Olympics Bid
London 2012

Probability assessment for the
Department of Culture, Media and Sport

13 January 2003
Contents

- Introduction
- Summary of key variables
- Probability assessment
- Results and analysis
Background

• PwC has been commissioned by the DCMS to provide a subjective, probabilistic assessment of the risks and uncertainties involved in a bid to hold the Olympics in London in 2012.

• This process has involved:
  – Debate on key uncertainties;
  – Quantification of probabilistic distribution of key uncertainties drawing on expert judgement.
Contents

• Introduction
• Summary of key variables
• Probability assessment
• Results and analysis
We have identified a subset of variables that are key to the decision to bid.

**Cost variables**
- Land acquisition
- Construction / infrastructure
- ICT
- Elite sports programme
- Security
- Look of London
- Transport
- Administration
- Venue rental

**Decision variable:**
*We have selected the public subsidy as the output of interest.*

**Revenue variables**
- TV revenues
- Ticket sales
- Sponsorship
- Legacy value

**Pre-event and staging**
- Bidding
- Pre-event

**Post-event**
- Staging
Contents

• Introduction
• Summary of key variables
  • Probability assessment
• Results and analysis
Bidding cost: Land acquisition

- This is the total cost attributable to the Olympics of acquiring new land on which facilities for the Games can be built.

<table>
<thead>
<tr>
<th>Value</th>
<th>Low (10%)</th>
<th>Nominal (50%)</th>
<th>High (90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>375</td>
<td>425</td>
<td>500</td>
</tr>
</tbody>
</table>

Notes / Assumptions

- Nominal case = Arup estimate (£375m, spring 2002) + £50m due to price appreciation to January 2003.

- The high estimate incorporates the risk of price speculation:
  - if the CPO process is not started early after an announcement to bid, or
  - for those sites not included in the main Order that will be required at a later date.
Pre-event cost: Construction and Infrastructure

• This is the total cost attributable to the Olympics of construction and infrastructure of venues for the Games, splitting out training venue upgrades.

<table>
<thead>
<tr>
<th></th>
<th>Low (10%)</th>
<th>Nominal (50%)</th>
<th>High (90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction and infrastructure, excl. training venue upgrades</td>
<td>609</td>
<td>731</td>
<td>1000</td>
</tr>
<tr>
<td>Training venue upgrades</td>
<td>10</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

Notes / Assumptions

• All estimates assume the Olympic village will be developed by the private sector and leased to LOCOG during the staging phase.

• Nominal case (excl. upgrades) = Arup estimate inclusive of contingencies.

• High cases include:
  – Extra costs arising through scope creep and pressure to increase legacy value, e.g. by building permanent rather than temporary structures.
  – Uncertainty around Sport England estimates - may need to finance a 50m pool.
  – Uncertainty around design requirements, e.g. height of roofs.
Pre-event cost: Information and Communication Technology

- This is the total cost attributable to the Olympics of ensuring that adequate IT, communications and broadcasting infrastructure is in place to support the Games.

<table>
<thead>
<tr>
<th>Category</th>
<th>Low (10%)</th>
<th>Nominal (50%)</th>
<th>High (90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV signal</td>
<td>50</td>
<td>67</td>
<td>100</td>
</tr>
<tr>
<td>Other IT / comms</td>
<td>115</td>
<td>170</td>
<td>280</td>
</tr>
</tbody>
</table>

Notes / Assumptions
- High case (both categories) = Arup estimate.
- Nominal case (TV signal) = Sydney cost.
- Low case (other IT/comms) = San Francisco cost.
- New Olympic Broadcasting Committee (OBC) to be set up which may bring TV costs down in the future by increasing competition.
- At least £174m may be mandated by IOC for tech / comms (rumour).
- The UK is an established ICT market, thus offering considerable cost savings compared to Sydney.
Pre-event cost: Elite Sports Programme

• This is the total cost attributable to the Olympics of initiating and maintaining an elite sports programme to boost performance at the Games.

<table>
<thead>
<tr>
<th>Value</th>
<th>Low (10%)</th>
<th>Nominal (50%)</th>
<th>High (90%)</th>
</tr>
</thead>
</table>

Notes / Assumptions

• High case = Arup estimate, benchmarked against Sydney costs.
• Range influenced by factors such as:
  – public pressure to guarantee a successful Games for the host nation;
  – extent of Lottery funding that may be diverted to this programme;
  – uncertainty about how much of this cost would be attributable to the London Olympics rather than general preparation for an Olympics.
• Such a programme will generate wider economic benefits that are not considered in this evaluation of Exchequer costs and benefits.
Staging cost: Security – Range estimation

- This is the total cost attributable to setting up and operating an Operational Command Unit prior to the Games and providing security during the Games, including at venues.

<table>
<thead>
<tr>
<th>Value</th>
<th>Low (10%)</th>
<th>Nominal (50%)</th>
<th>High (90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>170</td>
<td>280</td>
</tr>
</tbody>
</table>
Staging cost:
Security – Notes and assumptions

• Arup estimate (£160m) derived from:
  – £30m for operating costs (benchmarked as 150% of Sydney costs, split £25/5m in London/outside);
  – £130m for the Met OCU (4 year programme).
  – Doubts exist about the scope and timing of OCU.

• Nominal estimate (£170m) derived from:
  – £30m for venue security;
  – £100m actual spend in 2012 (Lord Faulkner’s estimate);
  – £40m for planning prior to 2012.

• High estimate (£280m) derived by raising the nominal figure as follows:
  – £50m for venue security;
  – £100m actual spend in 2012 (Lord Faulkner’s estimate);
  – £130m for planning prior to 2012.
Staging cost: Look of London

• This is the total cost attributable to the Olympics of improving the “Look of London” for the staging of the Games.

<table>
<thead>
<tr>
<th>Value</th>
<th>Low (10%)</th>
<th>Nominal (50%)</th>
<th>High (90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20</td>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>

Notes / Assumptions

• Benchmarked against Manchester costs (£5m), accounting for:
  – 4-8 times multiple for London;
  – London has two times as many venues as Manchester.
This is the total cost of administration for staging the Games.

<table>
<thead>
<tr>
<th></th>
<th>Low (10%)</th>
<th>Nominal (50%)</th>
<th>High (90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>298</td>
<td>450</td>
<td>550</td>
</tr>
</tbody>
</table>

**Notes / Assumptions**

- High level of uncertainty noted in this area, especially salary / resourcing:
  - Consensus that Arup salary estimates are around 50% too low;
  - Staffing numbers in year of staging may also be too low: benchmarking against past Games may exclude hidden costs due to organisational structure (e.g. utilisation of staff from local government).

- Low case = Arup estimate.
- Nominal case adds corrections for salary levels.
- High case adds further corrections for staffing levels.
Staging cost: Venue rental

- This is the total cost of venue rental for staging the Games.

<table>
<thead>
<tr>
<th>Value</th>
<th>Low (10%)</th>
<th>Nominal (50%)</th>
<th>High (90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>47</td>
<td>67</td>
<td>87</td>
</tr>
</tbody>
</table>

Notes / Assumptions
- Nominal case = Arup estimate
  - Based on actual quotes received from venues (e.g. ExCel), or
  - 15% of ticket revenues, as estimated from a quote for football ground rental.
Transport: Range estimation

- Transport is a complex cost with implications at various stages:
  - Pre-event: infrastructure costs, e.g. of upgrading existing infrastructure (excluding Crossrail);
  - Pre-event and staging: cost of setting up and operating an Olympic Transport Agency for traffic management for the Games.

<table>
<thead>
<tr>
<th></th>
<th>Low (10%)</th>
<th>Nominal (50%)</th>
<th>High (90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital expenditure</td>
<td>100</td>
<td>200</td>
<td>300</td>
</tr>
<tr>
<td>Operating expenditure</td>
<td>100</td>
<td>143</td>
<td>200</td>
</tr>
</tbody>
</table>
Transport: Notes and assumptions

- The transport range estimates derive from consultations arranged by the Government Office for London (GoL) as listed below:
  - Opex: £23.4m [Arup report], £20m-£50m [LU], £4m-£5m [DLR], £30m [SRA – net of revenue], £8m [TfL - for traffic mgt], £5m [Highways Agency], £2m [City airport], £20m [publicity planning]. The nominal case assumes the maximum of these estimates.
  - Capex: £100m-£200m [Stratford upgrade – Arup dispute this estimate], £10m-£20m [Bromley-by-Bow upgrade], £25m [Park & Ride], £15m [DLR]. The nominal case assumes £150m [Stratford] and £10m [B-by-B].

- Scheduling is controllable but background demand must be suppressed.
- Capex is largely attributable to the Olympics as there is no obvious reason why it would otherwise be undertaken.
- Legacy benefit has not been taken into account.
- Possible displacement of alternative transportation schemes.
Television Revenues: Range estimation

- This is the total revenue from TV rights for the Games, both in advance of and during the staging of the Games.

<table>
<thead>
<tr>
<th>Value</th>
<th>Low (10%)</th>
<th>Nominal (50%)</th>
<th>High (90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>350</td>
<td>534</td>
<td>700</td>
</tr>
</tbody>
</table>
Television Revenues: Notes and assumptions

- Estimates are media rights, but these are largely driven by TV.
- Assume IOC share will remain stable at around 51% (unless values drop or rise substantially in which case it is expected that the IOC will lower or raise its take accordingly).
- Listed events are shown free-to-air - affects competition and limits revenues.
- Timing of bid is unclear – 2005, or later?
- The low case assumes that poor economic conditions prevail when bidding.
- Nominal case = Arup estimate adjusted for current $/£ exchange rate.
- The high case considers that:
  - Valuable new markets (for example China, Eastern Europe) are expected to open up between now and 2012;
  - Compared to Australia, London is well located geographically;
  - UK has an established broadcasting market so purchasers may pay more for confidence in the product.
Ticket Sales Revenues

- This is the total revenue from ticket sales for the Games, driven by the price of the tickets and the number of tickets sold.

<table>
<thead>
<tr>
<th>Value</th>
<th>Low (10%)</th>
<th>Nominal (50%)</th>
<th>High (90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>200</td>
<td>300</td>
<td>464</td>
</tr>
</tbody>
</table>

Notes / Assumptions

- Key issues are median price, seat kill, sales commission and % sold.
- Assume that the Games are sold out in all cases, through price adjustment if necessary.
- High case = Arup estimate because this was felt to be a very optimistic scenario with high median price, low seat kill, low commission and a sell-out Games (although the median prices are comparable to other bids).
- High degree of discomfort with existing pricing due to affordability issues: public willingness-to-pay has not been market tested.
Sponsorship Revenues

- This is the total revenue from TOP and local sponsorship, plus official suppliers, for the Games.

<table>
<thead>
<tr>
<th></th>
<th>Low (10%)</th>
<th>Nominal (50%)</th>
<th>High (90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOP sponsors</td>
<td>65</td>
<td>115</td>
<td>140</td>
</tr>
<tr>
<td>Local sponsors and official suppliers</td>
<td>100</td>
<td>210</td>
<td>300</td>
</tr>
</tbody>
</table>

Notes / Assumptions

- TOP nominal case = Arup estimate adjusted for current $/€ forex rate.
- Non-TOP nominal case = Arup estimate (£150m local + £60m suppliers).
- Athens has achieved sponsorship targets early.
- TOP sponsors limited to 8, preventing crowding out of local sponsors.
- TOP sponsorship is an established market with existing contracts; hence no significant variability in income is foreseen.
- Cost of looking after local sponsors? (up to a third – not included).
- Benefits of official suppliers queried – excess supply is of limited value.
Legacy Value Revenues

- This is the total revenue derived from legacy uses of Olympic assets (stadia and land).

<table>
<thead>
<tr>
<th></th>
<th>Low (10%)</th>
<th>Nominal (50%)</th>
<th>High (90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Football stadium</td>
<td>0</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>Land</td>
<td>350</td>
<td>500</td>
<td>600</td>
</tr>
</tbody>
</table>

Notes / Assumptions

- Nominal case (land) = Arup estimate + extra £50m for land appreciation consistent with £50m added to nominal land acquisition costs.
- Nominal case (stadium) = Arup guess, comparable to Manchester.
- Timing for revenue recovery (impacting NPV) likely to be delayed relative to Arup assumptions.
- Very likely that land costs will be recovered, as Games development can only increase its (currently very low) value.
Contents

• Introduction
• Summary of key variables
• Probability assessment
• Results and analysis
All subcategories of the variables assessed as key to the Olympics bid are shown below.

<table>
<thead>
<tr>
<th>Cost variables</th>
<th>Revenue variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Land acquisition</td>
<td>• TV revenues</td>
</tr>
<tr>
<td>• Construction / infrastructure</td>
<td>• Ticket sales</td>
</tr>
<tr>
<td>• Training venue</td>
<td>• TOP sponsorship</td>
</tr>
<tr>
<td>• Transport CAPEX</td>
<td>• Local sponsorship</td>
</tr>
<tr>
<td>• Technology &amp; telecom</td>
<td>• Football legacy</td>
</tr>
<tr>
<td>• TV signal production</td>
<td>• Land disposal value</td>
</tr>
<tr>
<td>• Elite sports programme</td>
<td></td>
</tr>
<tr>
<td>• Security</td>
<td></td>
</tr>
<tr>
<td>• Look of London</td>
<td></td>
</tr>
<tr>
<td>• Transport OPEX</td>
<td></td>
</tr>
<tr>
<td>• Administration</td>
<td></td>
</tr>
<tr>
<td>• Venue rental</td>
<td></td>
</tr>
</tbody>
</table>

Bidding

Pre-event

Staging

Pre-event and staging

Post-event
Analysis – Step 1: Sensitivity analysis

- Set the spreadsheet to the nominal value for all variables
  - This is the base case.
- For each variable X, holding all other variables at their nominal values:
  - Vary the value of X: set X to the low value assessed and run the spreadsheet.
  - Repeat for the high value assessed for X.
  - This provides a sensitivity range for X.
Sensitivity analysis shows the impact of each variable on the public subsidy

- Construction: -1000 to -731, -609
- TV rights: 350 to 700
- Land disposal value: 350 to 600
- Administration: -550 to -450, -298
- Elite sports funding: -100 to 2
- Local sponsorship: 322 to 522
- Transport CAPEX: 522 to 686
- Ticket sales: 422 to 522
- Security: -170 to 322
- Technology & telecomms: -170 to 337
- Land acquisition: -425 to 597
- Transport OPEX: -143 to 322
- Training venue: -20 to 32
- TOP Sponsorship: 97 to 362
- TV signal: -67 to 362
- Football legacy: 2 to 72
- Venue rental: -67 to 69
- Look of London: 115

Base case public subsidy = £1.17Bn
Analysis – Step 2:
Convert range assessments to probability distributions

- Where the ranges assessed are relatively symmetric, low (10th percentile), nominal (50th percentile), and high (90th percentile) estimates are roughly equivalent to a discrete distribution with 3 states of 30%, 40%, and 30% probability, respectively.
Analysis – Step 2:
Convert range assessments to probability distributions (continued)

• While a 30%-40%-30% normal approximation was deemed to be appropriate for most of the variables, some adjustment was made to the more asymmetric variables with a significant impact on the output value (as demonstrated by the sensitivity analysis)

• This adjustment was intended to shift a higher probability to the case furthest from the nominal, while maintaining a 40% nominal probability

• The greater the asymmetry in assessment, the larger the difference imposed between the probabilities assigned to the low and high cases

• 20% - 40% - 40% distribution (low - nominal - high):
  – Construction excluding training upgrades and technology / telecommunications

• 25% - 40% - 35% distribution (low - nominal - high):
  – Security and elite sports programme

• 35% - 40% - 25% distribution (low - nominal - high):
  – Administration and land disposal values
Analysis – Step 3: Risk profile based on probability distributions

- A risk profile is generated by computing all possible paths through an uncertainty tree (shown below) for a specified output variable.

- This generates a profile of the range of output values expected given the range and distribution of uncertainties assessed.
We concentrate on the variables with a large impact on the public subsidy

**Cost variables**
- Land acquisition
- Construction / infrastructure
- Training venue
- Transport CAPEX
- Technology & telecom
- TV signal production
- Elite sports programme
- Security
- Look of London
- Transport OPEX
- Administration
- Venue rental

**Revenue variables**
- TV revenues
- Ticket sales
- TOP sponsorship
- Local sponsorship
- Football legacy
- Land disposal value

Variable with less impact
Variable with large impact
The expected public subsidy for the Olympics bid is £1.33Bn; there is an 80% chance that it falls within the range £0.90Bn to £1.77Bn.

Variables with less impact are set to their nominal values.

This calculation is done without inflation.

There is a 10% chance the subsidy will be less than £0.90Bn.

There is a 10% chance the subsidy will be more than £1.77Bn.

There is a 5% chance the subsidy will be more than £1.88Bn.

Expected subsidy = £1.33Bn

N.B.: the expected subsidy differs from the base case value because the former is probabilistically weighted among high, nominal and low cases while the latter assumes a 100% probability that the nominal case occurs for every variable.
A frequency distribution shows the likelihood of every possible outcome.

<table>
<thead>
<tr>
<th>Public subsidy (£'m)</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2750</td>
<td>0.005</td>
</tr>
<tr>
<td>-2500</td>
<td>0.010</td>
</tr>
<tr>
<td>-2250</td>
<td>0.015</td>
</tr>
<tr>
<td>-2000</td>
<td>0.020</td>
</tr>
<tr>
<td>-1750</td>
<td>0.025</td>
</tr>
<tr>
<td>-1500</td>
<td>0.030</td>
</tr>
<tr>
<td>-1250</td>
<td>0.035</td>
</tr>
<tr>
<td>-1000</td>
<td>0.040</td>
</tr>
<tr>
<td>-750</td>
<td>0.045</td>
</tr>
<tr>
<td>-500</td>
<td>0.050</td>
</tr>
<tr>
<td>-250</td>
<td>0.055</td>
</tr>
<tr>
<td>0</td>
<td>0.060</td>
</tr>
</tbody>
</table>

There are a few outcomes where the public subsidy is in the £2.25-£2.5bn range.

There are a few outcomes where the public subsidy is in the £250-£500m range.
The expected costs for the Olympics bid is £3.14Bn; there is an 80% chance that it falls within the range £2.81Bn to £3.48Bn.

Variables with less impact are set to their nominal values.

This calculation is done without inflation.

Expected costs = £3.14Bn

There is a 10% chance the costs will be more than £3.48Bn

There is a 5% chance the costs will be more than £3.55Bn

There is a 10% chance the costs will be less than £2.81Bn
The expected revenue for the Olympics bid is £1.80Bn; there is an 80% chance that it falls within the range £1.53Bn to £2.08Bn.

Variables with less impact are set to their nominal values.

This calculation is done without inflation.

There is a 10% chance the revenue will be less than £1.53Bn.

There is a 10% chance the revenue will be more than £2.08Bn.

There is a 5% chance the revenue will be less than £1.46Bn.

Expected revenue = £1.80Bn
The expected public subsidy with inflation is £1.61Bn; there is an 80% chance that it falls within the range £1.10Bn to £2.10Bn.

Variables with less impact are set to their nominal values.

This calculation is done with 2.5% inflation p.a.

N.B.: the expected subsidy differs from the base case value because the former is probabilistically weighted among high, nominal and low cases while the latter assumes a 100% probability that the nominal case occurs for every variable.
A frequency distribution (with inflation) shows the likelihood of every possible outcome.
The expected costs with inflation is £3.80Bn; there is an 80% chance that it falls within the range £3.40Bn to £4.20Bn.

Variables with less impact are set to their nominal values.

This calculation is done with 2.5% inflation p.a.
The expected revenue with inflation is £2.20Bn; there is an 80% chance that it falls within the range £1.85Bn to £2.54Bn.

Variables with less impact are set to their nominal values.

This calculation is done with 2.5% inflation p.a.

- There is a 10% chance the revenue will be less than £1.79Bn.
- There is a 10% chance the revenue will be more than £2.54Bn.
- There is a 5% chance the revenue will be less than £1.85Bn.
Assumptions for NPV calculation

• Two discount factors:
  – 6% and 3.5%
• Capex for transportation infrastructure starts in 2006 with the following six-year timing profile:
  – 5% in 2005
  – 10% in 2006 to 2007
  – 25% in 2008 to 2010
• Look of London costs are allocated as follows:
  – 25% in 2011
  – 75% in 2012
• Timing of all other costs and revenues are as in Arup spreadsheet.
The NPV of the Olympics bid is negative at 6%.

Variables with less impact are set to their nominal values.

*This calculation is done without inflation.*

**Expected NPV**

\[ \text{Expected NPV} = -£0.87\text{Bn} \]
The NPV of the Olympics bid is negative at 3.5%

Variables with less impact are set to their nominal values.

This calculation is done without inflation.

Expected NPV = - £1.04Bn
## Assessment of control

<table>
<thead>
<tr>
<th>Variable</th>
<th>Degree of control (HMG)</th>
<th>Confidence in ranges</th>
<th>Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land acquisition</td>
<td>Medium to high</td>
<td>High</td>
<td>Assigning vesting powers to LOCOG, legal proceedings, timing, % of site assembly covering the CPO</td>
</tr>
<tr>
<td>Construction &amp; infrastructure</td>
<td>Low/Medium</td>
<td>Moderate</td>
<td>Scope, being held to ransom (e.g., Jubilee line), transaction costs with 3rd parties</td>
</tr>
<tr>
<td>TV rights</td>
<td>Low</td>
<td>Moderate</td>
<td>Exogenous market conditions, timing of deal, structure of OBC</td>
</tr>
<tr>
<td>Land disposal value</td>
<td>Low</td>
<td>Moderate</td>
<td>Driven by market conditions, transaction costs may escalate, oversupply of land in an area</td>
</tr>
<tr>
<td>Administration</td>
<td>High</td>
<td>Moderate</td>
<td>Lack of control in salary of experts and committee members</td>
</tr>
<tr>
<td>Elite sports funding</td>
<td>High</td>
<td>High</td>
<td>Managing public expectations</td>
</tr>
<tr>
<td>Local sponsorship</td>
<td>Medium/Low</td>
<td>Moderate</td>
<td>Driven by exogenous factors, including market advertising, sponsor of the events, competing alternatives</td>
</tr>
<tr>
<td>Transport CAPEX</td>
<td>Medium</td>
<td>Low</td>
<td>Complex, large-scale capital project with interdependencies</td>
</tr>
<tr>
<td>Ticket sales</td>
<td>Medium/High</td>
<td>Low/Moderate</td>
<td>Price (affordability), no. sold, seat kills, administration costs</td>
</tr>
<tr>
<td>Security</td>
<td>Medium</td>
<td>Moderate/High</td>
<td>OSO administration and planning costs more variable than direct spend</td>
</tr>
<tr>
<td>Technology/telecoms</td>
<td>Low</td>
<td>Low</td>
<td>Lack of expertise available for assessment, future development uncertain</td>
</tr>
<tr>
<td>Transport OPEX</td>
<td>Medium</td>
<td>Moderate/Low</td>
<td>Complexity, correlation to transport CAPEX</td>
</tr>
</tbody>
</table>
Wider economic costs and benefits

- Tourism benefits measured by enhanced expenditure (2002 prices, before discounting):
  - Overseas residents in London during Olympics - £143-£219 million in 2012
  - Overseas residents outside London during Olympics - £94-£163 million in 2012
  - Pre- and post- Olympics - £30 million (as per Arup)
  - Paralympics - £35 million (as per Arup)
  - “Knock-on” effect - £61 million per annum in 2011-2013 (as per Arup)
  - Domestic residents (net displaced overseas trips) - £51-£207 million

- Congestion costs measured by loss of productivity
  - Depend critically on the condition of the transport network
  - Using the costs of recent tube strikes/rail disruptions as a proxy suggests costs might reach £100 million
• The expected cost without inflation is £3.14 billion with an 80% chance of it falling between £2.81 billion and £3.48 billion.
• The expected cost with 2.5% inflation is £3.80 billion with an 80% chance of it falling between £3.40 billion and £4.20 billion.
• The expected revenue without inflation is £1.80 billion with an 80% chance of it falling between £1.53 billion and £2.08 billion.
• The expected revenue with 2.5% inflation is £2.20 billion with an 80% chance of it falling between £1.85 billion and £2.54 billion.
• The expected public subsidy without inflation is £1.33 billion with an 80% chance of it falling between £0.90 billion and £1.77 billion.
• The expected public subsidy with 2.5% inflation is £1.61 billion with an 80% chance of it falling between £1.10 billion and £2.10 billion.
• The NPV of the Olympics bid at a 6.0% discount rate is -£0.87 billion with an 80% chance it is between -£1.15 billion and -£0.60 billion.
• The NPV of the Olympics bid at a 3.5% discount rate is -£1.04 billion with an 80% chance it is between -£1.37 billion and -£0.72 billion.
Conclusions - interpretation

• All results are based on the assessments completed on Friday based on input from DCMS, Arup and PwC.

• The ranges for both public subsidy and NPV appear relatively small given the timeframes and nature of the bid decision.

• It is clear from the asymmetric nature of some of the variables that there is a long tail to the distribution: in order to quantify the size of the tail, further work would be required based on expert assessment and/or analysis of the historical data.

• In particular, we would recommend revisiting those assessments where only limited work has been undertaken, where there is little HMG control and/or where considerable uncertainty was highlighted during Friday’s discussion: this would include areas on the revenue side (eg ticket sales) and the cost side (eg administration).

• Given this, we would expect that with further work, the ranges for both the public subsidy and NPV would initially broaden until appropriate management control can be introduced.