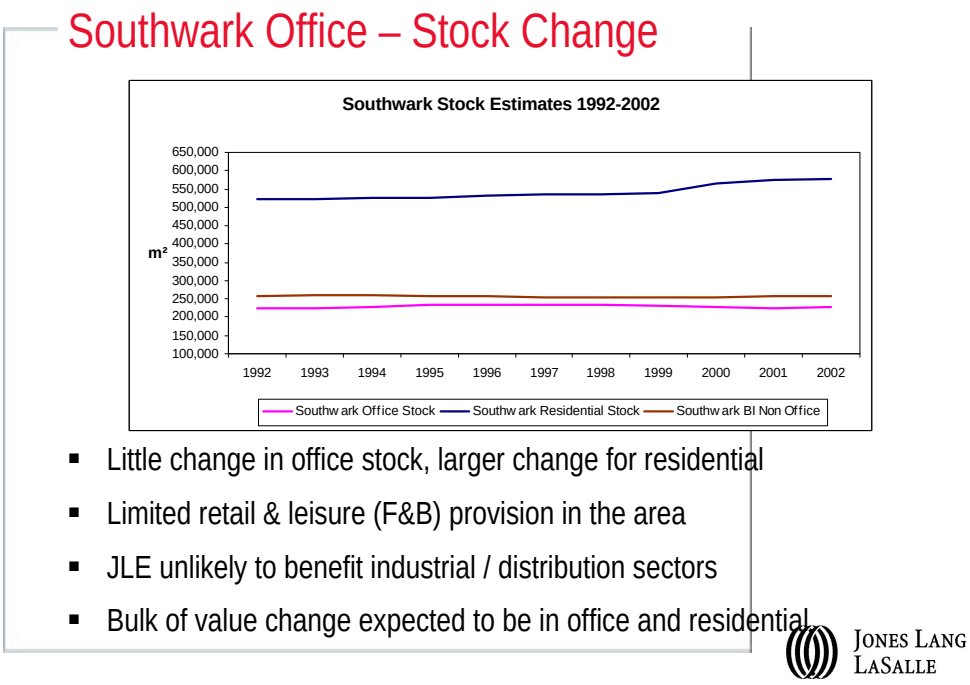
3.3 Stock Findings

For a detailed note on how we assessed stock in the Southwark Study Area see Appendix 2.

Slide 5 illustrates stock change over the period. As can be seen there was very limited change between 1992 and 2002 in office and industrial property. Residential property saw a notable increase from 1998, while hotel stock went from none in 1992 to three sizeable hotels in 2002.

These figures include an element for non-office commercial stocks – industrial units, workshops and the like. As explained in Appendix 2 the varied nature of this stock and the difficulty of obtaining value evidence means that this element of the property stock in the area needs to be treated with particular caution. However, in line with the hypothesis in the Methodology Report, we did not anticipate that this component of the stock would be responsible for a significant proportion of the uplift, so that this problem, which would have been significant had it related to offices for example, is not of major significance.

Slide 5



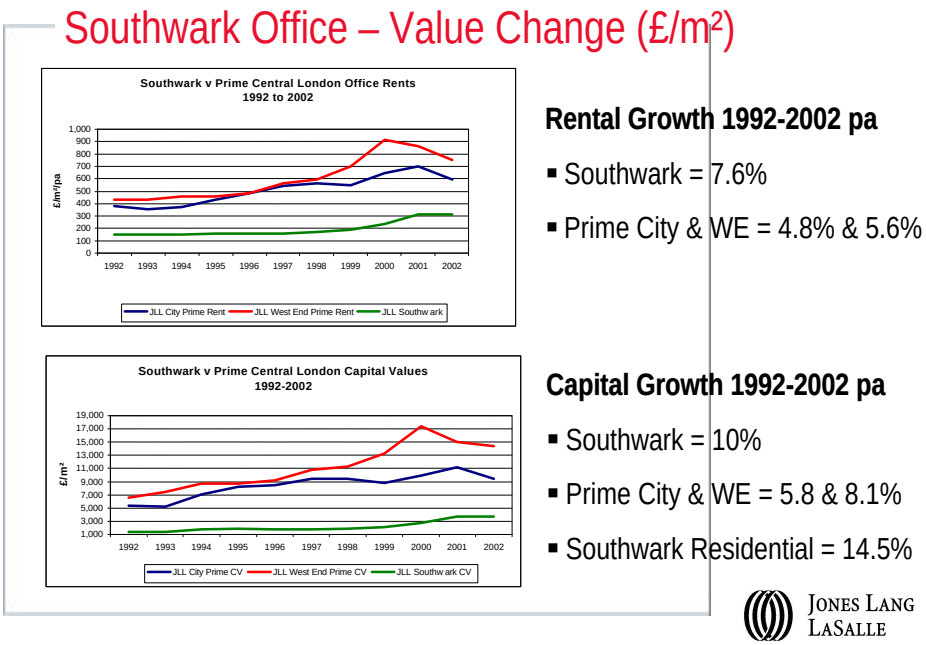
3.4 Value Findings

For a detailed note on how we assessed value in the Southwark Study Area see Appendix 3. We covered all the uses; residential, hotels, retail, other commercial etc as per the methodology report.

Value per unit area

Breaking down value change over the period we see the following, first in terms of values per unit area. Slide 6 shows office rental change and then capital value change over the period. This data forms the raw material for our calculation of overall value change and subsequently JLE uplift.

Slide 6

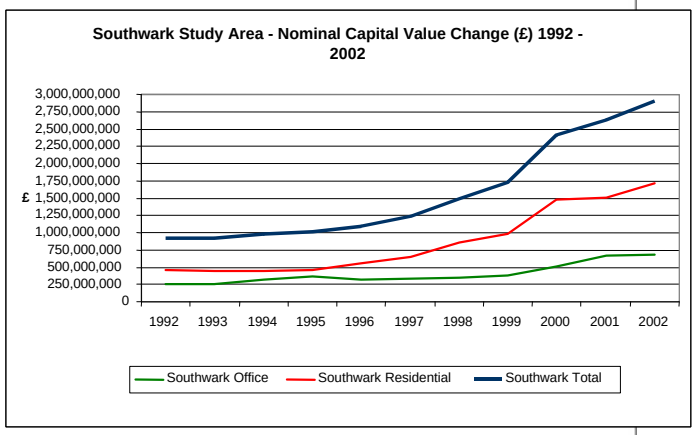


Capital Value

Applying these values (and similar values to the other uses) to the stock calculated in the study area shows the following gross capital value change over the period, Slide 7. This slide clearly shows the uplift around 1998, this was the scheduled completion date for the JLE but it was also when the property market began a period of sustained growth.

Slide 7

Southwark – Value Change (£/Study Area)



1992 – Total Southwark Built Stock Capital Value: £915m

2002 – Total Southwark Built Stock Capital Value: £2.90bn

Overall change in value 1992-2002 = £1.985bn

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The prime components of value impact are office and residential.

The capital value of stock in the Southwark Study Area is estimated to have increased from £915m in 1992 to £2.9 bn in 2002, an increase of nearly £2bn. The total change is split as per the following estimates:

- Office: £423m
- Residential:£1.25bn
- Retail: £15m
- Hotel: £25m
- Industrial: £277m (subject to comment made in appendices 2 and 3).

(NB the figures do not always sum exactly due to rounding).

4.0 CANARY WHARF STUDY AREA

4.1 Study Area Character

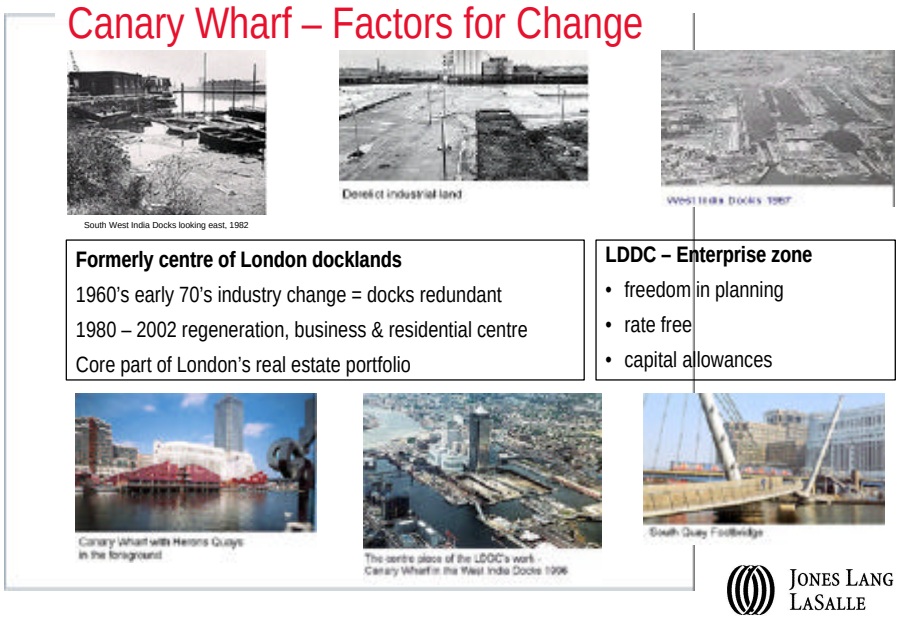
Core themes to emerge include:

- The office study area incorporates all the Canary Wharf plc estate and office development to the north of Marsh Wall. There is currently very limited residential space within this area.
- There is a significant quantum of retail space within the Canary Wharf Estate which increases in phases as new elements open.
- Residential accommodation is dominated by private sector developments on the western side, while public sector housing is located in both the middle and eastern sections of the Isle of Dogs.

4.2 Factors for Change

Nevertheless, there are fewer factors to control for at Canary Wharf than in the Southwark Study area. However, as we introduce later in this report and associated appendices, of fundamental importance is the need to "control for stock" in assessing value uplift at Canary Wharf. This is because of the massive increase in stock over the study period. Slide 8 illustrates how Canary Wharf has changed over the last twenty years. Whilst the study area extends beyond Canary Wharf itself, the stock and value within the area are dominated by this single development.

Slide 8



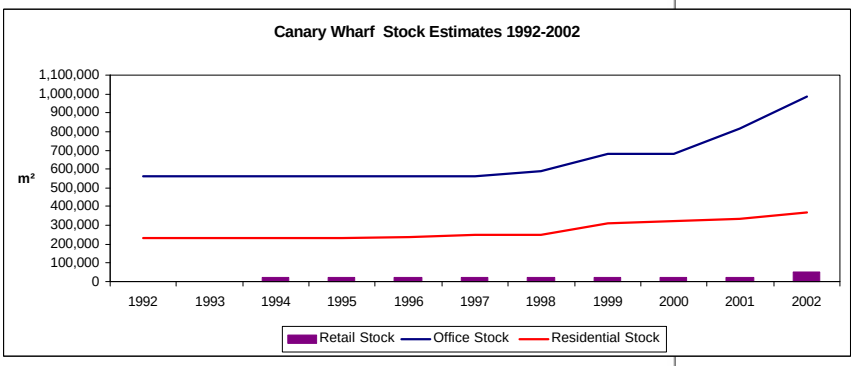
The transport situation at Canary Wharf is also markedly different to that at Southwark. The JLE is a transforming event for Canary Wharf bringing the mass public transport which is already available to London as a whole, to Canary Wharf for the first time. This contrasts with the Southwark area, which was already well served by public transport.

4.3 Stock Findings

Stock change at Canary Wharf is largely characterised by well reported and large scale office developments at Canary Wharf itself and surrounding schemes. For a detailed note on how we assessed stock in the Canary Wharf Study Area see appendix 4. Slide 9 illustrates stock change over the period. As can be seen there was very limited change between 1992 and 1998. However office, retail and residential property saw significant completions after 1998, that resulted in major stock change over the period.

Slide 9

Canary Wharf – Stock Change



- Significant change in stock from 1998 onwards
- Retail provision driven by increase in workers from office development
- Bulk value change in office and residential

Jones Lang LaSalle

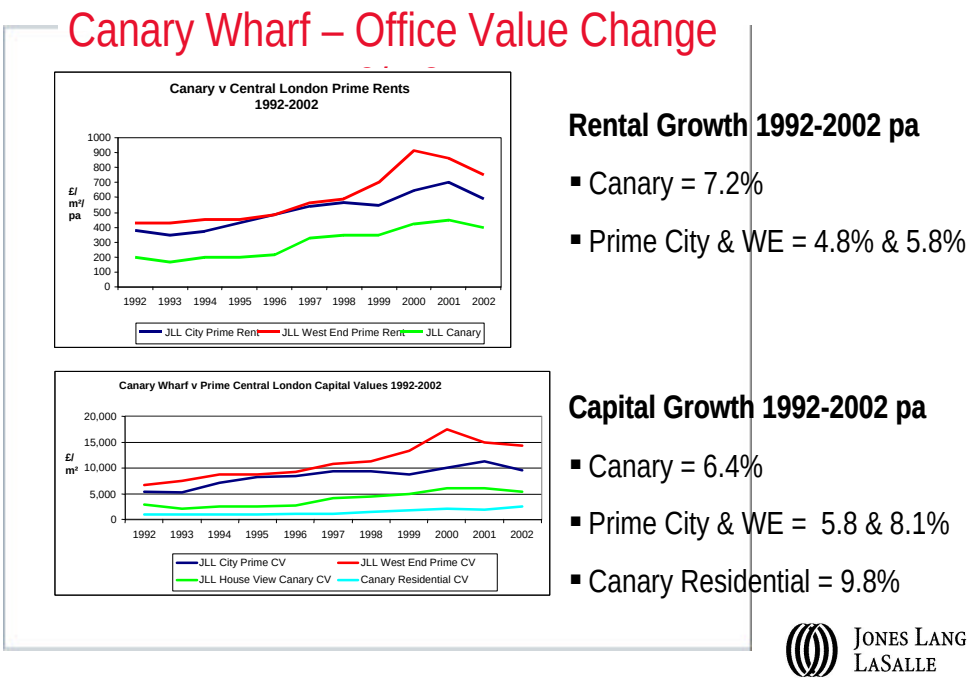
4.4 Value Findings

For a detailed note on how we assessed value in the Canary Wharf Study Area see Appendix 5. We covered all the uses, residential, hotels, retail, other commercial etc as per the methodology report.

Value per unit area

Breaking down value change over the period we see the following, first in terms of values per unit area. This shows office rental change and then capital value change over the period - slide 10. This data forms the raw material for our calculation of overall value change and subsequently JLE uplift.

Slide 10

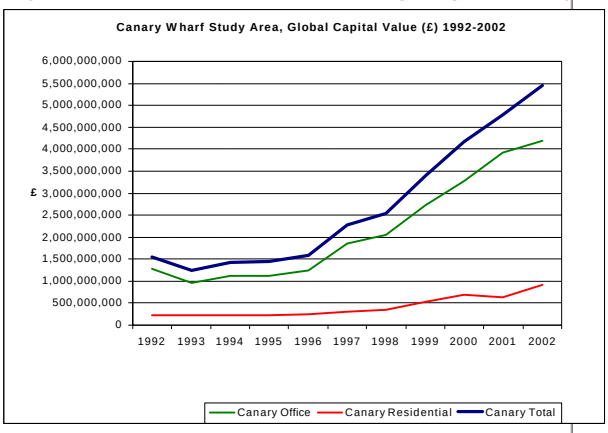


Capital Value

Then applying these values to the stock calculated in the study area shows the following gross capital value change over the period, Slide 11. This slide clearly shows the uplift around 1998, this was the scheduled completion date for the JLE but it was also when the property market began a period of sustained growth. With the huge increase in stock from the late 1990's onwards (400,000m²+) the accelerated value change is unsurprising and we tackle this situation in the next chapter.

Slide 11

Canary Wharf – Value Change (£/Study Area)



1992 - Total Canary Wharf Built Stock Capital Value: £1.54bn

2002 - Total Canary Wharf Built Stock Capital Value: £5.45bn

Overall change in value 1992-2002 = £3.91 bn

JONES LANG LASALLE

The prime components of value impact are office and residential uses. The capital value of stock in the Canary Wharf study area is estimated to have increased from £1.54bn in 1992 to £5.45bn in 2002, an increase of £3.91bn. The total change (to the nearest million) is split as per the following estimates:

- Office: £2911m
- Residential: £693m
- Retail: £201m
- Hotel: £105m

5.0 CONTROL – NORTH & EAST CITY FRINGE

5.1 What We Proposed

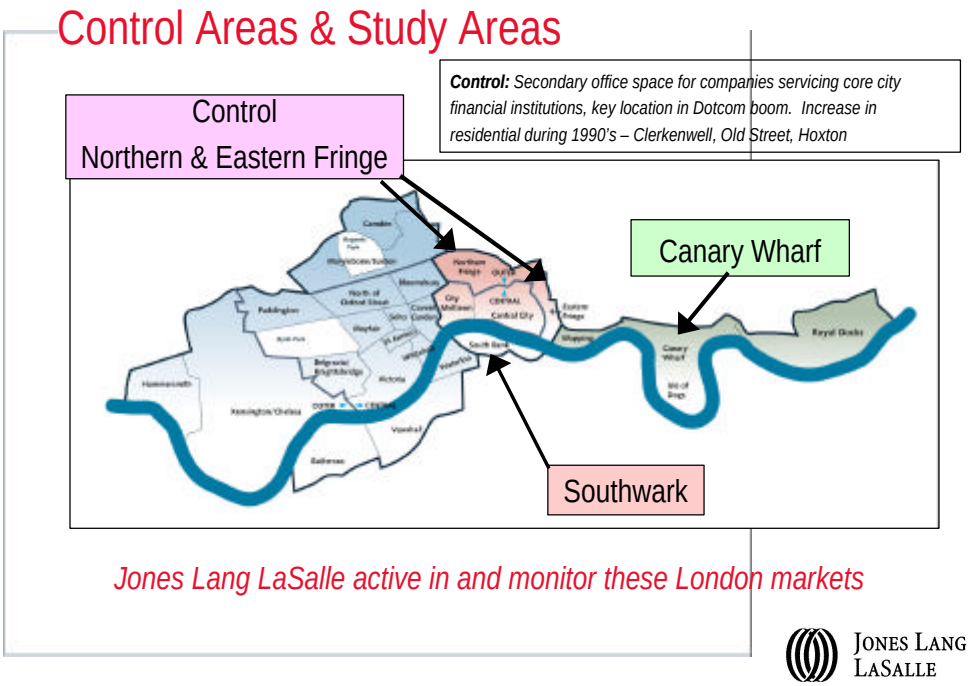
The control area proposed by our Methodology Report was the North and East city fringe. This equates to the areas around Old Street and Clerkenwell to the north and Aldgate to the east. Data from these city fringe areas is recorded by Jones Lang LaSalle.

These areas were chosen as appropriate controls because they are likely locations for occupiers looking for alternatives to the core City and West End office markets. Consequently they could be expected to address a similar market as Southwark and Canary Wharf. We hypothesised that their performance in terms of capital growth would give an indication of the way values may have performed in the study areas in the absence of the JLE.

For residential uses we anticipated that using small market areas would be inappropriate as residential values would closely relate to local market circumstances, so we proposed adapting one of the residential indices available for appropriate areas of London as a control.

Slide 12 illustrates the areas proposed.

Slide 12



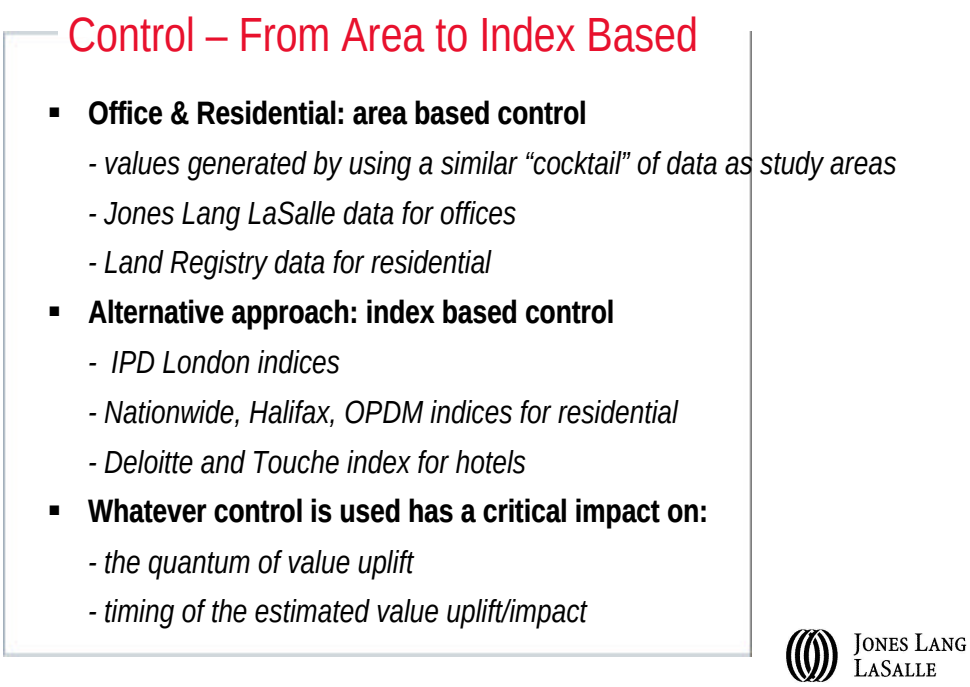
5.2 Areas Based Controls – Problems

Our experience showed this 'area based' control generated volatile and counter intuitive results. This we believe was because:-

- Data availability is very patchy in these city fringe areas;
- Each area was subject to area specific events which occurred at specific times and bare no relation either to the wider London market or to the study area, e.g. Hoxton Arts revival, Clerkenwell dotcom boom bust, the effect of the IRA bombs on the city;
- Distortions caused by large prelets on new buildings in a relatively small sample of data. These deals, unrepresentative of both the majority of office product or values in the area, distorted the average value for that year such that the data series saw year on year changes that did not reflect the tenor of the overall market.

5.3 Index Based Controls

Slide 13



We adopted instead an index based control approach using Investment Property Databank (IPD) data service for Central London fringe office markets and other appropriate indices for residential and other components of stock. IPD is the property industry benchmark for value performance used by fund managers.

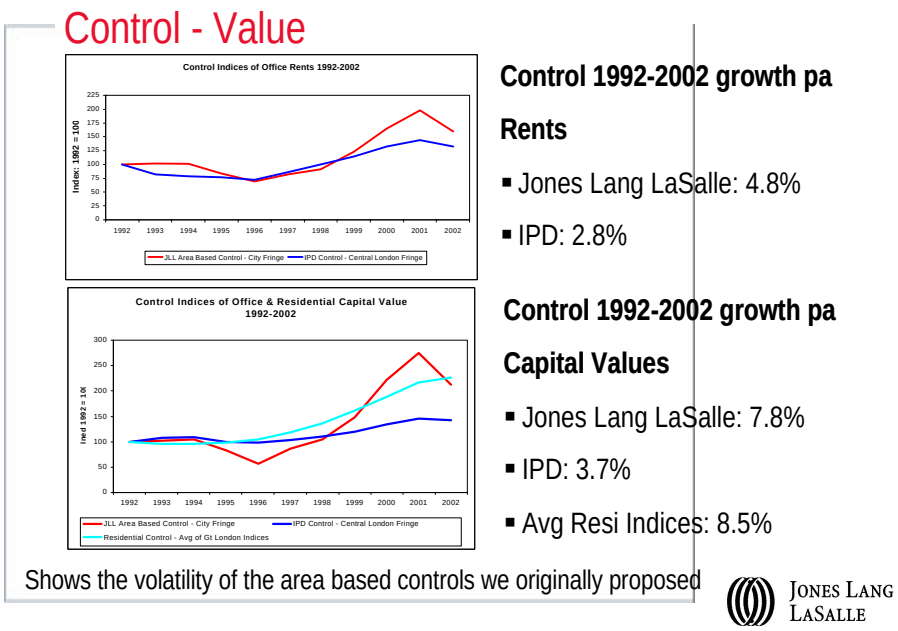
The detail of this index and the method used to apply it is set out in Appendix 1 and 6.

The defect of using IPD is that it includes elements of the JLE corridor itself such that arguably the index does not present a clear control since it includes the uplift we are trying to control for. However, in our view the practical impact of this is not likely to be material since the 'signal' from the study areas is likely to have a minor impact on the overall index. In the

absence of effective area based controls, and with the knowledge that no control will be perfect, we switched to this approach.

Slide 14 illustrates the differing performance of the two control approaches.

Slide 14



5.4 Controlling for Stock

There are two components of value change comprising any uplift to the JLE:

- Changes in value per unit area;
- Changes in value due to change in the quantum and nature of stock.

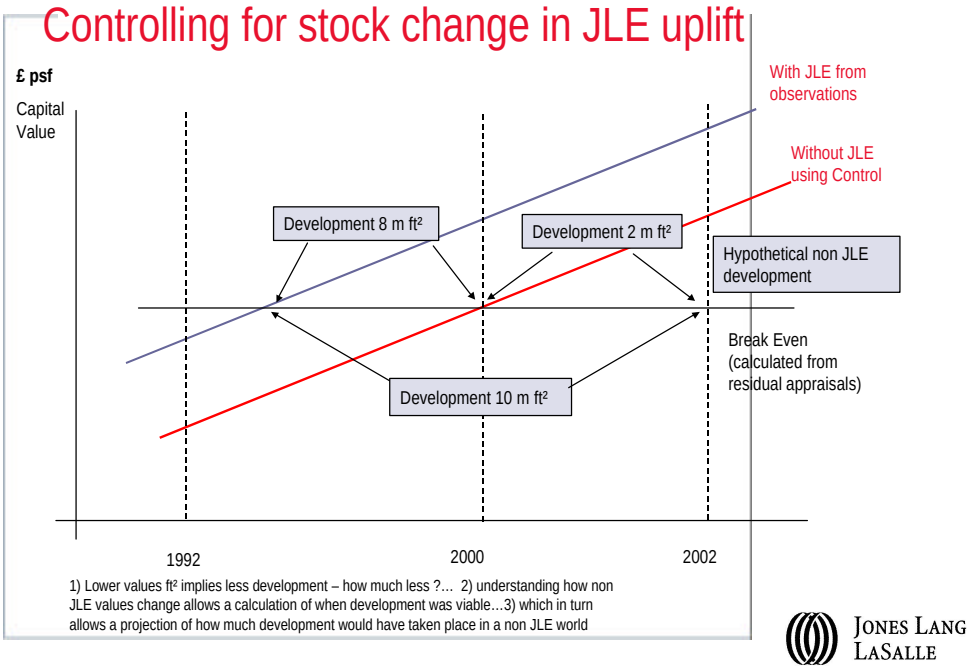
This is not an issue for Southwark because stock change is relatively small. However, Canary Wharf was transformed during the study period, and significant value added as a result of additional built stock.

The key question is to attempt to identify how much of this change/acceleration of development can be attributed to the JLE.

Slide 15 below shows the principles of the approach we outlined in our methodology report.

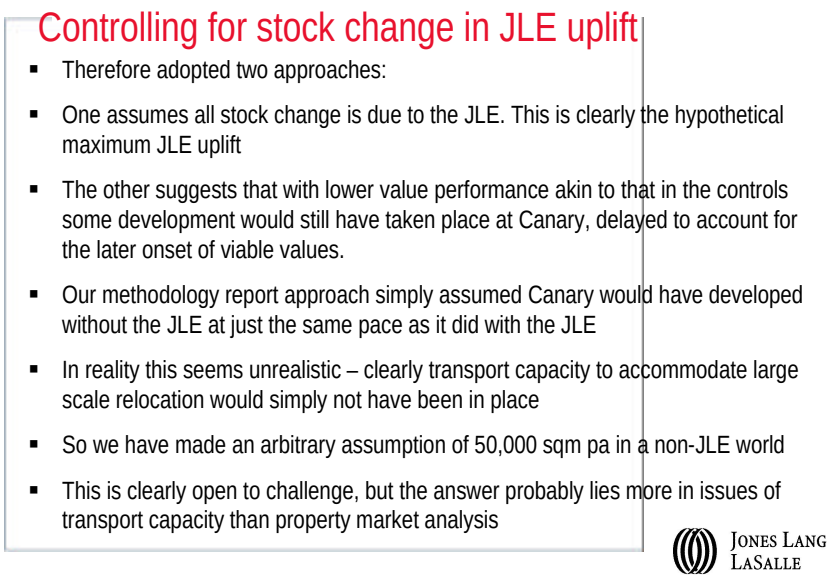
We orginally proposed an approach which effectively "delayed" the onset of development at Canary Wharf. In the Methodology Report we suggested that development at Canary Wharf would be delayed until the hypothetical capital values without the JLE (red line below) attained the actual observed level at which development commenced (intersection of "break even" line and blue 'actual observed' line). We would thereby control for the delayed onset of development without the construction of the JLE. We were to generate the hypothetical values without the JLE by applying values derived from the controls.

Slide 15



But, on reflection it seems unlikely Canary Wharf would have proceeded at anything like the pace it did without the JLE. The real driver is transport capacity rather than property market dynamics. So we adjusted this approach and assumed a nominal 'non-JLE' rate of development of 50,000m^2 per annum (Slide 16). This compares with an actual rate post 1998 of c 80,000m^2 pa, to reflect the assumption that some development would have taken place without the JLE, but not at the pace seen in actuality. This is clearly an assumption open to challenge, but from a property market perspective it is not feasible to assert with any authority "how much" of the development at Canary Wharf could be attributed to the JLE.

Slide 16

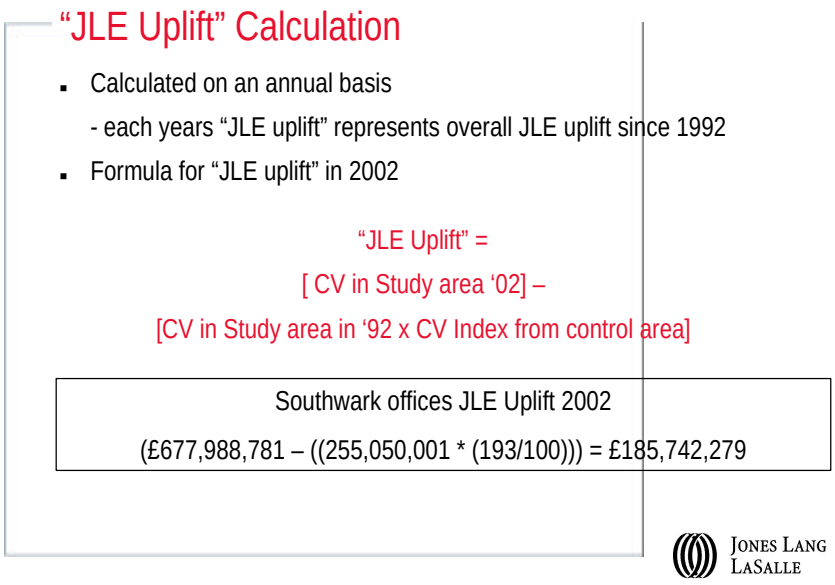


On advice from TfL, we also included a scenario based on information provided from the JLE Impact Study. It has been estimated that in the absence of the JLE, employment floorspace at Canary Wharf (offices) would have grown to a total of only 6-7 million sq ft. We rationalised this estimate to correspond to a development rate of 21,800m sq per annum from 1999 when substantial take-up in fact commenced, and applied this scenario to our uplift calculation in support of the "nominal" assumption described above.

6.0 ESTIMATING THE IMPACT OF THE JLE

We were asked to estimate how much of the global change in capital value described in chapter 4 could be attributed to the JLE. Our agreed methodology was to compare the study area capital values with the performance of the control area capital values, a suitable surrogate for the performance of the study area without the impact of the JLE. Slide 17 summarises how we assessed the impact of the JLE. The capital value observed in each year (ie "CV in Study area '02" below) was compared with what the capital value would have been had it performed in the same way as capital values in the control area ("CV in Study area in '92 x CV Index for control area" for year in question). The formula is therefore a simple index comparing the two scenarios- with and without the JLE.

Slide 17



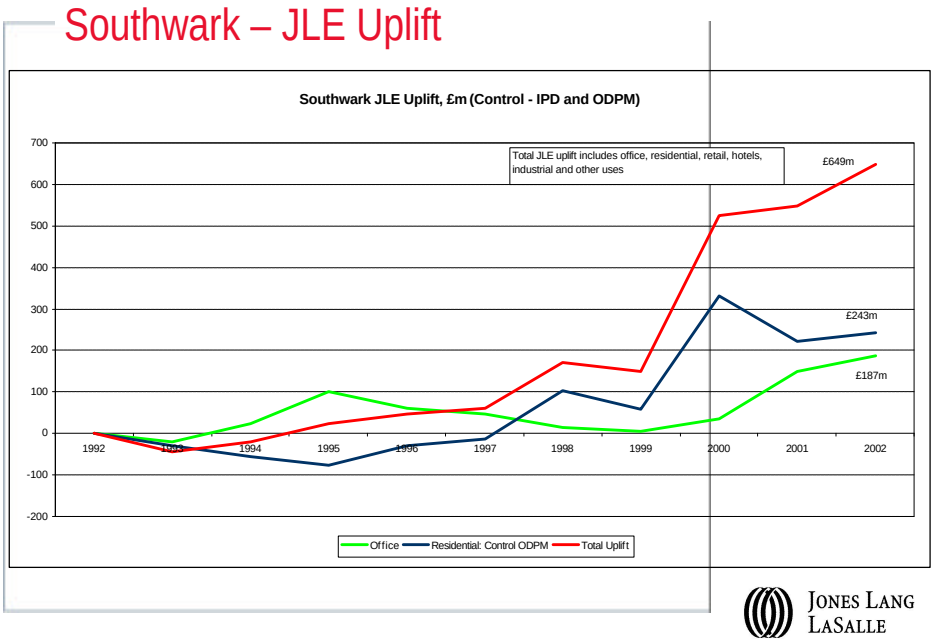
6.1 Southwark Findings – Property Values

The overall uplift for the Southwark study area was estimated to be in the range of £150m to £650m (Slide 18). The upper value represents the sum of maximum estimates for each use. The lower value is a judgement based on an assessment of how much of this upper range might be attributable to factors not captured by the control methodology, i.e. the unique factors affecting Southwark described in Chapter 3.

Appendix 9 details our thinking behind the lower and upper estimates of uplift. The lower figure of £150m was arrived at by discounting the uplift attributable to retail, hotels and industrial stock. The contribution of residential and office JLE uplift were discounted heavily to reflect the importance of other factors and the good transport connections in existence prior to the JLE.

The figure of £150m is therefore our estimate of the minimum value that could reasonably be attributed to the impact of the JLE alone, and we consider the JLE uplift is likely to lie towards this lower end of the range. More detail behind our reasoning for this figure is found in Appendix 9.

Slide 18

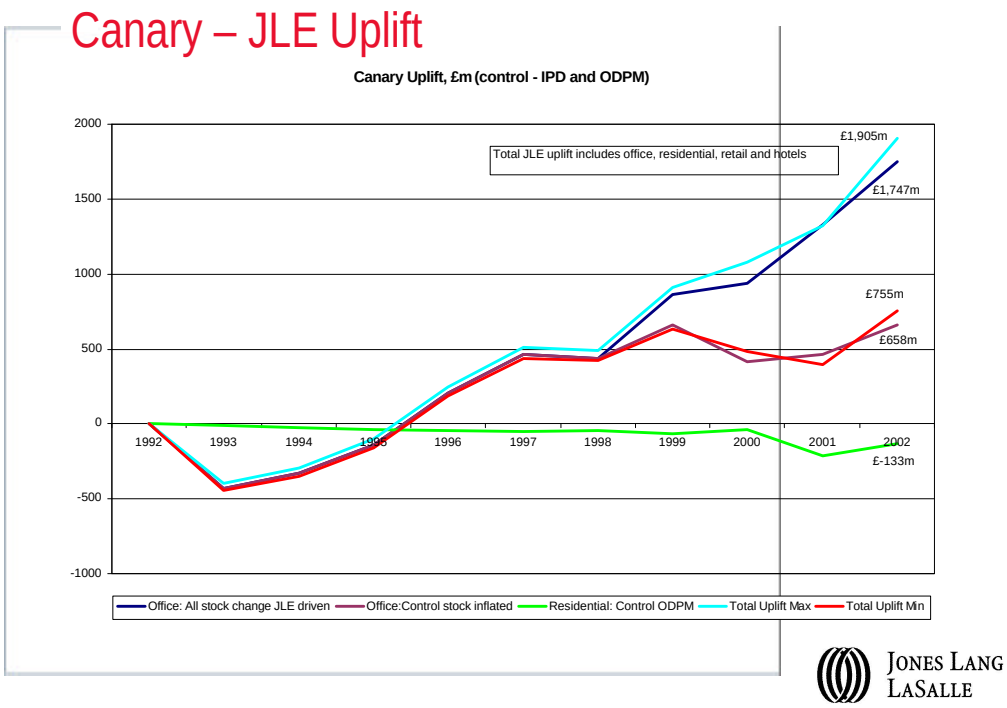


6.2 Canary Wharf Findings – Property Values

The total JLE uplift for the Canary Wharf study area has been estimated as being within the range £755m to £1.9bn (Slide 19). Office uplift accounted for £1.7bn and retail for £190m. This wide range is due to the different scenarios used to account for the dramatic stock change at Canary Wharf.

We consider that the JLE uplift at Canary Wharf would lie in the upper part of the above range. Applying the estimated "non JLE" stock figure as reported in the JLE Impact Study, for example, (see section 5.4 above) indicates a total JLE Uplift figure (including office and residential) of some £1.4bn. The detail supporting the process for assessing this, and critically controlling for the significant increase in office stock is outlined in Appendix 9.

Slide 19



6.3 Land Values – Change and Uplift Findings

It is firstly perhaps worth commenting on the different characteristics of land and property values. Land values are highly volatile since they are generated as a residual geared to a wide range of inputs. Moreover, unlike capital values for built property they can fall to zero. In fact, negative land values can be generated by residual appraisals when the property market is at the bottom of the cycle. The effect is that development activity is stalled until values move in a positive direction, when land values move sharply upwards in response to several indicators (rent, yield, market incentives, finance costs for example) working together.

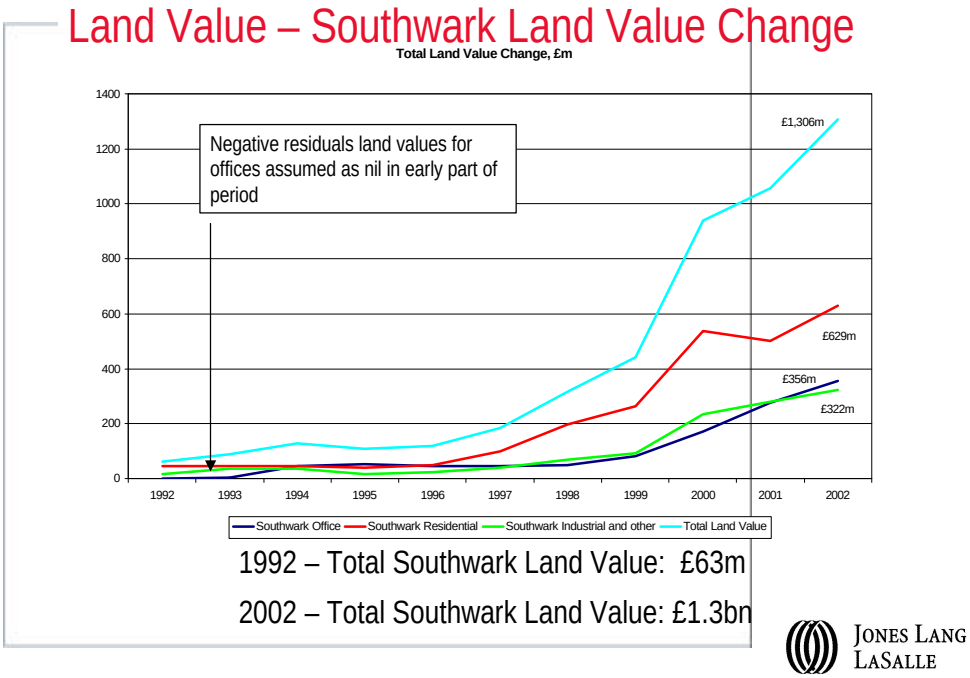
This is exactly what we find in the two pilot study areas. Land values at the start of the study period were low or negative. (We assumed a zero value rather than adopt the theoretical negative values which do not apply in practical reality). Subsequently as property market activity returned land values have increased sharply as shown by Slides 20 and 21.

Market evidence for sales of land is very limited in central London, and extremely challenging to interpret in any case because of the wide range of different circumstances which can affect the price. We therefore adopted an approach using estimations of land value based on residual appraisals. A specimen of the appraisal used is shown in Appendix 7.

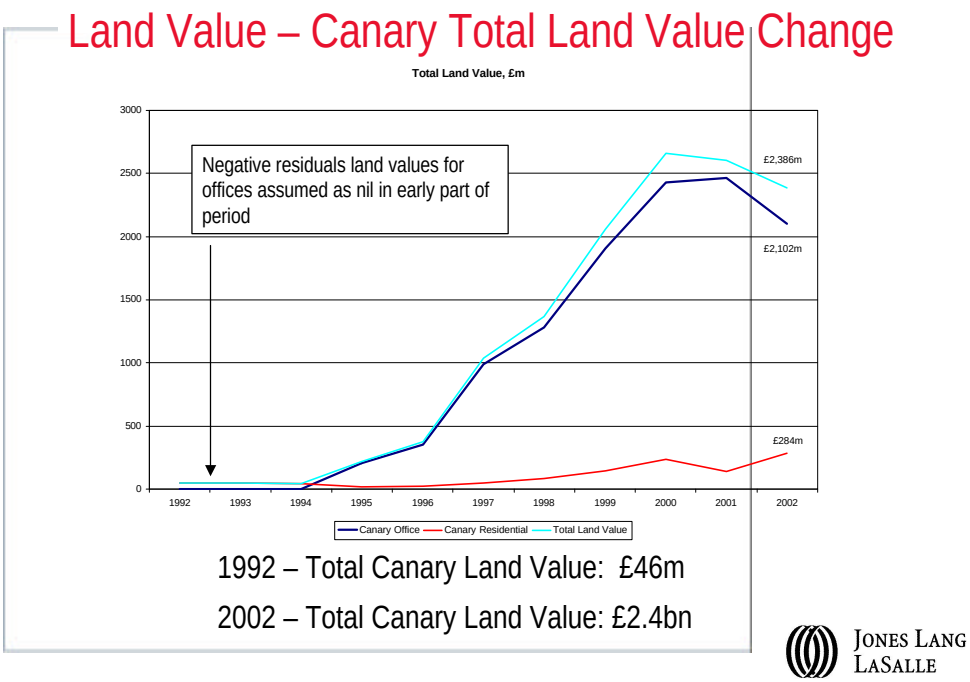
It is important to note that this method of estimating land value is highly sensitive to the inputs used. To reflect this, we ran a series of sensitivity analyses, varying the key inputs by 5 to 10% in order to generate an estimated range of land value change. These inputs were rent and yield, in the case of office valuations, and capital value, in the case of residential valuations. Sensitivity testing involving further variables would be likely to produce a still wider range in residual valuations.

Slides 20 and 21, following, show our best estimate of the total land value change over the study period. Slide 22 shows our best estimate of the JLE uplift. The range in our estimates is indicated in the table following Slide 22.

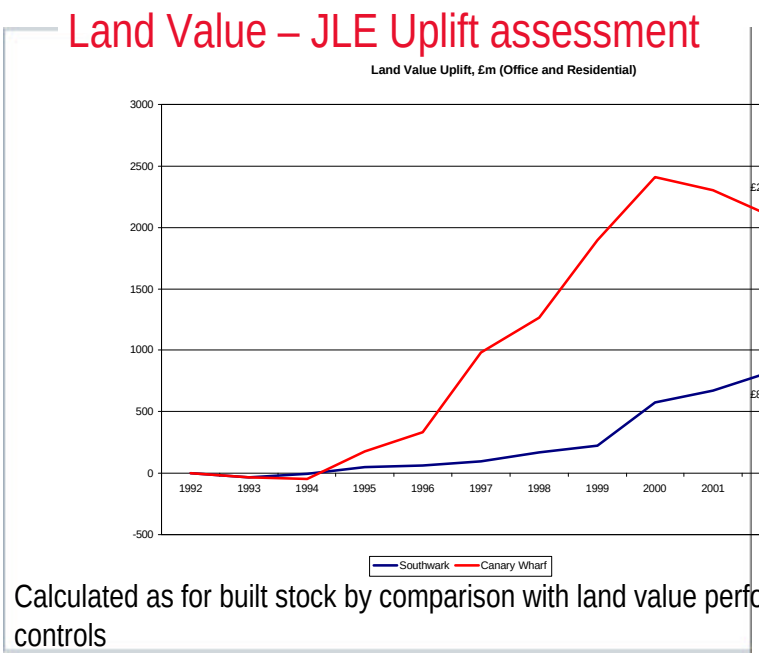
Slide 20



Slide 21



Slide 22



A specific point to note in relation to Canary Wharf is that estimates of land value include an element of discounting for the time value of money. Any development of such a large quantum of stock will be phased, and any bid for the land would be discounted to reflect this. There is significant room for contrasting assumptions as to the discount rate and period to be adopted. We have used contemporary capital market rates linked to yields, and based the period of discount on the average annual take up role at Canary Wharf.

This issue will be relevant to other station areas in the JLE which are subject to comprehensive large scale development such as Greenwich and Stratford.

So our approximate best estimates are as follows, together with an indication of the range generated by the sensitivity analysis described earlier in this section:

Year	Southwark Land	Canary Wharf Land
Gross Land Value Change		
1992	£63m	£46m
2002	£1.3bn	£2.4bn
Change- best estimate	£1.24bn	£2.35bn
Range	£822m-£1.68bn	£1.82bn-£2.84bn
JLE Uplift Land		
1992 to 2002 best estimate	£829m	£2.0bn
Range	Zero-£1.45bn	£300m-£2.7bn

Sensitivity analysis around the residual valuation of land for office development at Canary Wharf has a dramatic effect on the JLE Uplift calculation because of the quantum of development land that is affected. A 10% variation of key inputs takes the lower end of the range to £124m. However, it seems reasonable to suggest that the lower range of the uplift may be defined by the value that Canary Wharf Plc placed on the construction of the JLE, with it reported that an initial £98m payment was made, to be followed by a further payment of £300m over a 25 year period. It should be noted that these contributions were made in the context of the original cost of the scheme (£1.8bn), rather than the actual outturn cost of £3.5bn. For the purpose of this study the lower end of the uplift range has been assummed as c.£300m. Our estimate range also reflects different judgements as to the role of the JLE in permitting or encouraging the potential development of so much stock. As discussed previously this is not, essentially, an area which property market analysis will illuminate.

6.4 Interpretation

These results must be treated with caution because of the special characteristics of land value described above. In particular it is worth noting the specific impact of very low values on the indexation process used to estimate JLE uplift.

Where land values are close to zero,very small absolute differences between the land values adopted for the study areas and the controls (between values of virtually nil and those of a few hundred thousand pounds an acre for example) have a very big percentage significance.

Yet, given the wide range of assumptions and variables employed in calculating land values, residual values which vary quite markedly can be generated by only quite small and apparently well founded changes to inputs. In other words these differences between controls and study area may be within the most accurate margin of estimation for land value. However, the indexation process takes these small and highly sensitive differences and multiplies them enormously. This is why we advise that estimates of land value uplift due to the JLE should be treated with even more caution than those we have made for the value of built property.

By implication, the choice of start date is even more important for the assessment of land value impact than it is for the assessment of property value change. Adopting a different time period for the study would yield a dramatically different result.

7.0 CONCLUSIONS, INTERPRETATION AND IMPLICATIONS

7.1 Conclusions

We conclude, based on the assumptions and methodology described in this report and associated appendices, that the JLE has had a positive effect on the value of land and property in the pilot study areas.

Estimates for the scale of this uplift, which are subject to the notes on their interpretation set out below, and to the assumptions and methodology described in this report, are as follows:

"JLE Uplift"	**Southwark**	**Canary Wharf**
Property	£150m to £650m	£755m to £1.9bn
Land	£0m to £1.45bn	£300m to £2.7bn
Capital Value Change over the study period		
Property	£2bn	£3.9bn
Land value	£822m to £1.68bn	£1.82bn to £2.84bn

This table should not be considered without reference to the commentary below on interpretation, the specific pilot study areas, and specific issues with land value. The ranges given are indicative rather than absolute – i.e. an estimate outside the range is not completely excluded but simply less likely.

7.2 Commentary

7.2.1 "JLE Uplift" - Property

- At Southwark our assessment is that uplift to property (built stock) values will be towards the bottom of our range;
- At Canary Wharf our assessment of JLE uplift is towards the top of our range.

7.2.2 "JLE Uplift" - Land

The assessment of land value is particularly sensitive to assumptions, and to the character of the property market at the start of the study period, and these estimates should be treated with greater caution than those for built stock.

The range for land value has been generated by applying a sensitivity analysis to the key inputs used in residual calculations of land value. The results vary widely because of the extreme sensitivity of land value estimates to such inputs. However, our best estimate of uplift within each range is:

- At Southwark our best estimate of JLE Uplift for land is in the region of £830m (in the range 0m to £1.45bn).

- At Canary Wharf our best estimate of the JLE Uplift for land is £2.0bn (in the range £300m to £2.7bn).

Note:

Capital Value Change- the relativity between "land" and "property"

The capital value change over the period is greater for property than it is for land. This is as expected since the increase in land value is a component of the increase in property value.

However, in the estimation of "JLE Uplift" the uplift for land can exceed that for property. This is a function of the volatility in residual valuations for land which are low or zero at the start of the period. This results in the estimation of "JLE Uplift" (detailed in section 6.0 and the Methodology Report) being greater for land than for property because property values at the start of the period do not tend to zero in the same way. A further factor in the calculation of "JLE Uplift" is the performance of the control areas. The residual land controls were less volatile than the study area, which also tends to lead to a more pronounced "JLE Uplift" calculation for land.

7.3 Interpretation

When interpreting these conclusions it is important to note that:

- These figures are estimates, based on assumptions and judgement, particularly in the areas of identifying the quantum and nature of stock, establishing and applying appropriate values to appropriate stock, and in identifying the best controls to isolate the effect of the JLE;

- A statistically accurate calculation of the impact of the JLE on property value is not feasible because of the deficiencies of the data available, and because of the difficulty in disentangling a single cause from the multiple drivers of property value;

- There is, therefore, the potential for large differences between different estimates of the impact of the JLE on property values;

- Nonetheless the approach we have adopted applies the accepted principles of property valuation techniques to the problem. Applying the benefit of market experience to the appropriate judgement and application of property values would appear to be the best available approach;

- As a test, the results above appear to stand up to the basic hypotheses set out in our methodology report, which predicted a positive impact generally, a large uplift at Canary Wharf where the perceived incremental impact of the JLE is great, and a smaller impact at Southwark where the converse is true.

- The conclusions from each of the pilot study areas are affected by specific issues which merit a brief comment. The issues are likely to recur when looking at other

stations along the JLE although perhaps not at the same scale, and to this extent the pilot study stations are well chosen to highlight issues of general relevance.

7.4 Southwark Study Area

Our control based method is likely to be a full estimate of JLE impact at Southwark because there are other unique factors affecting value apart from the JLE which cannot be controlled for. The area was subject to the wider renaissance of the South Bank as a cultural destination, becoming an "acceptable" place to live and visit.

Whilst many other parts of inner London experienced a similar transition the strength of this change and number of new facilities of London wide significance in the area is unique. Whilst some of these facilities may have located there because of the JLE it seems likely many were only marginally affected by this, although in truth without a detailed interview of the decision makers the nature of the link is impossible to disentangle. Certainly the area already had a range of public transport choices available before the JLE.

In our view, therefore, the figure generated by our uplift estimation (£650m) is likely to be a full one, and hence we have applied a lower figure based on judgement, of £150m.

7.5 Canary Wharf Study Area

The key question at Canary Wharf is to identify how much of the enormous change in built stock over the study period is "due" to the JLE. The range given for our estimates above reflects two different assumptions:

- All of the new development is directly attributable to the JLE. This is clearly the maximum impact supportable;
- Some moderate development would have taken place without the JLE such that the impact of the JLE is reduced.

In our view, deciding where in the range the best estimate lies is likely to be driven by considerations of transport capacity rather than property market value. Unlike Southwark, which was already relatively well served by public transport before the JLE, Canary Wharf could be said to resemble a poorly connected island to which the JLE provided a critical bridge. This bridge effectively permitted development, which when combined with the large potential of the site resulted in a transformation. It seems clear that the large scale of relocations to Canary Wharf, and therefore the massive acceleration in development, would not have taken place without the potential occupiers seeing the means by which thousands of employees could gain access to new buildings.

Conversely, given the availability of land it seems unlikely that no development at all would have taken place. Without the JLE some development, albeit at a much reduced scale, and probably of different nature, seems likely to have taken place even without the JLE, and this would have been governed by the existing transport capacity. We have been unable to identify from property market characteristics what this development might have been, and hence the lower end of our range represents an assumption designed to illustrate this scenario.

7.6 Land

Special characteristics affect the estimation of JLE impact on land value, which means the estimations of land value impact must be treated with additional caution:

- Any analysis of land value must be treated with additional caution because land value is to a large extent a theoretical construct, heavily prone to assumptions. The land values adopted are the product of residual value calculations which makes them highly sensitive to the inputs used, including the assumed development capacity;

- Land is relatively rarely traded on the open market, and even when it is, differences in the sites and their development capacity make comparison of values of limited usefulness;

- Furthermore land values are highly volatile, and can tend to zero (or produce theoretically negative land values) at times when the property market is depressed. This is in contrast to capital values for built stock;

- At the start of the study period land values were in exactly this situation. Very small differences between the land values adopted for the study areas and the controls (between values of virtually nil and those of a few hundred thousand pounds an acre for example) have a huge effect on the estimation of JLE uplift when indexed up over the period;

- By implication, whilst the choice of study period and start date will have a major impact on the estimation of JLE uplift generally, the effect on the estimation of impact on land value will be even more disproportionate.

7.7 Implications

We believe the pilot study conclusions have key lessons for any possible wider assessment of the JLE:

- Any assessment of the impact of the JLE on property and land value will be subject to wide margins of estimation because of the need to apply assumptions and judgement;

- The exercise will be heavily affected by the deficiencies of the data available, which is imperfect for both stock and value, and partly restricted within the timescale of the study by government confidentiality (the VoA data which never became available);

- This pilot study has used two data sources for stock which are only available for the JLE (the 1997 JLE Impact Study Unit Land Use survey and a study Jones Lang LaSalle undertook for the European Investment Bank in 1992). These would clearly be unavailable to any application of this method elsewhere. We were not able to identify any accurate system (even GIS based) for identifying the quantum and nature of built stock in an area.

- Equally the two pilot study areas are submarkets of the Central London commercial market, for which there is significant market activivty and commitment by market players and research houses to capture market evidence. Many of the remaining

stations are in less well covered and active fringe areas, so data difficulties will be enhanced.

- The controls used have a critical impact on the estimation of "JLE uplift", yet are subject to all the difficulties discussed in our Methodolgy Report and in the relevent chapter above. Moreover no control can adequately disaggregate the JLE effect when there are other unique factors at play such as in Southwark, and to a greater or lesser extent this will affect all the catchment areas of the JLE. Equally, property market controls are of limited value in assessing a situation which is essentially driven by transport capacity such as Canary Wharf. This is expected to be more of a one off in the JLE context but might be relevant in trying to apply the technique elsewhere e.g. Stratford or North Greenwich.

Finally this exercise has been heavily labour intensive, and yet the assumptions, judgement and data issues involved allow only the generation of wide ranging estimates. Any decision as to whether and how to move forwards must balance the scale of the exercise given the current UK data environment with the impact of these assumptions and judgements on the estimated outputs which are generated.

APPENDICES

Appendix 1: Data Sources - Stock & Value

Appendix 2: Assessing Stock in the Southwark Study Area

Appendix 3: Assessing Value in the Southwark Study Area

Appendix 4: Assessing Stock in the Canary Wharf Study Area

Appendix 5: Assessing Value in the Canary Wharf Study Area

Appendix 6: Assessing Value in the Controls

Appendix 7: Assessing Land Value

Appendix 8: Stock & Value Data Used

Appendix 9: Assessment of JLE Uplift

Appendix 10: Jones Lang LaSalle – Central London Research Methodology

APPENDIX 1

DATA SOURCES – STOCK AND VALUE

We outline below the core data sources for stock and value inputs. A variety of data sources were used to develop a number of *"triangulation points"* with the following aims:

- to provide the ability to cross check;
- to make sense of each data source;
- to produce a clear story with regard to stock and value change within each study area.

The table below summarises stock and value data from Jones Lang LaSalle and third party sources used in the Pilot Study.

Variable / Source	Description	Period & Coverage	Data
Stock			
Jones Lang LaSalle	Central London Demand Database	1984 to 2003 7,464 records 41 m m² of space	Market enquiries, Sub Market, quantum, location
Jones Lang LaSalle	Central London Development Pipeline Database	2003 to 2015 & Undated 666 records 9m m²	Market, Sub market, postcode, address, quantum, date
Jones Lang LaSalle	Central London Development Completions Database	1981 to 2003 2,024 records 11.1 m m²	Market, Sub market, postcode, address, quantum, date, developer
University of Westminster	Land use study of JLE study areas	1997 all sectors	Stock and use
Value			
Jones Lang LaSalle	Central London Take Database	1990 – 2003 5,900 records 11.5 m m²	Market, Sub market, postcode, address, quantum, date, occupier, sector, achieved rent
Jones Lang LaSalle	Central London Investment Database	1994 to 2003 2,788 records £46bn investment value	Market, Sub market, postcode, address, quantum, date, price, yield
Land Registry	UK property database	London Borough & Postcode districts 1995 onwards	Residential sale prices for different residential types
Investment Property Databank (IPD);	A global information business providing investors, occupiers and researchers with independent property benchmarks and indices	UK and international. UK coverage 11,400 properties with a capital value of £103 bn	Office, retail, industrial & residential performance statistics
Analyse	Database of rateable value	Rateable Value by hereditaments and use across the UK at 1993 & 1998	All property use sectors in the UK
Banks & Building Societies	Financial Groups	Residential House price indices 1990s onwards	UK, generally district / borough specific
OPDM	Government	Residential House price indices 1990s onwards	UK, generally district / borough specific
Stock & Value			
Jones Lang LaSalle	Central London Aggregates	1984 to 2003 Aggregated data of London office property markets	West End, City, Docklands. Stock, Take Up, Demand, Supply, rent, yield
Jones Lang LaSalle	RADAR Europe	1980 - 2003	Comprehensive Pan European property and economic data
Estates Gazette Interactive (EGi);	On line property databases	Varies, generally 1990's onwards	All property sectors stock, completions, take up, rents, yields

	www.egi.co.uk		
Property Week	On line archive of articles from magazine **www.property-week.co.uk**	1999 onwards	All property sectors stock, completions, take up, rents, yields
Property Market Analysis (PMA);	Property Consultants	Location specific product	Property and economic variables / activity
Focus	Property Consultants	Property specific product	Property variables / activity
London Borough of Tower Hamlets, Southwark	Local Authority	General information on Study Areas	Various

Jones Lang LaSalle Data

Jones Lang LaSalle has an industry leading research function that for over 20 years has helped to develop industry "best practice" property research methodologies. Additionally in the ordinary conduct of its business Jones Lang LaSalle teams in valuation, rating, leasing, investment and consulting maintain records of work undertaken. The two areas in the pilot study are therefore, well known to us, and consequently we have a high level of confidence in our in house data.

Third Party Data

The majority of third party data sources discussed in our Methodology Report have been used. We have maintained a dialogue with TfL to try to uncover other sources that may prove of value in terms of using more "triangulation points".

At various stages of our work other potential data sources were uncovered, one of the most significant that we discussed with TfL was the potential of Geographical Information Systems (GIS) in obtaining stock data for different land uses within each study area.

Alongside TfL we approached the "GeoInformation Group" and in particular their *"Cities Revealed"* GIS system. This system goes a little way toward providing such information. However, because the data does not cover the whole study period and would require further interpretation in terms of land use it was agreed that the value this would add would be minimal.

APPENDIX 2

ASSESSING STOCK

Southwark Study Area – Data Sources, Process and Assumptions

Within this appendix we have sought to highlight data sources, assumptions made and the process undertaken. The following headings help to signpost our overall process.

*Benchmark*s. These included estimates of stock from the University of Westminster in 1997 and from Jones Lang LaSalle's report to the European Investment Bank in 1992.

Completions. Information on development activity was sourced from Jones Lang LaSalle databases and EGi.

Sanity Check. Benchmarks and Completions information was cross-checked for consistency to substantiate our eventual view on the estimate of stock to be used.

Site Visit. This formed part of our sanity check and put into context the significant data analysis undertaken, maps received, number of development sites, uses and quantum.

Assumptions & Special Issues. This deals with gaps that occurred in various data series and assumptions made on issues such as industrial property and private and/or affordable housing.

Office

Benchmark

- University of Westminster data relates to a 1,000m radius around all JLE stations. With the assistance of the University of Westminster, this data was restructured to reflect study areas of 750m for residential uses and 500m for commercial uses.

- University of Westminster office data covered a very broad definition, in effect the total B1 use class - Office, Industrial & Distribution property. The total estimation of this stock was some 490,000 m² in 1997.

- This figure was likely to be an over-estimate of 'pure' office stock.

- To 'triangulate' towards an appropriate figure we also referred to the data from the Jones Lang LaSalle EIB study of 1992. This study gave a stock figure of 224,000m^2.

Completions

- Both stock figures were extrapolated across the study period using our in house completions data and checked against that recorded by EGi.

- EGi has a minimum threshold of 2,500 ft^2 (232m^2) below which information is not recorded. We believe this is not of significance in terms of new office completions throughout the whole area.

Sanity Check / Site Visits

- In arriving at a decision as to which stock data series to use, we compared both 2002 estimates with an analysis of all known major office buildings noted from our site visit. This stock data was sourced from EGi's "London Office Database". Site visits and the sanity check against EGi data corresponded more closely with the EIB estimate of office stock and confirmed that the figures derived from the JLE Impact Study Unit were out of alignment with the other data sources, which we therefore preferred.

- We concluded the EIB stock figure from 1992 extrapolated using Jones Lang LaSalle completions data provided the best assessment of office stock.

Residential

Benchmark

- The University of Westminster residential category comprised; Residential and Residential Institutions. These two categories were combined to give an overall figure for residential stock in 1997.

- The EIB study recorded residential stock for 1992 but only in a 500m study area. We therefore adopted the Westminster study figure as our benchmark.

Completions

- Residential completions for the study period were derived from EGi. There was limited data available prior to 1995 when EGi's 'London Residential Research' database was initiated. Furthermore EGi does not systematically record information relating to less than 5 residential units and no other source for such data were easily available.

Assumption & Special Issues

- An average of $75m^2$ per unit was applied to the area based stock figure.

- The University of Westminster data was used because:
  - First the EIB study did not give any information on residential stock at Canary Wharf. For continuity, therefore, it was appropriate to use the University of Westminster figure for both;
  - Second, the EIB figure relied on the pro-rata increase relating to the different study area radii. This assumed that residential stock was evenly distributed across the study area. Our site visits suggested that this might not be the case;

- Based on our site visits we assumed 85% of the residential stock to be flats, and the balance terrace houses.

Retail

Benchmark

- Retail stock in Southwark was calculated in 1997 by the University of Westminster study and we adopted this as our benchmark.

Completions

- Completions information sourced from EGi mainly dealt with retail as part of larger office or residential schemes and in Southwark there was no evidence of any major change.

Sanity Check / Site Visit

- Site visits confirmed that there was not only very little retail in the study area, but that there was little evidence of significant recent development.

Hotels

Benchmarks

- The University of Westminster study established that in 1997 there were no hotels within the study area.

Completions

- A completions schedule for the three hotels currently in the area was established from EGi and in house records.

Sanity Check / Site Visit

- Study area visit confirmed the construction of three new hotels in the area.

Industrial

Assumption & Special Issues

- There was a considerable quantum of stock identified by the University of Westminster land use study as 'Office/ Light Industrial' which by comparison with our earlier EIB study was clearly not "offices".

- Site visits confirmed that there was some industrial and distribution activity in the study area. However, as much of this is of secondary or tertiary quality, there is very little market information of any kind about it. Moreover it is clearly diverse in its nature.

- Assessment of this component of stock is therefore heavily qualified by assumptions (see slide below).

Southwark – Note on 'industrial' stock

- University of Westminster 1997 study identified a significant amount of non-office commercial stock - it is very difficult to identify exactly what uses this encompasses
- Site inspection clearly shows there are manufacturing premises particularly in the south of the area, but does not appear to be as much as UoW study indicates
- Value data, its application to this stock, and controls are extremely difficult to achieve with accuracy
- The hypothesis in our methodology study was that JLE would have little impact on industrial/ manufacturing uses.
- We have therefore made an attempt to include this stock in calculations but have separated it from overall figures because it is less robust than the other components of the estimation

JONES LANG LASALLE

APPENDIX 3

ASSESSING VALUE

Southwark Study Area – Data Sources, Process and Assumptions

Our hypothesis is that the major value impact of the JLE would be on office and residential property. These account for the bulk of stock.

Office

Data

- Southwark forms part of our South Bank Central London sub market for which market data is collated on an ongoing basis by Jones Lang LaSalle.
- All available data for the South Bank sub market was analysed, although the data series used was derived from those details relating to the SE1 0, 8 and 9 sub-postcodes that most closely correspond with the study area.
- There were, however, problems with the data. There was no recorded transactions for the years 1992, 1993 and 1996 and the sample size in some years was small leading to erratic results.
- This data was supplemented by third party sources such as EGi and application of value data from outside the immediate study area.
- Investment transactions for the South Bank sub market were analysed for each year. Again the data for SE1 is not a continuous series and at times is based upon limited investment activity reflecting market conditions.

Assumption

- In our assessment of capital values the rental figure was applied to 80% of the stock estimate figure to adjust for the net to gross ratio. (The overall stock figures being gross estimates and value indicates being applied to net floor areas).

Process

- This data was compared with all available data for the study area, as well as the wider South Bank area and the City and West End markets, to inform a "house view" across the period, drawing on the experience and knowledge of those familiar with the markets at the time.

Residential

Data

- The most comprehensive source for residential data was the Land Registry.
- Building Society indices were investigated but these did not provide sufficient resolution down to the postcode or sub-postcode level. Furthermore if they did provide a suitable sample most were unwilling to make the raw data available.

- TfL informed us at our regular workshops of the continuing difficulty of accessing Valuation Office data. This was never made available to us.

- Two Land Registry residential classifications were assumed to be appropriate for Southwark; average flat price and average terrace house price. Data for each was collected for both the whole borough of Southwark and also for Sub-postcodes SE1, 0, 8 and 9.

- Each data series was not complete. There was no data available from the Land Registry prior to 1995 and for terraced houses (in the defined sub-postcode area) there was additionally no data available for 1996 and 1997.

Process

- As a proxy for 1992 to 1994 the series was completed by applying the average year on year change of indices produced by Halifax, Nationwide and ODPM. Any gaps in the middle of the series were addressed by applying the average annual growth rate pa across the whole series.

Assumptions

- Some account needed to be taken of both the proportion of flats to terraces and also the proportion of public to private sector accommodation. Although in discussions with TfL it had been agreed that the intention was to value stock regardless of tenure, nevertheless because of the implications for the quality of stock it is important to take tenure profile into account.

- On the basis of visits to the study area it was estimated that in Southwark 85% of the stock was flats and the remainder terraced housing. Overall 90% of stock was estimated to be public housing and 10% private.

- It was assumed that housing of the quality generally seen in the public sector could be expected to achieve 65% of the value of a similar product in the private sector.

Retail

Data

- There is very little retail stock and very limited market evidence of values. We also hypothesised that the JLE would have little impact on retail.

- Faced with this we adopted the following assumptions as a proxy to generate a retail values.

Process

- Southwark retail values were approximated by reference to the total rateable value for retail property within the study area in 1993 and 1998 (*Source: Analyse*) divided by the estimated retail stock.

- The resulting estimate of rental value m² was extrapolated using the IPD Inner London retail rental growth index.

- Retail yields were derived from the IPD retail performance database.

Industrial

Data

- There is limited evidence of market value for industrial premises, and a great diversity of stock. However, contemporary evidence is available for the wider South London area for 2002.

Process

- To complete a rental series for the whole study area this 2002 figure was extrapolated backwards according to the year on year change of the IPD index for Industrial rents.

- Because of the difficulties highlighted in identifying the character of this stock and the inherent problems in attributing values to it, we do not have as high a degree of confidence in this element of the assessment as with other uses.

Hotel

Data

- Jones Lang LaSalle has in house knowledge of hotel values relevant to Southwark from direct experience. These values were calculated for the year of construction, the peak of the market (2000) and for the end of the study period (2002). The intervening years were extrapolated on a straight-line basis.

APPENDIX 4

ASSESSING STOCK

Canary Study Area – Data Sources, Process and Assumptions

Office

Benchmark

- For the Canary Wharf study area we have three estimates of stock.
- University of Westminster study that gives a figure for 1997. Although this figure is subject to the same categorisation problems as the Southwark figure, it was not felt to be an issue in Canary Wharf. This is because the office stock within the 500m radius of the JLE station is all newly constructed and there are no industrial or warehouse uses.
- The second estimate is based on the EIB study of 1992.
- The third estimate is from figures of year end completions and stock collected by Jones Lang LaSalle during the study period.

Completions

- Stock figures from 1997 and 1992 were extrapolated using Jones Lang LaSalle completions data alongside those recorded by EGi. These two sets of completions correspond closely. We used the in house data series because we have a high degree of confidence in our in house data-collection methodology for the Canary Wharf market.
- Completions are accounted for when buildings are complete, not when let.

Residential

Benchmark

- The Jones Lang LaSalle EIB study of 1992 did not provide an assessment of residential stock at Canary Wharf because it focussed on a 500m radius around the station in which there was no residential stock.
- Stock estimates were therefore generated using the University of Westminster study in 1997, extrapolated using EGi completions data.

Assumption & Special Issues

- As with Southwark an estimate of $75m^2$ per unit was used to convert the area based assessment into an estimate of number of units.
- EGi showed no evidence of stock change in the early part of the period, and we have consequently assumed no change.

Retail

Benchmark

- Retail stock was estimated by the University of Westminster study to be in excess of 50,000m^2 in 1997.

- This is far in excess of the figure quoted on the Canary Wharf Plc website for 1997 of just over 18,000m^2.

- We adopted the figures published by Canary Wharf Plc for the reasons set out below.

Assumptions & Special Issues

- We assumed that the University of Westminster figures are based upon gross floor areas and therefore include a great deal of circulation space within shopping centre developments. Equally, the Canary Wharf Plc website records the completions of the major retail elements, Cabot Place and Canada Place but does not account for other smaller retail units across the study area.

Completions

- As the majority of value lies in the major developments it was decided to rely upon the completions figures from the Canary Wharf Plc website, validated against completions data recorded by EGi.

Hotels

Completions

- EGi and internal sources showed that there are two hotels that fall within the study area. The first is the *Britannia* on Marsh Wall, completed in 1993. The second the *Four Seasons* in the Canary Riverside development, completed in 2000.

APPENDIX 5

ASSESSING VALUE

Canary Wharf Study Area – Data Sources, Process and Assumptions

Offices

Data

- In our Methodology Report we highlighted the opaque nature of the Canary Wharf property market and the problems that result in sourcing comparable evidence.

- Jones Lang LaSalle in house data recorded some transactions permitting an estimate of average rents to be made. However there is limited sample of transactions, 72 in total between 1992 and 2002 recorded by Jones Lang LaSalle at the time.

- Second, as part of Jones Lang LaSalle's ongoing monitoring of the Docklands market as a whole, prime rents were estimated at the time on a quarterly basis by Jones Lang LaSalle. These are an estimate of rent achievable on a notional prime property on the open market which in Docklands would accord closely to the Canary Wharf study area product.

Process

- Using these data sources, a Jones Lang LaSalle view of rents was arrived at in consultation with a number of colleagues with experience of working in the Canary Wharf market from its inception to current date.

- Yields were available from both in house and third party sources. The house view of yields was arrived at in discussions with people familiar with the Canary Wharf market during the study period.

Residential

Data

- Residential values for Canary Wharf were sourced from the Land Registry. Two data series were available; first the average value of flats in Tower Hamlets as a whole and second the average value of flats in the sub postcodes approximating to the study area, E14 3,4,5,8 and 9.

Assumptions & Special Issues

- No land registry data was available prior to 1995. To complete a full data series values for the early period were calculated by applying the average year on year change of London-wide average house price indices published by Halifax, Nationwide and the ODPM.

- For Canary Wharf site visits confirmed that within our study area in the region of 95% of residential stock was flats. Value data on terraced housing was available for Tower Hamlets as a whole but no data was available for the study area sub-postcodes (confirming the lack of stock, the land registry data being based upon traded properties).

- For the purpose of value estimation we assumed all stock to be flats. This seemed a reasonable assumption as the limited terraced housing in the area is not of a substantially different scale or character to much of the flat accommodation being local authority or ex-local authority stock judged to have been constructed in the 1970s and 1980s.

- The assumptions made for public/private housing at Southwark were applied at Canary Wharf.

Retail

Data

- Values for Canary Wharf retail were arrived at in discussion with Jones Lang LaSalle retail teams. Rent information was sourced for; 1992, 1995, 2000 and 2002.

Assumptions & Special Issues

- Gaps in the data series were completed by applying IPD inner London retail rental growth.

Hotels

Data

- There are two hotels to be considered within the Canary Wharf study area; the Britannia and the Four Seasons.

- These were both valued on a per room basis by the specialist Jones Lang LaSalle Hotels team. For the Britannia, completed in 1993, values were estimated for the opening date, the peak of the market in 2000 and for 2002. The series was extrapolated on a straight-line basis.

- For the Four Seasons, values were estimated for each year since opening 2000.

APPENDIX 6

CONTROLS

Control – Data Sources, Process and Assumptions

As discussed in our report we moved from using an "Area Based Control" to an "Index Based Control".

Offices

- The office rental control is based on the IPD index for office rents in the 'central London fringe' (SE1, E1, E3, N1, NW1).
- This IPD series does not coincide exactly with the control areas envisaged since in addition to the city fringe it also incorporates fringe areas of the West End market.
- However, it does adequately address the intention of the control area; to benchmark Canary Wharf and Southwark against other potential locations marginal to the core London office markets.
- Furthermore, as a larger aggregate it avoids the problem of the area based control being too strongly influenced by any one unique set of market circumstances.
- It has the theoretic defect that it includes SE1, part of the area we are studying. This would tend to mean that the effect of the JLE might be underestimated.

Residential

- Three potential data series were assessed; the Nationwide Index, the Halifax Index and an index published by the ODPM (based on Land Registry data). The latter was chosen in preference for two reasons.
- First it provided consistency in that the residential data for study areas was also sourced from the Land Registry;
- Second, there were concerns relating to the coverage of the building society's data because each has traditionally a slightly different customer base and catchment area.
- The ODPM index was therefore used to provide a London-wide average price for flats and terraced housing.

Retail

- The IPD index of inner London retail capital values between 1992 and 2002 was used.

Hotels

- An index of London Hotel capital values, published by Deloite and Touche and indexed to 1992 was used as the control data.

Industrial

- The IPD index of London industrial capital values between 1992 and 2002 was used.

Summary

- This gave a series of 'performance indices' for each stock type in the control area, all indexed to the start year of 1992.

APPENDIX 7

ASSESSING LAND VALUE

Jones Lang LaSalle

Development Appraisal

Dummy Appraisal

Report Date 10/9/2003

Jones Lang LaSalle
Dummy Appraisal

TIMESCALE (Duration in months)

Part1	**mths**	**Commences**
Phase Start Date		Sep 2003
Construction	24	Sep 2003
Part Length	**24**	
Project Length	**25**	

ASSUMPTIONS

CONSTRUCTION

1. Construction Costs paid on S-Curve
2. Professional Fees are related to Construction

DISPOSAL

1. Purchaser's Costs based on Net Capitalisation
2. Purchaser's Costs Deducted from Sale (not Added to Cost)
3. Sales Fees based on Sales plus Net Capitalisation
4. Sales Fees Added to Cost (not Deducted from Sale)

INTEREST

1. Single rates of Interest adopted for all Payments/Receipts: Debit Rate 12.50%. Credit Rate 0.00%
2. Interest Compounded Quarterly and Charged Monthly
3. Same rate of interest in each DCF period
4. Interest calculated on items in final DCF period
5. Interest included in IRR calculations
6. Effective Rates of Interest used

INFLATION/GROWTH

Inflation Sets
Set Number Set 1
Infl.Rate % 0.00

CASHFLOW

1. Payments In Arrears
2. Receipts In Advance
3. Initial IRR guess rate 8.00%

VALUATION

Tables are Annually in Arrears
Rent Free Cost method: Deduct proportion of ERV and add to Costs

RESIDUAL TARGETS

Part 1 Profit on Cost 10.00%

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Circle Version: 2.06.020

Jones Lang LaSalle

Dummy Appraisal

Appraisal Summary for Part 1

REVENUE					
Rental Area Summary	**ft²**	**Rate ft²**	**Grs. Rent pa**		
Miscellaneous	1,022	£10.00	10,222		
	1,022		10,222		
Investment Valuation	**Valuation Rent**		**Yield**	**Factor**	**Cap. Rent**
Miscellaneous	10,222	YP @	10.00%	10.0000	102,220
					102,220
NET CAPITALISATION					102,220
Purchaser's Costs		1.50%	-1,511		
NET DEVELOPMENT VALUE					100,709
NET REALISATION					**100,709**
OUTLAY					
ACQUISITION COSTS					
Acquisition Price			1,064		
				1,064	
CONSTRUCTION COSTS					
Summary	**ft²**	**Rate ft²**	**Cost**		
Miscellaneous	1,076	£50.00	53,800		
	1,076			53,800	
Contingency		5.00%	2,690		
				2,690	
PROFESSIONAL FEES					
All Professional fees		12.50%	6,725		
				6,725	
MARKETING					
Letting Agent Fees		10.00%	1,022		
Letting Legal Fees		5.00%	511		
				1,533	
RENT FREE COSTS					
Miscellaneous	12 mths		10,222		
				10,222	
FINANCE					
Debit Rate 12.500% Credit Rate 0.000% (Effective)					
Land			283		
Building			7,607		
Total Finance Cost				7,890	
TOTAL COSTS					**83,924**
PROFIT					**16,785**
Performance Measures					
Profit on Cost%		20.00%			

Profit on GDV%	16.42%

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Jones Lang LaSalle

Dummy Appraisal

Profit on NDV (Net Development Value)%	16.67%
Development Yield	12.18%
Equivalent Yield (Normal)	10.00%
Equivalent Yield (True)	10.66%
IRR (Internal Rate of Return) %	36.43%
Rent Cover	1 yr 8 mths
Profit Erosion (finance rate 12.500%)	1 yr 6 mths

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APPENDIX 8: Stock & Value Data Used - Southwark

Office	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
EIB Stock m²	225,476	225,476	228,488	233,737	233,737	233,737	232,978	231,398	228,291	225,755	227,963
UoW Stock m²	481,497	484,509	489,758	489,758	489,758	488,999	487,419	484,312	481,776	483,984	484,124
Rent £/m² House View	152	149	151	154	156	160	168	187	234	313	316
Yield % - House View	10.75%	10.50%	8.75%	8.00%	9.00%	9.00%	9.00%	9.00%	8.50%	8.50%	8.50%
CV £ EIB Stock	255,050,061	255,968,945	315,444,005	359,954,980	324,115,307	332,425,956	347,913,813	384,634,898	502,777,355	665,047,671	677,988,781
CV EIB Index	100	100	124	141	127	130	136	151	197	261	266

Residential	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
UoW No. of Units	6,976	6,976	7,005	7,016	7,086	7,120	7,154	7,183	7,549	7,643	7,701
SE1 0, 8, 9, Terrace £	148,643	141,972	143,173	146,106	157,794	170,418	132,085	156,757	197,477	222,810	244,329
SE1 0, 8, 9 Flat £	87,480	83,554	84,261	85,987	104,904	127,983	180,736	208,845	300,107	297,910	338,384
CV £ Study Area Weighted	461,856,802	441,128,624	446,710,936	456,576,631	547,688,702	655,225,313	849,893,550	989,118,737	1,472,308,863	1,500,735,741	1,710,597,273

Retail	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
UoW Stock m²	11,610	11,610	11,610	11,610	11,610	11,610	11,610	11,858	11,858	12,229	12,229
Rateable Value m²	1,342,951	1,412,740	1,482,529	1,555,766	1,632,621	1,713,273	1,797,850	1,886,664	1,979,865	2,077,670	2,180,307
Yield %	14.50%	10.00%	9.75%	10.75%	10.25%	10.00%	10.25%	9.75%	10.50%	10.50%	9.00%
CV £ UoW Stock	9,261,729	14,127,400	15,205,429	14,472,245	15,928,011	17,132,726	17,540,000	19,350,398	18,855,857	19,787,336	24,225,636

Hotel	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
No Rooms	0	0	0	0	0	0	30	120	266	266	266
CV £	0	0	0	0	0	0	1,200,000	8,812,500	25,905,000	25,357,500	24,810,000

Non Office B1 ("Industrial")	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Stock m²	256,021	259,033	261,270	256,021	256,021	255,262	254,441	252,914	253,485	258,229	256,161
Rent £/m²	79	79	79	79	86	90	102	103	113	124	129
Yield %	10.70%	9.90%	9.70%	10.60%	10.60%	9.50%	9.40%	8.00%	7.20%	7.70%	7.10%
CV £	189,078,981	207,384,444	213,702,003	191,820,505	207,597,949	240,822,628	275,683,833	325,302,571	399,408,306	416,716,622	466,021,689

Stock & Value Data Used – Canary Wharf

Office	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
JLL Stock m²	563,086	563,086	563,086	563,086	563,086	563,086	587,576	681,031	681,031	817,319	983,804
UoW Stock m²	619,507	619,507	619,507	619,507	619,507	619,507	619,507	766,182	766,182	885,739	1,053,572
JLL Rent £/m²	200	170	200	200	220	330	350	350	420	450	400
JLL Yield %	7.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	7.00%	7.00%	7.50%	7.50%
CV £ JLL Stock	1,287,053,714	957,246,200	1,126,172,000	1,126,172,000	1,238,789,200	1,858,183,800	2,056,516,000	2,724,124,000	3,268,948,800	3,923,131,200	4,197,563,733
CV Index	100	74	88	88	96	144	160	212	254	305	326

Residential	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
UoW No. of Units	3,113	3,113	3,113	3,113	3,203	3,312	3,312	4,127	4,287	4,441	4,934
Tower H - Terrace £	92,007	87,878	88,622	90,437	98,610	116,514	137,333	173,481	206,603	229,961	250,440
E14,3,4,5,8,9 - Flat £	107,297	102,481	103,348	105,465	113,123	130,178	152,821	188,707	233,455	204,117	272,858
CV £ UoW Flat	228,795,624	218,527,255	220,376,477	224,890,376	248,193,888	295,332,050	346,701,870	533,466,103	685,553,331	620,932,998	922,191,690

Retail	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Canary Wharf Stock m²	18,115	18,115	18,115	18,115	18,115	18,115	18,115	18,115	18,115	24,432	43,012
Rent £/m²	100	113	128	174	197	223	253	286	347	347	347
Yield %	9.00%	8.00%	7.00%	7.00%	7.00%	6.50%	7.00%	7.00%	7.00%	7.00%	6.75%
CV £	20,168,033	25,692,850	33,250,673	45,028,714	50,990,087	62,182,281	65,385,007	74,041,359	89,902,157	121,252,526	221,368,427

Hotel	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
No Rooms	0	442	442	442	442	442	442	442	592	592	592
CV £	0	48,620,000	51,777,143	54,934,286	58,091,429	61,248,571	64,405,714	67,562,857	124,270,000	114,470,000	104,670,000

Value Data Used - Control

Office	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
North and East Fringe Rent £/m²	194	210	211	194	190	201	215	234	263	282	278
Control Yield	10.0%	10.0%	9.6%	10.1%	9.9%	9.6%	8.8%	8.3%	7.5%	7.2%	7.5%

Residential	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
LB Islington - Avg Flat (£)	90,402	85,896	86,139	87,507	97,959	117,290	143,818	165,733	197,501	218,070	240,443
LB Islington - Avg Terrace (£)	171,414	162,871	163,332	165,925	171,188	201,802	239,467	292,515	359,781	408,507	452,684
ODPM London Av Flat/ Maisonette	61,765	62,879	66,791	71,084	76,683	88,429	98,824	122,084	141,999	157,705	179,786
ODPM London Av Terrace	78,120	79,851	84,310	87,957	91,584	106,292	114,720	145,925	172,223	187,493	213,744
Capital Value Indices based on (stock/value):											
UoW / Islington Flat	100	95	96	97	110	132	163	189	236	264	294
UoW / Islington Flat and Terrace Weighted	100	95	96	97	108	129	158	185	234	263	293
UoW / ODPM Flat	100	102	109	116	126	146	164	204	249	280	321
UoW / ODPM Weighted	100	102	109	115	125	145	162	201	247	277	318

Retail	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
IPD CV London Retail Index	100	110	116	113	120	138	146	156	160	161	168

Hotels	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
London real annual room rate change (Index) (Deloitte and Touche)	100	105	109	121	134	147	151	154	164	135	133
Index to 1998							100	102	109	89	88

Industrial	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Index IPD London CV	100	109	109	104	105	115	121	134	144	144	148

APPENDIX 9

Assessment of JLE Uplift

Commentary on Property Value Uplift

- The principle is to compare the observed performance in the study area with the performance expected had the study area performed in the same way as the control.
- The uplift has been assessed on an annual basis retrospectively to 1992 in each case. That is, each year's value represents the uplift since 1992.
- For each year, the observed capital value in the study area multiplied by the index of capital value performance in the control area has been subtracted from the capital value of the study area in that year;
- Estimation of the uplift is therefore an indexing exercise based to 1992.
- It follows that the estimate is highly sensitive to:
    - The start date;
    - The controls used;
    - The end date.
- For example using different housing indices from the ODPM index adopted gave a markedly different figure for the calculation of the residential uplift.
- Equally if the exercise had been run in 2001/2 at the peak of the market, the uplift figures for Canary Wharf would have been specifically greater.
- This is a volatile calculation which compares the performance of two separate varying lines of value. Intuitively we feel the real value impact of a major infrastructure project is likely to be rather more incremental and long term.

A specific note on "controlling for stock"

- The maximum JLE uplift for office stock was estimated to be £1.7 bn. This assumes that all of the building at Canary Wharf over the period was made possible by the JLE and counts the entire capital value as JLE uplift.
- The methodology report highlighted that the treatment of stock issues was of critical importance to the estimation of the JLE uplift effect in Canary Wharf. It was proposed in the methodology report that without the JLE, development at Canary Wharf would have been delayed until the values in the control (ie without the JLE) had risen to those at which development at Canary Wharf became viable, and in fact commenced (see also discussion above pages 23-24).

In practice this approach was modified for two reasons:

- First it did not seem appropriate to suggest that stock growth would have been delayed but would then have been undertaken at the same magnitude. It is clear that the increased transport capacity provided by the JLE was of critical importance in supporting the volume of construction seen at Canary Wharf. In the absence of the JLE, not only is it likely that development would have been delayed, but also that it would have been undertaken on a reduced scale and in all probability would have consisted of different land uses.

- The methodology proposed was changed slightly to allow for this. In practice in the control calculations development starts were delayed by a year and stock was then increased by 50,000m^2 per year (between 1999 and 2002), a slightly slower rate than observed at Canary Wharf in actuality where stock grew on average by 84,000m^2 per year with growth of 136,000m^2 and 166,000m^2 in 2001 and 2002.

- This inflated stock figure gives a minimum estimation of JLE uplift for offices in 2002 of £658m. The assumption used is clearly open to challenge but we feel the only solution to this problem would be to refer to issues of transport capacity rather than property market characteristics.

Land Values

Land values were estimated as follows:

- Using a "template" residual valuation model. An example of the calculation is found in Appendix 7. Similar calculations were made for each study area, control area, and each property type for every year of the model. Appendix 7 is presented as a sample as there are too many similar calculations to include every example.

- Adopting the value inputs generated in the assessment of property value described in the earlier chapters;

- Adopting cost inputs from industry cost indices, historic data regarding finance rates, and in house data from appraisals undertaken at the time.

- For each land use this generated a land value m^2 of built space. Where available the outputs of this analysis were tested against market evidence. However interpreting sales of development land in central London is difficult given the frequently complex nature of the sites and interests sold, so to a large extent the underlying value whch this section of the report is seeking to address is something of a theoretical construct.

- The critical question is clearly the quantum and nature of stock to which this land value should be applied. We adopted three different techniques in order to generate a total figure for the underlying land value in each area which varies over time:

    - The land value attributable to the existing stock;
    - The land value of sites undeveloped throughout the period. This most significantly applies to Canary Wharf where the future devlopment capacity

is well known. There are also a few sites in Southwark where capacity is less clear, and we applied a plot ratio comparable to surrounding uses;

- Where development took place during the period we applied the underlying value of the new stock some two years before it was delivered, on the basis that development took place because this value was higher than that of the existing use.

Estimation of the JLE uplift was achieved as before by the application of values from the controls.

APPENDIX 10

Jones Lang LaSalle Property Market Data Research Methodology

Central London Offices Research - Research Methodology – Our full European wide Research Methodology is available upon request

In the ordinary conduct of its business Jones Lang LaSalle (JLL) maintains databases of Take-up, Demand, Supply (availability) and Development activity in support of its agency and advisory services to clients. These records are checked for accuracy and completeness at each calendar quarter-end for use in our quarterly Central London Offices research publication and to verify the aggregates that are then adopted in our long-term time series and in international reporting. The specific research procedures are as follows:

Supply

JLL keeps records of office space that it has been instructed to dispose of (by letting or sale). In addition, we receive, as a matter of course, from other agents, property particulars and letting brochures in respect of all office accommodation being offered on the market. Details are updated in the ordinary course of business to reflect new and deleted availability.

At the end of each quarter, a 'register check' is conducted whereby other firms of agents are asked to confirm:

a) that each unit of accommodation remains available or, if not,
b) whether it has been withdrawn, is under offer to be let, or has been let and, if so,
c) to whom and upon what terms.

Demand

JLL keeps records of the accommodation requirements of its own occupier-clients. In addition, we receive notification of requirements from other agents, direct from occupiers (who are not clients) and from general market intelligence. Whilst we record enquiries received from agents on behalf of un-named clients, such requirements are not included in our statistics to avoid the risk of double-counting.
Each enquiry is allocated to a member of the Jones Lang LaSalle office agency team who checks upon the status of the enquiry regularly in the ordinary course of business as well as at each quarter-end for reporting purposes.

Take-Up

JLL keeps records of the transactions undertaken on behalf of its clients. Information about lettings with which JLL has not been directly involved is obtained from market contact with other agents, press reports and as a by-product of the quarter-end register-check process. Each firm of agents is allocated to a member of the Jones Lang LaSalle office agency team who, where possible, verifies the data with the disposing or acquiring agent, either when the information becomes available or at the quarter-end.
Where full information cannot be obtained, for reasons of confidentiality or otherwise, JLL will make an informed estimate of such matters as the rent based on its general market knowledge. Where the identity of the tenant is confidential we ask that at least the business sector be disclosed. Otherwise we record simply the floorspace that has been let, with the

remaining information recorded as 'unknown'. This will apply to a proportion of smaller lettings but rarely to any significant transaction. *DLE/JLL, 23 November 2001*

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