

L.E.K.

AUCKLAND  
BANGKOK  
BEIJING  
BOSTON  
CHICAGO  
LONDON  
LOS ANGELES  
MELBOURNE  
MILAN  
MUMBAI  
MUNICH  
NEW DELHI  
NEW YORK  
PARIS  
SAN FRANCISCO  
SHANGHAI  
SINGAPORE  
SYDNEY  
TOKYO



***Input Price Trends  
Summary Report – Refresh***

**29 February 2008**

L.E.K. CONSULTING (INTERNATIONAL) LIMITED  
40 GROSVENOR PLACE  
LONDON SW1X 7JL  
UNITED KINGDOM

T: 44.20.7389.7200  
F: 44.20.7389.7440  
WWW.LEK.COM

### NON-DISCLOSURE RULES AND LIABILITY DISCLAIMER

To: Network Rail ("the Customer")

Project Input Prices Trends Refresh 2008: Input Price Trends Summary Report – Refresh, Dated 29 February 2008 (the "Final Report")

#### 1. **Introduction**

- 1.1 This Final Report and any ancillary reports or correspondence in connection therewith has been prepared by L.E.K. Consulting (International) Limited ("L.E.K." or "we") at the request of the Customer solely with a view to providing an estimate of the future input price trends that the Customer faces.
- 1.2 This Final Report is for the sole benefit and use of the Customer. This Final Report has been prepared to address the interests and priorities of the Customer and not the interest or priorities of any third party.
- 1.3 This Final Report must be construed in the context in which it was prepared including the constraints relating to availability of time and information, the quality of that information, the instructions agreed with the Customer and our assumptions and qualifications, in each case, as more fully set out in this Final Report. L.E.K.'s advice is based on information received from the Customer, external interviews and desk-top research. In addition L.E.K.'s access to information and time and resources available to it have been limited and the results of the study are therefore confined to L.E.K.'s findings on the information considered within these constraints. In particular the extent and scope of the project undertaken by L.E.K. is confined to the matters set out in L.E.K.'s revised proposal dated 15 January 2008 ("the Proposal"). Also, the Final Report prepared by L.E.K. shall be valid as at the date it is delivered to the Customer. As legislation changes frequently and/or the Customer's circumstances and affairs may change, L.E.K. cannot be responsible if the Customer relies on its report at a date later than that envisaged by the Proposal without requesting L.E.K. to review advice given previously.
- 1.4 Any recommendations made or work undertaken by the Customer as a result of the findings from the input price trends study shall be based on the Customer's own assessment of the implications of its recommendations and/or work required and is to be taken at the Customer's own risk who shall be solely responsible for obtaining all necessary consents to such work, complying with statutory and other requirements in respect of the same and considering the broader industry implications of such actions. For the avoidance of doubt L.E.K. has not been requested to advise on health and safety (including railway safety) or performance issues in developing its findings and preparing the report.

#### 2. **Reliance**

- 2.1 The Customer may place reliance on this Final Report on and subject to the terms of the framework agreement (bserv211) agreed with L.E.K. Those third parties who have our written permission may rely on this Final Report on and subject to the terms of the reliance letter agreed with L.E.K. Save in respect of the Customer, if you have not agreed a written reliance letter with us you do not have our permission to, and shall not, rely on this Final Report.

#### 3. **Limitation of Liability**

- 3.1 This study has been carried out under the framework agreement between L.E.K. and Customer (bserv211) which shall be binding on the Customer. L.E.K.'s total liability to the Customer is limited in the aggregate to that under the above mentioned framework agreement between L.E.K. and Network Rail.
- 3.2 Save in respect of the Customer, your interests and priorities are not known to us and have not been considered in the preparation of this Final Report. Unless otherwise agreed in writing, you are not a client of L.E.K. and we owe no obligations or duties to you in respect of this Final Report whether in contract, tort (including negligence), breach of statutory duty or otherwise.
- 3.3 Save as we have agreed with you in writing under an engagement letter, reliance letter or non reliance letter, L.E.K. shall have no liability to you or any third party for any loss or damage arising out of or in connection with, the disclosure of the Final Report by us to you, the receipt by any third party of the Final Report through you, or any reliance placed on, or use of, the Final Report by you or any third party, howsoever arising, whether arising in or caused by breach of contract, tort (including negligence), breach of statutory duty or otherwise.
- 3.4 Nothing in this disclaimer shall exclude or in any way limit L.E.K.'s liability to you for (i) fraud, (ii) death or personal injury caused by L.E.K.'s negligence (including negligence as defined in s. 1 Unfair Contract Terms Act 1977), (iii) breach of terms regarding title implied by s. 2 Supply of Goods and Services Act 1982, or (iv) any liability to the extent the same may not be excluded or limited as a matter of law (including under the Financial Services and Markets Act 2000).
- 3.5 This Final Report shall be governed by the laws of England.

## ***Introduction***

- **Network Rail engaged L.E.K. to refresh the August 2007 Input Prices study. The 2007 study had the objectives of:**
  - **identifying the main labour, plant & materials inputs of Network Rail, identifying the key cost drivers in each supply market, explaining variations compared with historical trends, and identifying the impacts of supply constraints, and changes in those constraints, within each supply market**
  - **building on this to develop forecasts of input price trends for Network Rail's supply markets, forecast to 2013/14 both by category of purchase and in aggregate (i.e., weighted by the mix of Network Rail's planned expenditure); and**
  - **developing a view of regional variations in these input price trends across Great Britain**
  
- **The refresh is to address a specific set of issues raised by Network Rail and ORR since the 2007 work. It is not intended to be a comprehensive reworking of the 2007 study. Specifically, the study carried out the following steps:**
  - **consider the inflationary impact of the Crossrail scheme following confirmation that it will proceed**
  - **re-consider the trajectory for copper and steel prices**
  - **engage with, and respond to, issues raised by Network Rail (specifically: enhancement programme, signalling IT, splitting IT costs between hardware and software, breaking out project management costs)**
  
- **The final result is an update to the 2007 report, including updates to the differential inflation relative to RPI that Network Rail is forecast to experience over CP4**

***The process and analytical method adopted for the 2007 report was used as a base to complete the 2008 refresh***

Process	Analytical Method
<ul style="list-style-type: none"> <li>● Extensive consultation with Network Rail and market participants</li> <li>● Feedback on 2007 report from Network Rail and the ORR has been incorporated in this update</li> <li>● A list of additional issues to be considered has been circulated within Network Rail and feedback has been incorporated in this report</li> <li>● Interviews with 33 market participants (between the 2007 and 2008 studies) on inflationary pressures augmented the understanding of past and future trends in inflation experienced by Network Rail</li> <li>● Feedback reports were distributed to key personnel within Network Rail for consultation</li> <li>● Feedback has been received and addressed either in the report or directly with the interested party, as appropriate</li> <li>● In addition, the ORR were consulted to identify any additional issues from their perspective</li> </ul>	<ul style="list-style-type: none"> <li>● Inflation forecasts have been determined for each major category of expenditure in each asset class and based on the following:               <ul style="list-style-type: none"> <li>- third party forecasts, where available</li> <li>- continuation of historical trends</li> <li>- estimation based on market commentary or Network Rail data</li> </ul> </li> <li>● In total, c.32 independent inflation forecasts have been produced</li> <li>● Major infrastructure projects have been assessed to determine their impact on inflation               <ul style="list-style-type: none"> <li>- specific inflation overlays were added for the 2012 Olympics and National Grid planned work</li> <li>- no incremental inflation has been included due to the increase in Network Rail's future workload to deliver the enhancements programme</li> </ul> </li> <li>● Forecasts for each asset class were then weighted by the asset class expenditures for renewals and enhancements (SBP ICM v2.0) provided by Network Rail to obtain an overall forecast</li> <li>● Regional variations in labour inflation have then been calculated by determining historical regional relationships, and apportioning the regional impact of major projects (e.g., 2012 Olympics)</li> </ul>

*In addition, the 2008 refresh has analysed and updated the following areas*

### Updates

- Steel price forecasts
- Copper price forecasts
- OM&R Expenditure update from SBP (from ICM v1.0 - 30th June 2006 to ICM v2.0 - Report 7)
- Enhancement expenditure
- Other minor updates
  - ONS historical data for labour (2006 revised)
  - RPI forecast from OEF updated to latest version available as of January 2008
  - additional historical data and forecast update for material price indices

### Changes considered

- Inflationary impact of Crossrail
- Signalling IT index
- Software and hardware cost inflation separately
- Project management costs in additional asset categories
- Railway Pension Scheme inflation within supplier base
- E&P labour inflation

---

***L.E.K. has determined Network Rail input price inflation as a premium over RPI***

- In a competitive market, a relationship commonly presented is that output (e.g., consumer) inflation is equal to input price inflation minus the increase in factor productivity (i.e. RPI is usually lower than input price inflation)
- Because Network Rail will be explicitly targeted on efficiency savings (productivity), it is necessary to adjust an output inflation allowance (based, e.g., on RPI) for the constituent element of factor productivity, to avoid double counting the efficiency saving target
- In addition, a consumer-based output inflation measure such as RPI does not reflect the same input market mix as Network Rail's activities, which would be expected to give rise to a differential rate of experienced inflation. Whilst changes in mix and constituent inflation rates may cause this differential to vary over time, a fixed premium represents a simple and pragmatic approximation in the absence of a more appropriate base inflation measure
- Our calculated premium over RPI takes account of both of these analytical requirements

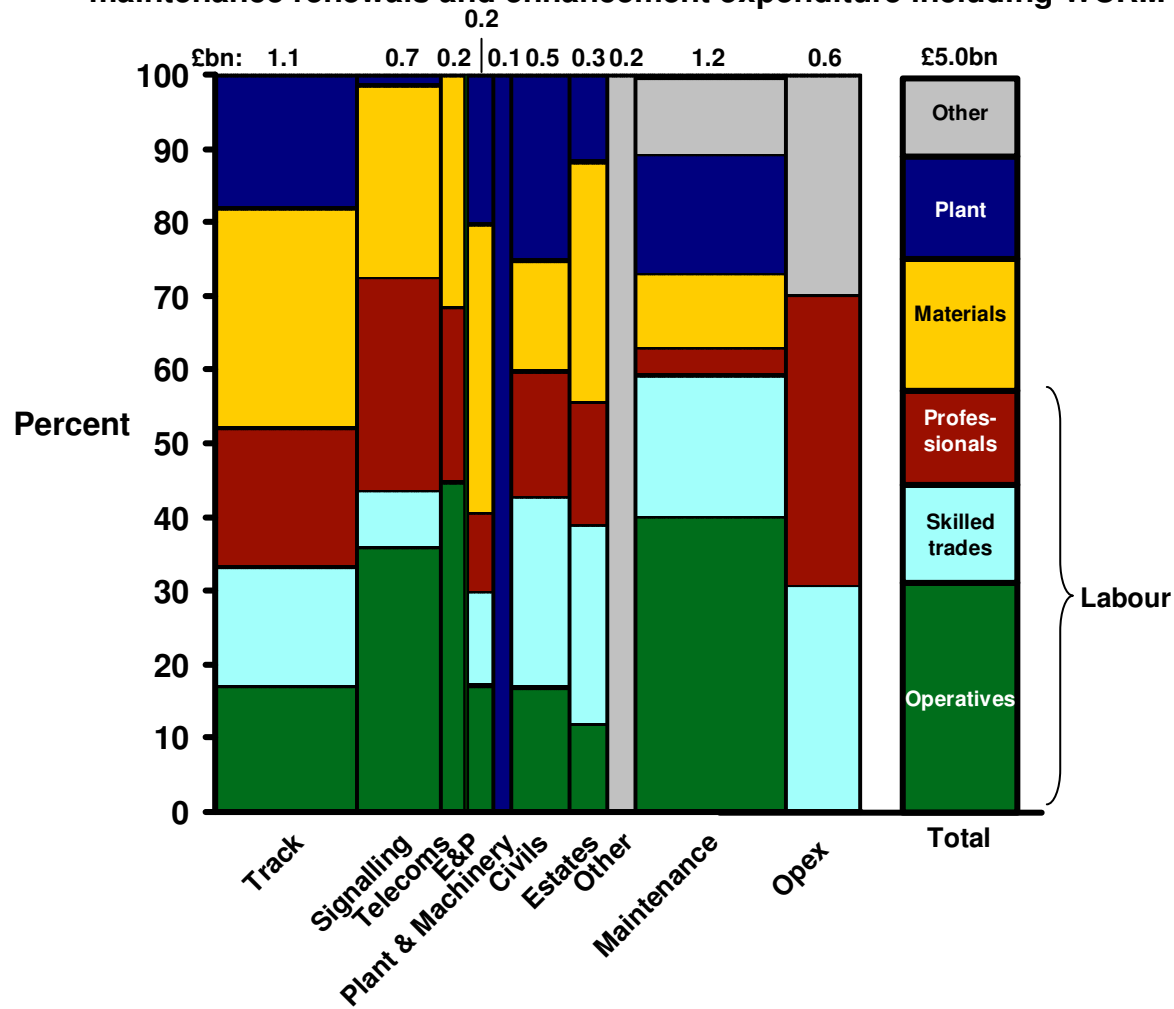
***Our view of the potential inflationary impact of the 2012 Olympics has been informed by independent estimates***

	Price inflation due to the 2012 Olympics			
	Overall Inflationary Impact on CP4 CAGR	Timing of Impact	Industry Affected	Geography Affected
Deloitte	0.4% - 0.6% p.a.	2007-2010	Construction industry including infrastructure	London Area, generally assumes ability to increase labour supply
EC Harris	0.8% - 1.2% p.a.	Mid 2007 to 2012	Construction industry including infrastructure	London and Southeast
Davis Langdon	0.4% - 0.8% p.a.	2008 to 2010	New constructions including infrastructure	Impact on London; impact on the rest of the country is unclear
L.E.K. estimate	0.7% p.a. overall (median case)	2008/09 to 2010/11	Construction infrastructure and Railway	South East (0.6% in GB overall including secondary impact in other territories)

- In general, third party reports discuss 2012 Olympics inflation in terms of London/South East only rather than a national impact, however, it is improbable that wages increases in the South East area will not attract labour from other areas thereby tightening other local labour markets
- The L.E.K. estimate of 0.7% p.a. incremental inflation (overall) in the South East assumes no additional inflation on materials and includes a secondary impact of the 2012 Olympics beyond the South East, which raises overall inflation by 0.6% p.a. in GB (CP4 CAGR)
  - this is equivalent to (and derived from) incremental labour inflation of 1.2% in the South East, 0.4% p.a. in other Network Rail territories, and 1.0% p.a. in GB overall

**The inflation forecasts have been weighted on the basis of an estimated expenditure split to develop an overall inflation forecast**

Estimated split of Network Rail's 2006/07 controllable opex, maintenance renewals and enhancement expenditure including WCRM



- Each of the boxes in the diagram represents one category of spend for which an inflation forecast has been developed, although in some cases we have examined a more detailed split
- Network Rail's management information does not provide an accurate split of expenditure within asset categories between labour, plant and materials
  - approximate splits were developed by Network Rail for the purpose of this project
- Together, these splits provide the weighting for estimating an overall inflation forecast for Network Rail's expenditure

**The 2008 refresh forecasts a median input price premium to RPI of 1.1%**

	<b>2008 Refresh</b>					<b>Comments</b>
	<b>CAGR including RPI (ppt)</b>		<b>CAGR relative to RPI (ppt)</b>			
	<b>Historical*</b>	<b>CP4</b>	<b>Historical*</b>	<b>CP4</b>		
<b>Labour (61%)</b>		2.9		0.2	Low	<ul style="list-style-type: none"> <li>The historical premium over RPI used to forecast labour categories averages 1.2%</li> <li>The 2012 Olympics is expected to add c.1.0% to labour inflation during CP4 (0.6% to total inflation during CP4)</li> </ul>
	4.1	4.9	1.4	2.2	Median	
		7.5		4.7	High	
<b>Materials, Plant and Other (39%)</b>		(0.1)		(2.7)	Low	<ul style="list-style-type: none"> <li>Materials deflation (relative to RPI) is mainly driven by an expected decrease in copper and technology equipment prices</li> </ul>
	3.4	2.1	0.8	(0.6)	Median	
		4.2		1.5	High	
<b>Total (100%)</b>		1.7		(0.9)	Low	<ul style="list-style-type: none"> <li>Overall, given the inflationary pressures from labour and forecast copper and technology equipment price falls, our median input price forecast of 1.1% p.a. over CP4 is very similar to the historical rate of c.1.2% relative to RPI</li> </ul>
	3.8	3.8	1.2	1.1	Median	
		6.2		3.5	High	

Note : \* May include 1998-06, though years considered for individual line items will vary based on data available

**Summary of updates and changes for 2008 refresh**

	Incremental updates and changes median impact	Median* average CP4 annual premium over RPI
August 2007 premium over RPI		0.97
<b>Updates:</b>		
Steel price forecasts	(0.01)	
Copper price forecasts	0.03	
OM&R expenditure update from SBP	(0.06)	
Enhancement expenditure	0.05	
<b>Other updates:</b>		
- ONS historical data for labour (2006 revised)	(0.01)	
- RPI forecast from OEF updated to latest version	0.00	
- Additional historical data and forecast update for material price indices	0.02	
<b>Changes:</b>		
Inflationary impact of Crossrail	No overlay, some risk	
Signalling IT	0.04	
Software and hardware cost inflation	0.03	
Project management costs in additional asset categories	0.03	
Railway Pension Scheme inflation within supplier base	Not included	
E&P labour	No overlay, some risk	
Secondary effects of all changes	0.02	
February 2008 refresh premium over RPI		1.11

**Note :** \*For simplicity in this summary all impacts are shown as the difference between the median forecasts of the premium over RPI for total Network Rail spend. However it should be noted that the uncertainty in the forecasts is reflected in the ranges around the median shown in the main body of the report

## Summary of impacts on the premium over RPI due to updates (1 of 2)

Issue	Discussion	Change in category inflation forecast	Median impact on total CP4 premium to RPI*
2007 study	Aggregate result of the 2007 Input Price Trends work, expressed as average annual premium to RPI over CP4 (percent)		0.97
Update steel prices forecast (c. 5% of CP4 spend)	For the August 2007 study, the steel price inflation was forecast using an average of third party forecasts. Prices were forecast to decline over 2007 and 2008, and to experience some growth over CP4. While the price decline did not materialise, the updated forecasts views are still for small increases in steel price that would be experienced over CP4	Average of third party forecasts produces a virtually unchanged premium to RPI of 0.0% p.a. over CP4	(0.01)
Update copper prices forecast (c. 1% of CP4 spend)	In August 2007, copper was forecast by third parties to decrease sharply over CP4. Prices of copper have since been volatile. As of January 2008, forecasters have not substantially changed their view on long term price decreases, but have reduced the rate of decline that would be experienced during CP4	Average of third party forecasts is 11% p.a. below RPI over CP4 (cf. 15% p.a. below RPI in August 2007)	0.03
OM&R expenditure update	The aggregate premium depends on the weighting of different categories in Network Rail's forecast expenditure. In 2007 that was based on ICMv1 and we have now used the latest available, ICMv2.0	Changes in expenditure mix were small, however, categories with lower inflationary pressures over CP4 increased their share of overall expenditure	(0.06)
Running total			0.93

**Note :** \*For simplicity in this summary all impacts are shown as the difference between the median forecasts of the premium over RPI for total Network Rail spend. However it should be noted that the uncertainty in the forecasts is reflected in the ranges around the median shown in the main body of the report

I:\CASE\NWR13\PRESENTATIONS\FP\_INPUT\_PRICE\_TRENDS\_SUMMARY\_2008FEB29\_PUBLIC.PPT

## Summary of impacts on the premium over RPI due to updates (2 of 2)

Issue	Discussion	Change in category inflation forecast	Median impact on total CP4 premium to RPI*
Running total			0.93
Enhancement expenditures	The 2007 study included only the baseline enhancement expenditures for CP4. Since the 2007 study, Network Rail committed to delivering additional enhancements, over and above the baseline, which have now been included in the Enhancement expenditure for the purpose of this study. Moreover, Network Rail has now developed a view of the split of expenditures into asset programmes. The Enhancement expenditures currently exclude Crossrail (because the profile of expenditure is not yet confirmed), the Risk, CP5 and Performance Funds, the “Seven day railway” projects (because they are still unconfirmed) and Thameslink (because it is funded under a different arrangement already indexed for inflation). Network Rail has indicated that the cost split for Renewals within each asset class is broadly similar to Enhancements	Additional £5.5bn of Enhancements, treated as additional expenditure with the same constituent costs as the relevant renewals	0.05
Other minor updates	Data from various third party sources has been updated, such as ONS, RPI forecast from OEF (January 2008) and various material price indices	Small forecast changes on most categories of expenditure	0.01
Running total			0.99

**Note :** \*For simplicity in this summary all impacts are shown as the difference between the median forecasts of the premium over RPI for total Network Rail spend. However it should be noted that the uncertainty in the forecasts is reflected in the ranges around the median shown in the main body of the report

I:\CASE\NWR13\PRESENTATIONS\FP\_INPUT\_PRICE\_TRENDS\_SUMMARY\_2008FEB29\_PUBLIC.PPT

## Summary of impacts on the premium over RPI due to changes in forecasts or methodology

Issue	Discussion	Change in category inflation forecast	Median impact on total CP4 premium to RPI*
Running total			0.99
Signalling IT index (c. 0.4% of CP4 spend)	The BEAMA** Industrial Electronic Equipment index was suggested as a possible better index for signalling IT equipment costs. L.E.K. has analysed the index components, re-constructed the index using a longer data series and projected a consistent forecast	Signalling IT prices are now forecast to decrease at 2.6% p.a. below RPI over CP4 (cf. decreasing at 12% p.a. in August 2007)	0.04
IT costs (c.1% of CP4 spend)	Other R&E IT costs were previously forecast as hardware cost. The cost has now been broken out into hardware and software. As the main input to software is labour, a software labour index premium over RPI has been used as a proxy to forecast software prices	IT prices are forecast on average to decrease at 4.9% p.a. below RPI over CP4 (cf. decreasing at 12% p.a. in August 2007)	0.03
Project Management costs (c. 11% of CP4 spend)	Project management costs were only provided by Network Rail for Signalling, Civils, Estates and Opex. This category has now been additionally broken out for other expenditure categories (Track, Electrification, Telecom and Maintenance) adding 2.0% of 2006/07 spend to this category	The planners and project managers labour index has a premium to RPI of 2.9% over CP4. These expenditures were previously forecast at between 1% and 2% premium to RPI	0.03
Secondary effects	Combined additional effects of changes	Interaction among first order effects	0.02
Total			1.11

**Note :** \*For simplicity in this summary all impacts are shown as the difference between the median forecasts of the premium over RPI for total Network Rail spend. However it should be noted that the uncertainty in the forecasts is reflected in the ranges around the median shown in the main body of the report; \*\*British Electrotechnical & Allied Manufacturers Association

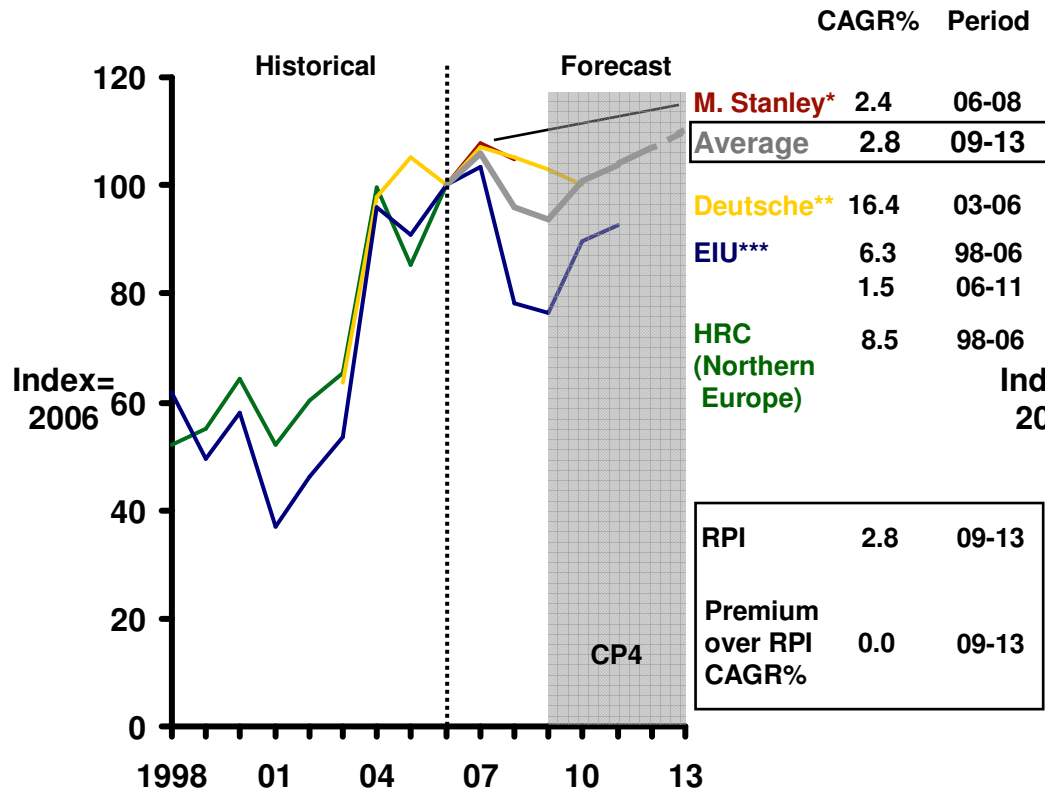
I:\CASE\NWR13\PRESENTATIONS\FP\_INPUT\_PRICE\_TRENDS\_SUMMARY\_2008FEB29\_PUBLIC.PPT

## ***Other issues considered that did not result in a change to the forecast***

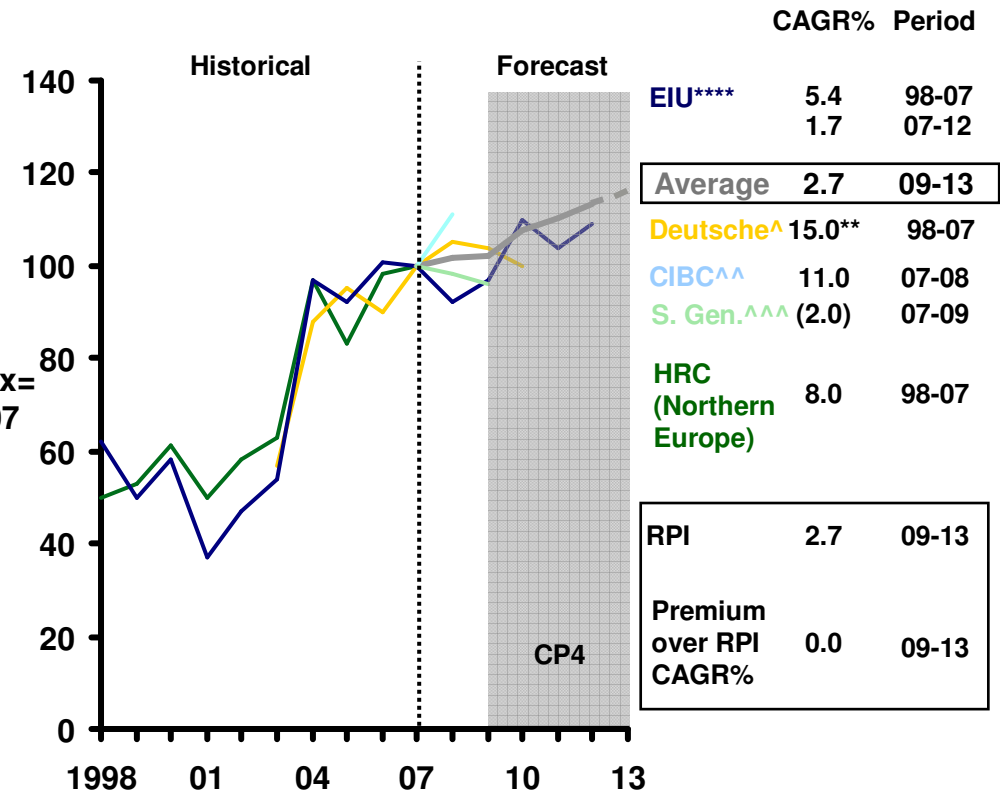
Issue	Discussion	Change in category inflation forecast
Inflationary impact of Crossrail	For the general construction work, Crossrail is expected to use capacity that will be freed by the conclusion of other major projects in the South East area. The ability to plan the works and to control the timeline should allow Network Rail to avoid overheating the market for 'on-network' work. Should a different timeframe be imposed on the project, there is a risk that Network Rail may experience labour inflation above what is currently forecast in this study. Moreover, as the design and project management phase may overlap with other rail work, there is a risk of increased labour inflation for these categories. This impact is currently difficult to quantify however, L.E.K. has already estimated 3% p.a. between 2007/2008 and 2010/2011 during the peak construction activity for the Olympics and other construction work impacting this category of workers	No overlays have been added to the forecast due to Crossrail. However, there is a risk that a tight timeframe may mean that Crossrail work would cause additional inflation
Railway pension scheme	Contractors have stated to Network Rail that they are facing increased costs because of planned increases in contributions to the Railway Pension Scheme. The only known employers' contribution increase is in 2009 (c. 0.8% increase). The future uncertainty in mortality and investment returns assumptions and the proposed changes by the Accounting Standards Board for the calculation of the discount rate mean that further contribution changes are difficult to forecast. Moreover, the increase is likely to affect only a small proportion of total contractors' employees	No adjustment due to uncertainty of contributions after 2009
E&P labour inflation	Network Rail raised concerns about the conclusions of the 2007 Input Prices Trends project on E&P labour inflation. A meeting with the E&P programme team established that the main concern was the deliverability of enhancements. Network Rail's deliverability review established that these works can be delivered but, if not planned correctly, there is a risk of an additional inflationary impact	Not included as impact on inflation but will need to be addressed as part of the deliverability review and there is a risk of incremental inflation

**The average of current steel forecasts is an increase of 2.7% p.a. over CP4 (cf. 2.8% in August)**

**Steel Prices (August 2007)  
(1998-13F)**



**Steel Prices (February 2008)  
(1998-13F)**



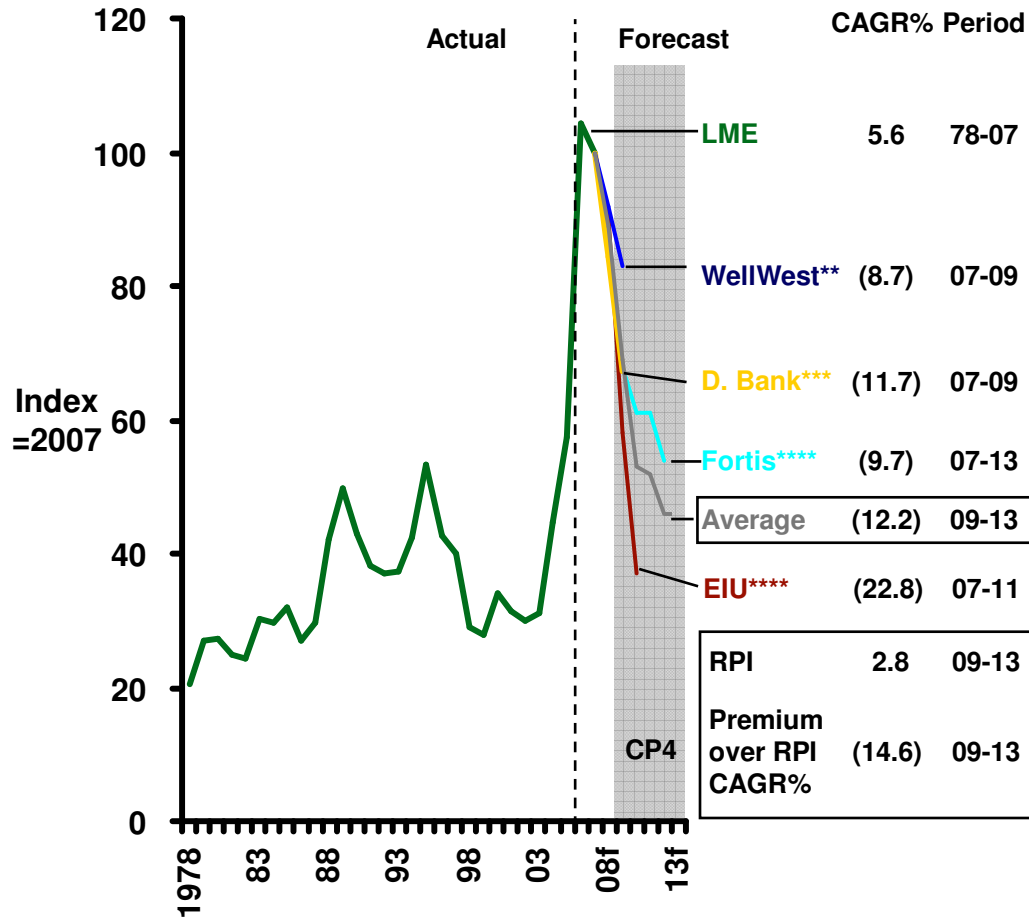
Note : Nominal; \* May 07; \*\* Apr 07; \*\*\* Jun 07; \*\*\*\* Jan 08; ^ Jul 07; ^^ Jan 08; ^^^ Nov 07

Source : Broker Reports; Economist Intelligence Unit; L.E.K. Analysis

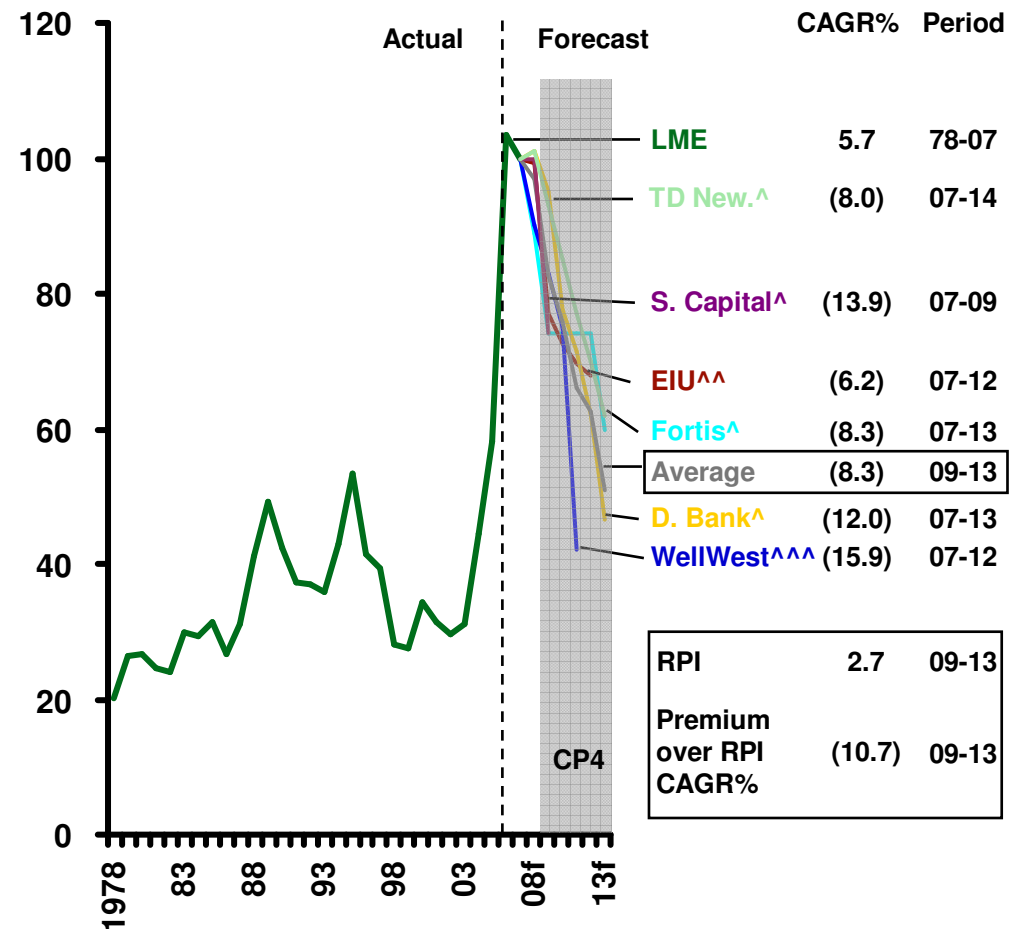
I:\CASE\NWR13\PRESENTATIONS\FP\_INPUT\_PRICE\_TRENDS\_SUMMARY\_2008FEB29\_PUBLIC.PPT

*The average of current copper forecasts is a decrease of c.8% p.a. over CP4 (cf. c.(12)% in August)*

Copper Prices\* (August 2007)  
(1978-2013F)



Copper Prices\* (February 2008)  
(1978-2014F)

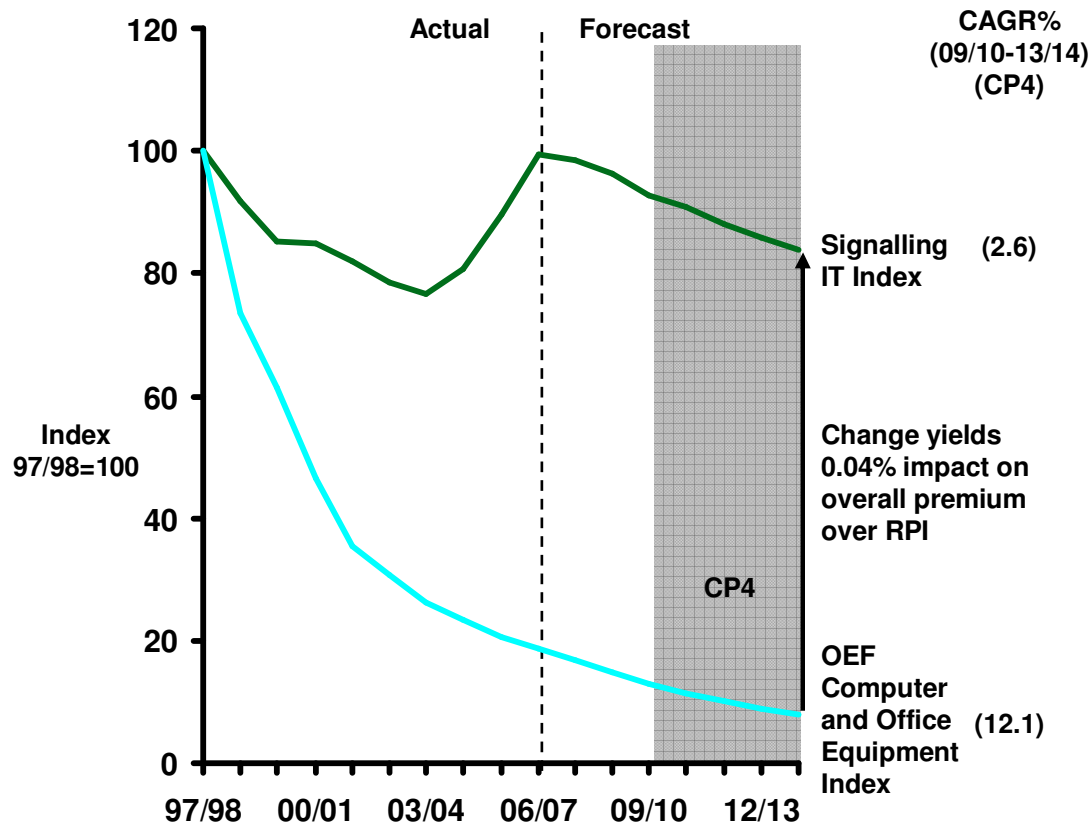


Note : Nominal; \* Historical annual value based on average monthly value. 2007 historical based on year to date average monthly value; \*\* Jun 07; \*\*\* May 07; \*\*\*\* Jun 07; ^ Jan 08; ^^ Dec 07; ^^^ Nov 07

Source : Datastream (LME); EIU; Broker Reports

**Signalling IT inflation has been forecast using an index based on the components and weightings of the BEAMA Industrial Electronic Equipment index**

**Comparison of Premium over RPI  
(97/98-13/14)**



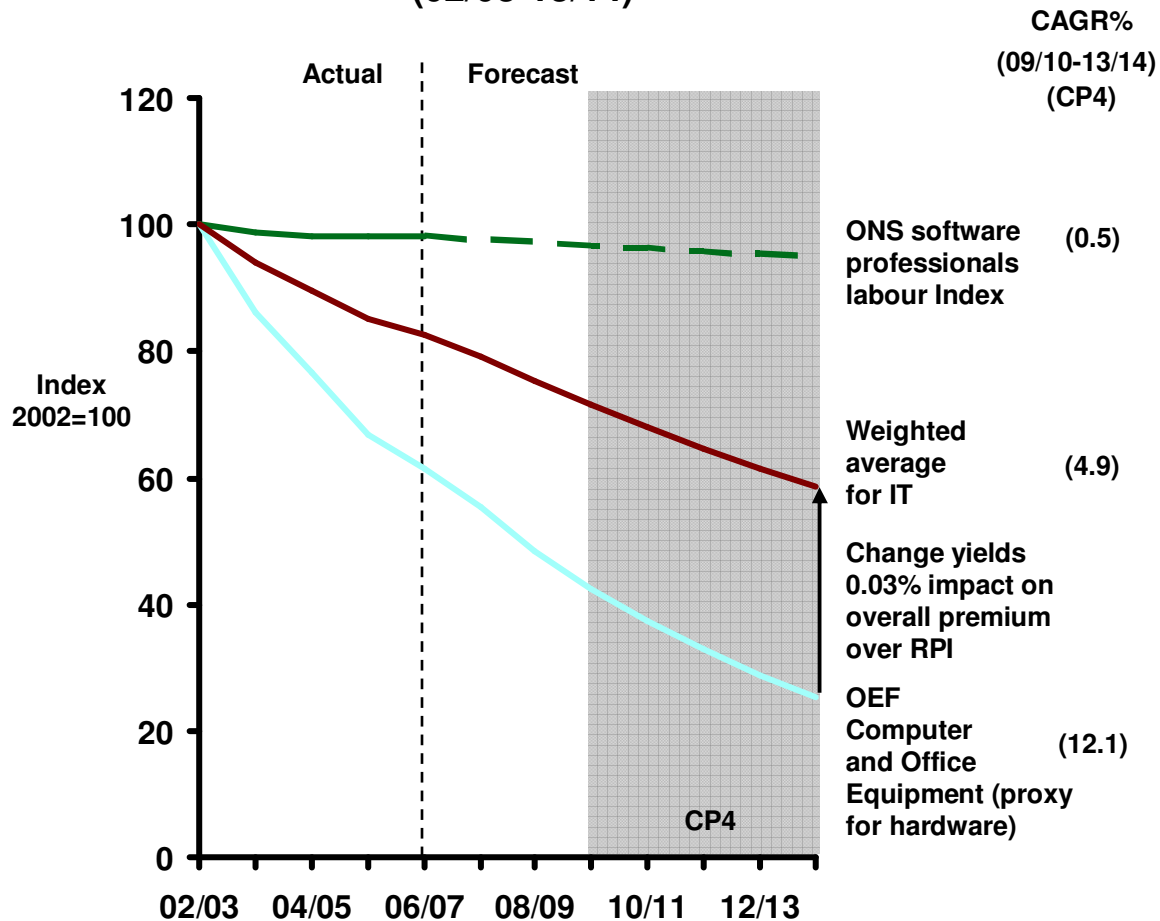
- In the absence of a better index, the OEF Computer and Office Equipment index was used to forecast Signaling IT inflation for the 2007 study
- Network Rail and an equipment manufacturer indicated that the BEAMA Industrial Electronic Equipment index could be suitable for measuring cost inflation of Signalling IT equipment
- The BEAMA Industrial Electronic Equipment index is composed of a weighted basket of 10 ONS indices. BEAMA provides the historical index between 2002 and 2007 but does not provide a forecast
  - L.E.K. recreated the index back to 1998 using original ONS data and BEAMA weightings
- In order to forecast signalling IT costs, each constituent index was projected forward using steel, copper or RPI forecasts depending on the contents of the index. For indices where this method was inappropriate the historical premium over RPI was used\*

Note : \*The following indices were forecast using steel forecasts: Manufacture of basic iron and steel and ferro-alloys (21%), Cold formed or folded products of iron or steel (1%). Historical premium over RPI forecast: Plastics in primary forms (19%), Manufacture of basic precious metal; Aluminium (12%), Electronic valve, tube & other electronic components (11%), Unwrought aluminium (4%). Copper forecast: Insulated wire & cables (7%). RPI forecast: Electricity cost including tax (23%)

Source : BEAMA; OEF; ONS; L.E.K. Interviews

**The historical premium over RPI of the ONS software professionals labour index has replaced the OEF computer and office equipment index in forecasting the development of software prices**

**Comparison of Premium over RPI  
(02/03-13/14)**



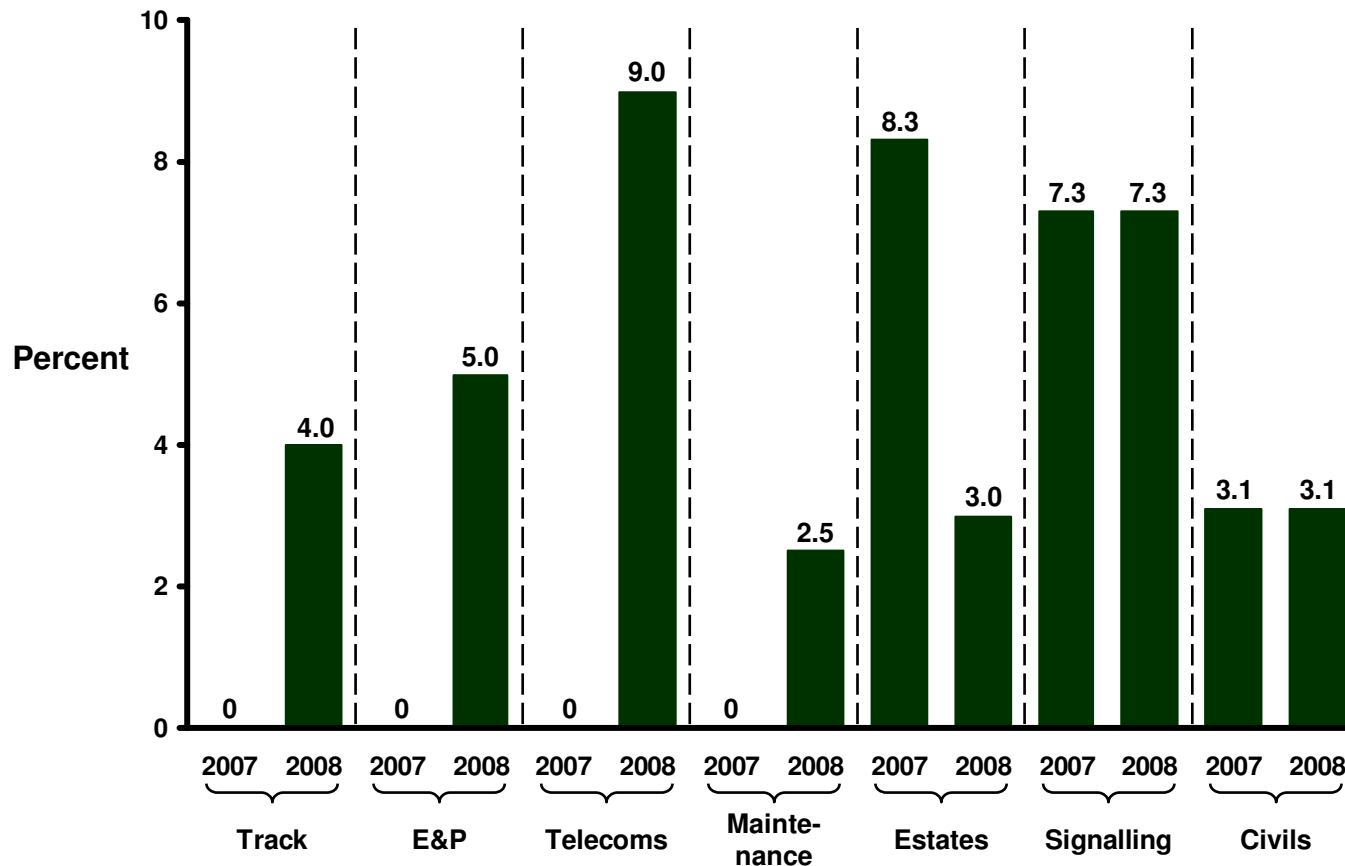
- Network Rail IT expenditure includes both hardware and software, the software expenditure represents c.62% of the total IT spend while hardware represents c.38%
  - the IT expenditure was previously forecast using a hardware index (OEF)
- It has not been possible to find an index which adequately reflects inflation in UK software prices
- Since the largest component of software price is labour, the ONS software professionals labour index has been used as a proxy for software prices
- In CP4 software labour cost changes are forecast by projecting forward the historical premium over RPI, OEF forecast for computer and office equipment will continue to be used for the hardware expenditure

Source : ONS; OEF; L.E.K. Interviews

I:\CASE\NWR13\PRESENTATIONS\FP\_INPUT\_PRICE\_TRENDS\_SUMMARY\_2008FEB29\_PUBLIC.PPT

***Project manager expenditure has been additionally broken out for Track, E&P, Telecoms and Maintenance, whilst the project manager weighting for Estates has been decreased***

Proportion of project manager expenditure within asset types - 2007 vs. 2008 Refresh -



- The CP4 annual premium over RPI for project managers is forecast to be 2.9%
- This is above the premium of other engineering categories
- The spend for project managers in 2006/07 was 6.2% in the 2007 study
  - in the 2008 Refresh, project manager spend has increased to 8.2% of total expenditure in 2006/07
- The result is an increase in the overall premium over RPI of 0.03

Source : Network Rail; L.E.K. Inflation Model

I:\CASE\NWR13\PRESENTATIONS\FP\_INPUT\_PRICE\_TRENDS\_SUMMARY\_2008FEB29\_PUBLIC.PPT

## Summary of Labour inflation rates relative to RPI

Relative to RPI	CP4 Average Weightings (%)	Historical Average Inflation	CAGR% CP4
Track	10%	1.1	L 0.1 Med 2.1 H 4.6
Signalling	9%	2.8	L 0.8 Med 2.6 H 5.1
Telecoms	3%	1.1	L (0.1) Med 1.9 H 4.5
Electrification	2%	1.1	L 0.2 Med 2.2 H 4.5
Plant and machinery	n/a	n/a	L n/a Med n/a H n/a
Civils	6%	1.0	L 0.0 Med 2.0 H 4.5
Estates	6%	1.0	L 0.0 Med 2.0 H 4.5
Other R&E	n/a	n/a	L n/a Med n/a H n/a
Maintenance	14%	1.0	L 0.0 Med 2.0 H 4.5
Opex	8%	1.7	L 0.4 Med 2.3 H 4.7
Enhancement management	4%	1.8	L 0.6 Med 2.9 H 5.7
<b>Total Labour</b>	<b>61%</b>	<b>1.4</b>	L 0.2 Med 2.2 H 4.7

- Forecasts for labour are mainly based on the observed average historical inflation as reported by ONS and corroborated by market commentary
- Signalling labour has experienced a high average premium over RPI mainly due to tight market conditions
  - this premium has been forecast to decrease only slightly during CP4
- During CP4 Network Rail is expected to experience a significant level of labour inflation, mainly due to the 2012 Olympics
  - track, signalling, civil, estates, and maintenance will be affected by the 2012 Olympics
  - other asset categories will be affected to a lesser extent
- National Grid's upgrade works are expected to influence the specific electrification market
  - an overlay for this has been included in the electrification labour categories
- Operational expenses includes signallers for whom inflation is forecast using the historical average premium to RPI
  - other grades of Network Rail staff such as project managers and planners are forecast to experience some 2012 Olympics premium

**Summary of Materials, Plant and Other inflation rates relative to RPI**

	CP4 Average Weightings (%)	Historical Average Inflation		CAGR% CP4
<b>Relative to RPI</b>				
Track	9%	2.4	L Med H	(3.0) 0.0 3.0
Signalling	3%	3.9	L Med H	(6.9) (2.9) 1.0
Telecoms	1%	(2.6)	L Med H	(2.7) (1.4) (0.1)
Electrification	3%	3.7	L Med H	(4.8) (1.9) 0.9
Plant and machinery	2%	(0.8)	L Med H	(1.4) (0.1) 1.3
Civils	4%	0.8	L Med H	(1.9) (0.3) 1.3
Estates	5%	0.5	L Med H	(1.9) (0.4) 1.1
Other R&E	3%	(1.7)	L Med H	(2.3) (1.2) (0.2)
Maintenance	6%	1.2	L Med H	(1.9) (0.1) 1.8
Opex	3%	0.0	L Med H	(0.5) 0.0 0.5
Enhancement management	n/a	n/a	L Med H	n/a n/a n/a
<b>Total Materials, Plant and Other</b>	<b>39%</b>	<b>0.8</b>	L Med H	(2.7) (0.6) 1.5

- Materials forecasts have generally been estimated using third party forecasts
  - when such forecasts were not available, the trend relative to RPI has been used
- A forecast slowdown in inflation for materials is mainly driven by deflationary expectations for copper and technology equipment

**Summary inflation table with relative weightings for labour and materials, plant and other**

	Labour to Materials, Plant and Other CP4 average split %			Labour CAGR% CP4	Materials, Plant and Other CAGR% CP4	Total CAGR% CP4
<b>Relative to RPI</b>						
Track	52	: 48	L Med H	0.1 2.1 4.6	(3.0) 0.0 3.0	(1.4) 1.1 3.8
Signalling	73	: 27	L Med H	0.8 2.6 5.1	(6.9) (2.9) 1.0	(1.2) 1.1 4.0
Telecoms	69	: 31	L Med H	(0.1) 1.9 4.5	(2.7) (1.4) (0.1)	(0.9) 0.9 3.1
Electrification	40	: 60	L Med H	0.2 2.2 4.5	(4.8) (1.9) 0.9	(2.8) (0.3) 2.4
Plant and machinery	-	: 100	L Med H	n/a n/a n/a	(1.4) (0.1) 1.3	(1.4) (0.1) 1.3
Civils	60	: 40	L Med H	0.0 2.0 4.5	(1.9) (0.3) 1.3	(0.8) 1.1 3.2
Estates	56	: 44	L Med H	0.0 2.0 4.5	(1.9) (0.4) 1.1	(0.8) 0.9 3.0
Other R&E	-	: 100	L Med H	n/a n/a n/a	(2.3) (1.2) (0.2)	(2.3) (1.2) (0.2)
Maintenance	68	: 32	L Med H	0.0 2.0 4.5	(1.9) (0.1) 1.8	(0.6) 1.3 3.6
Opex	70	: 30	L Med H	0.4 2.3 4.7	(0.5) 0.0 0.5	0.1 1.6 3.4
Enhancement management	100	: -	L Med H	0.6 2.9 5.7	n/a n/a n/a	0.6 2.9 5.7
<b>Total</b>	<b>61</b>	<b>: 39</b>	L Med H	<b>0.2 2.2 4.7</b>	<b>(2.7) (0.6) 1.5</b>	<b>(0.9) 1.1 3.5</b>

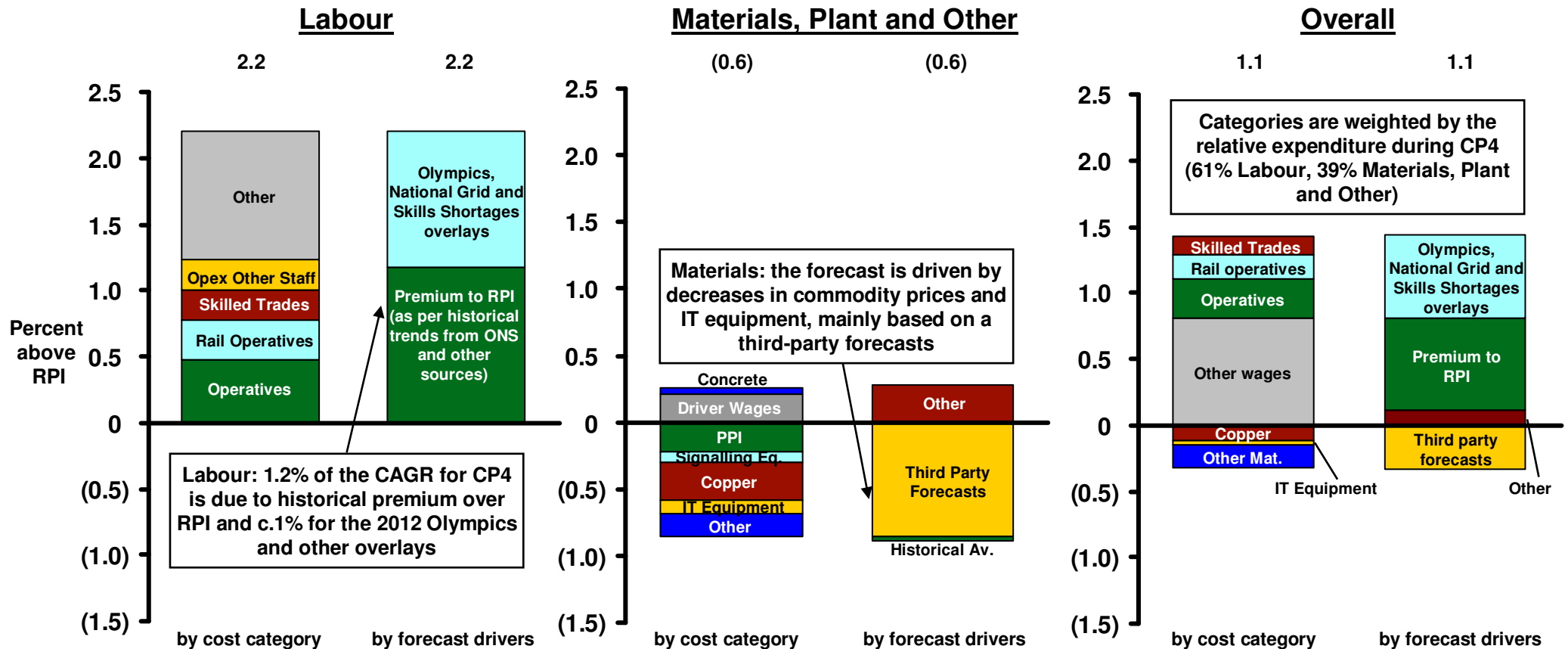
## Regional forecast analysis summary

Construction wages Relative to RPI	Construction wages historical CAGR% (1980/81 – 05/06)	Difference from national average	Labour Inflation Forecast		CAGR% CP4
			Relative to RPI		
North East	1.1%	(0.5%)	L	0.0	
Yorkshire and the Humber	1.6%	(0.1%)	Med	2.0	
East Midlands	1.5%	(0.2%)	H	4.5	
East of England	2.0%	0.4%	L	(0.0)	
South East	2.2%	0.5%	Med	2.0	
South West	1.1%	(0.6%)	H	4.5	
West Midlands	1.5%	(0.1%)	L	1.1	
North West	1.8%	0.1%	Med	3.1	
Wales	1.2%	(0.5%)	H	5.7	
Scotland	1.4%	(0.2%)	L	(0.3)	
London	2.7%	1.0%	Med	1.6	
			H	4.1	
GB	1.6%	-	L	0.3	
			Med	2.3	
			H	4.8	
			L	(1.0)	
			Med	1.0	
			H	3.3	
			L	0.2	
			Med	2.2	
			H	4.7	

- Similarly to the 2006 work, we have identified the historical relationship between regional construction wages and regional GDP (NUTS regions)
- Based on forecasts of regional GDP, we have been able to assess the relative trends in regional wages. Forecast wage rises vary between the territories from 0.9% above the national average for South East to 0.6% below for Western
- These variations have been applied equally to all Network Rail labour categories and have been redistributed to the Network Rail territories. The table above right shows the results of applying these variations to the CP4 labour inflation forecast

# Analysis of the CP4 CAGR premium over RPI by constituent parts

Sources for Inflation - Relative to RPI  
(CP4: 2008/09-13/14)



*The inflation forecast is broadly the same for categories where Network Rail has high, medium and low purchasing power*

Network Rail's purchasing power	Proportion of expenditure (%) 2006-07 split			Example categories	Median inflation forecast 2006/07-13/14
	Labour	Materials	Total		
High	18.1	1.6	19.7	Signallers, rail operatives	4.4
Medium	2.5	0.9	3.3	Signalling designers, telecom engineers	5.1
Low	37.2	9.4	46.6	Operatives, project managers	4.7
None	0.0	30.4	30.4	Copper, utilities	2.0

- An efficient network operator should be able to manage input price inflation in the sectors where it has high purchasing power
- In the medium to long term, such management of input price inflation ought to be able to prevent inflation being higher than observed in competitive markets
  - achieving inflation below these levels may be possible in the short term but the supply market will need to be able to continue to invest and recruit and so such short term wins would be expected to be unsustainable in the medium to long term
- Network Rail's expenditure is spread across a very wide range of input sectors. We have categorised the expenditure according to a view of Network Rail's level of purchasing power and then summarised the inflation forecasts in these terms
- The median inflation forecast for categories where Network Rail has high purchasing power is similar to the median forecast where Network Rail's purchasing power is lower, consistent with these expectations
- An update of the median inflation forecast has resulted in similar inflation rates for all categories except None, where a change in steel and copper price expectations for 2007/08-08/09 has netted a higher median inflation rate than previous 1.3%

**Comparison between inflation expected to be experienced over CP3 and CP4**

		Labour		Materials, Plant and Other		Total	
		CAGR% CP3	CAGR% CP4	CAGR% CP3	CAGR% CP4	CAGR% CP3	CAGR% CP4
<b>Relative to RPI</b>							
Track	L	0.7	0.1	1.3	(3.0)	1.1	(1.4)
	Med	1.2	2.1	2.1	0.0	1.7	1.1
	H	1.9	4.6	2.9	3.0	2.5	3.8
Signalling	L	1.2	0.8	5.5	(6.9)	2.4	(1.2)
	Med	1.6	2.6	6.6	(2.9)	3.0	1.1
	H	2.3	5.1	7.7	1.0	3.8	4.0
Telecoms	L	0.4	(0.1)	(1.0)	(2.7)	(0.1)	(0.9)
	Med	0.9	1.9	(0.7)	(1.4)	0.4	0.9
	H	1.6	4.5	(0.4)	(0.1)	1.0	3.1
Electrification	L	1.1	0.2	5.8	(4.8)	4.0	(2.8)
	Med	1.6	2.2	6.6	(1.9)	4.7	(0.3)
	H	2.2	4.5	7.3	0.9	5.4	2.4
Plant and machinery	L	n/a	n/a	(0.4)	(1.4)	(0.4)	(1.4)
	Med	n/a	n/a	0.1	(0.1)	0.1	(0.1)
	H	n/a	n/a	0.5	1.3	0.5	1.3
Civils	L	0.5	0.0	(0.1)	(1.9)	0.3	(0.8)
	Med	1.0	2.0	0.4	(0.3)	0.8	1.1
	H	1.7	4.5	0.8	1.3	1.4	3.2
Estates	L	0.6	0.0	1.3	(1.9)	0.9	(0.8)
	Med	1.1	2.0	1.5	(0.4)	1.3	0.9
	H	1.8	4.5	1.8	1.1	1.8	3.0
Other R&E	L	n/a	n/a	(1.5)	(2.3)	(1.5)	(2.3)
	Med	n/a	n/a	(1.1)	(1.2)	(1.1)	(1.2)
	H	n/a	n/a	(0.8)	(0.2)	(0.8)	(0.2)
Maintenance	L	0.4	0.0	0.9	(1.9)	0.6	(0.6)
	Med	0.9	2.0	1.4	(0.1)	1.1	1.3
	H	1.6	4.5	1.9	1.8	1.7	3.6
Opex	L	1.6	0.4	(0.2)	(0.5)	1.1	0.1
	Med	2.2	2.3	0.0	0.0	1.6	1.6
	H	3.1	4.7	0.2	0.5	2.2	3.4
Enhancement management	L	1.9	0.6	n/a	n/a	1.9	0.6
	Med	2.8	2.9	n/a	n/a	2.8	2.9
	H	3.9	5.7	n/a	n/a	3.9	5.7
<b>Total</b>	L	0.8	0.2	1.3	(2.7)	1.0	(0.9)
	Med	1.3	2.2	1.8	(0.6)	1.5	1.1
	H	2.0	4.7	2.4	1.5	2.2	3.5

## Summary of findings for 2008 refresh

- Our forecast is for Network Rail to experience an overall compound annual inflation rate of between 1.7% and 6.2% in CP4 (2009/10 to 2013/14), equating to between (0.9)% and 3.5% over forecast RPI with a median case of 1.1% above RPI
  - labour, which accounts for 61% of Network Rail's total expenditure, is expected to experience a compound annual inflation rate of between 2.9% and 7.5% (equating to between 0.2% and 4.7% p.a. above RPI) with a median case of 2.2% above RPI
  - materials, plant and other expenditures, which account for 39% of expenditure, are expected to experience a compound annual inflation rate of between (0.1)% and 4.2% (equating to between (2.7)% and 1.5% p.a. relative to RPI), with a median case of (0.6%) relative to RPI
- The overall premium to RPI forecast is largely supported either by independent forecasts or by the use of historical data to calculate the historical premium to RPI which are forecast to continue
  - c. (0.9)% of the material, plant and other inflation relative to RPI of (0.6)% (net) is accounted for by independent forecasts
- Our forecast of incremental inflation due to the 2012 Olympics (c. 0.7% p.a. impact on CP4 overall in the South East) is within the range of independent forecasts
- Although Network Rail operates in a number of sectors as the principal buyer in that market, e.g., in signalling and track related industries, the majority of its expenditure is subject to inflationary pressures outside its control
  - c. 20% of expenditure is in sectors where Network Rail has considerable control over inflationary pressures (e.g., by being able to manage industry demand through controlling and planning the profile of work)
  - c. 80% of expenditure is in sectors where Network Rail is a minority buyer and where its expenditure is subject to external inflationary pressures
  - excluding commodity markets, our forecast inflation rates are not materially different between these two types of sector
- The forecast premium to RPI for CP4 of 1.1% is c. 0.1% higher than our 2007 study forecast, reflecting small net changes in labour, material and plant forecasts, and changes in mix of Network Rail's forecast expenditure

Appendix – Summary of inflation forecast – by forecast categories (1 of 3)

Labour	Expenditure (06/07) (£m)	07/08	08/09	09/10	10/11	11/12	12/13	13/14	CP4 CAGR L Med H
		L Med H	L Med H	L Med H	L Med H	L Med H	L Med H	L Med H	
<b>Civil Engineers</b>									
Track / Maintenance	172	1.0 - 1.5 - 2.0	0.0 - 2.0 - 4.9	1.0 - 3.0 - 5.9	1.0 - 3.0 - 5.9	0.0 - 2.0 - 4.9	(0.9) - 1.0 - 2.9	(0.9) - 1.0 - 2.9	0.0 - 2.0 - 4.5
Civils / Estates	103	1.5 - 2.0 - 2.4	1.0 - 3.0 - 5.9	1.0 - 3.0 - 5.9	1.0 - 3.0 - 5.9	0.0 - 2.0 - 4.9	(0.9) - 1.0 - 2.9	(0.9) - 1.0 - 2.9	0.0 - 2.0 - 4.5
<b>Planners and Project Managers</b>									
All asset programmes excluding Plant & Machinery and Other R&E	412	3.2 - 4.7 - 6.6	1.8 - 4.7 - 8.6	1.8 - 4.7 - 8.6	1.8 - 4.7 - 8.6	(0.2) - 1.8 - 3.7	(0.2) - 1.8 - 3.7	(0.2) - 1.8 - 3.7	0.6 - 2.9 - 5.7
<b>Skilled Trades</b>									
Track / Signalling / Maintenance	450	0.9 - 1.4 - 1.8	(0.1) - 1.9 - 4.8	0.9 - 2.8 - 5.8	0.9 - 2.8 - 5.8	(0.1) - 1.9 - 4.8	(1.1) - 0.9 - 2.8	(1.1) - 0.9 - 2.8	(0.1) - 1.9 - 4.4
Civils / Estates	197	1.4 - 1.8 - 2.3	0.9 - 2.8 - 5.8	0.9 - 2.8 - 5.8	0.9 - 2.8 - 5.8	(0.1) - 1.9 - 4.8	(1.1) - 0.9 - 2.8	(1.1) - 0.9 - 2.8	(0.1) - 1.9 - 4.4
<b>Rail Operatives</b>									
Track / Maintenance	425	1.2 - 1.7 - 2.2	0.3 - 2.2 - 5.2	1.3 - 3.2 - 6.1	1.2 - 3.2 - 6.1	0.3 - 2.2 - 5.1	(0.7) - 1.2 - 3.2	(0.7) - 1.2 - 3.2	0.3 - 2.2 - 4.7
<b>Operatives</b>									
Signalling / Telecoms / E&P / Civils / Estates / Maintenance	714	0.5 - 1.0 - 1.5	0.0 - 2.0 - 4.9	1.0 - 3.0 - 5.9	1.0 - 3.0 - 5.9	0.0 - 2.0 - 4.9	(0.9) - 1.0 - 2.9	(0.9) - 1.0 - 2.9	0.0 - 2.0 - 4.5
<b>Telecom Engineers</b>									
Telecoms	28	0.4 - 0.8 - 1.3	(0.1) - 1.8 - 4.8	(0.1) - 1.8 - 4.7	(0.1) - 1.8 - 4.7	(1.1) - 0.8 - 3.8	(1.1) - 0.8 - 2.8	(1.1) - 0.8 - 2.8	(0.7) - 1.2 - 3.8
<b>OHL Linemen</b>									
E&P	27	1.6 - 2.1 - 2.5	1.1 - 3.1 - 5.0	1.1 - 3.0 - 5.0	1.1 - 3.0 - 5.0	1.1 - 3.0 - 5.0	(0.9) - 1.1 - 3.0	(0.9) - 1.1 - 3.0	0.3 - 2.3 - 4.2
<b>Electrical Engineers</b>									
E&P	12	1.1 - 1.6 - 2.1	0.7 - 2.6 - 4.6	0.7 - 2.6 - 4.6	0.7 - 2.6 - 4.6	0.7 - 2.6 - 4.6	(1.3) - 0.7 - 2.6	(1.3) - 0.7 - 2.6	(0.1) - 1.8 - 3.8
<b>Signalling Designers</b>									
Signalling	96	2.2 - 2.7 - 3.2	5.3 - 5.8 - 8.7	4.0 - 5.0 - 7.9	3.9 - 4.9 - 7.8	3.1 - 4.1 - 7.0	1.4 - 3.3 - 5.3	0.7 - 2.6 - 4.6	2.6 - 4.0 - 6.5
<b>Signalling Testers</b>									
Signalling	48	1.5 - 2.0 - 2.5	3.9 - 4.4 - 7.3	2.7 - 3.7 - 6.6	2.7 - 3.6 - 6.6	2.3 - 3.2 - 6.2	1.0 - 2.9 - 4.9	0.7 - 2.6 - 4.6	1.9 - 3.2 - 5.8
<b>Signallers</b>									
Opex	188	1.0 - 1.5 - 2.0	1.0 - 1.5 - 3.5	0.5 - 1.5 - 3.5	0.5 - 1.5 - 3.4	0.5 - 1.5 - 3.4	(0.4) - 1.5 - 3.4	(0.4) - 1.5 - 3.4	0.1 - 1.5 - 3.4

## Appendix – Summary of inflation forecast – by forecast categories (2 of 3)

Materials and Other	Expenditure (06/07) (£m)	07/08		08/09		09/10		10/11		11/12		12/13		13/14		CP4 CAGR L Med H									
		L	Med	H	L	Med	H	L	Med	H	L	Med	H	L	Med		H								
<b>General Operatives</b>																									
Labour component of concrete sleepers	15	(0.2)	-1.0	-2.2	(0.2)	-1.0	-2.2	(0.7)	-1.0	-2.7	(0.7)	-1.0	-2.7	(1.4)	-1.0	-3.4	(1.4)	-1.0	-3.4	(1.0)	-1.0	-3.0			
<b>Average Annual Earning Index</b>																									
Labour component of freight	49	(0.5)	-0.4	-1.4	0.1	-1.1	-2.1	0.1	-1.1	-2.0	0.0	-1.0	-2.0	(0.1)	-0.9	-1.9	(0.2)	-0.8	-1.8	(0.2)	-0.8	-1.8			
<b>Steel</b>																									
Rail, steel sleepers and component of various materials	251	(5.9)	-1.0	-3.8	(5.6)	-0.7	-4.2	(8.8)	-2.0	-4.8	(4.0)	-2.8	-9.7	(7.0)	-0.2	-6.6	(10.0)	-0.3	-9.4	(10.0)	-0.3	-9.4	(8.0)	-0.0	-8.0
<b>Concrete used for Construction</b>																									
Concrete and component of concrete sleepers	54	0.4	-1.4	-2.4	0.5	-1.4	-2.4	0.5	-1.4	-2.4	0.5	-1.4	-2.4	0.5	-1.4	-2.4	0.5	-1.4	-2.4	0.5	-1.4	-2.4	0.5	-1.4	-2.4
<b>Aggregates</b>																									
Aggregates	33	(2.8)	-2.3	-1.9	1.7	-2.2	-2.6	(2.0)	-1.5	-1.0	(2.0)	-1.5	-1.1	(2.1)	-1.6	-1.2	(2.2)	-1.7	-1.3	(2.2)	-1.7	-1.3	(2.1)	-1.6	-1.1
<b>Ballast</b>																									
Ballast	43	(2.7)	-2.2	-1.7	1.8	-2.3	-2.8	(1.8)	-1.3	-0.8	(1.9)	-1.4	-0.9	(2.0)	-1.5	-1.0	(2.1)	-1.6	-1.1	(2.1)	-1.6	-1.1	(2.0)	-1.5	-1.0
<b>RPI</b>																									
Component of concrete sleepers, freight, OHL and third rail materials, and "other"	369	(1.9)	-0.0	-1.9	(2.0)	-0.0	-2.0	(2.0)	-0.0	-2.0	(1.9)	-0.0	-1.9	(1.9)	-0.0	-1.9	(1.9)	-0.0	-1.9	(1.9)	-0.0	-1.9	(1.9)	-0.0	-1.9
<b>Construction Material</b>																									
General construction materials	285	0.3	-0.8	-1.2	0.3	-0.8	-1.3	(1.3)	-0.3	-0.7	(1.4)	-0.5	-0.5	(1.5)	-0.6	-0.4	(3.1)	-0.7	-1.8	(3.1)	-0.7	-1.8	(2.1)	-0.5	-1.0
<b>Signalling Materials</b>																									
General signalling materials	58	(4.4)	-3.4	-2.5	(3.3)	-2.4	-1.4	(3.6)	-2.6	-1.6	(3.6)	-2.6	-1.7	(3.7)	-2.7	-1.8	(3.8)	-2.8	-1.9	(3.8)	-2.8	-1.9	(3.7)	-2.7	-1.7
<b>Copper</b>																									
Copper and component of OHL, point heaters and third rail	52	(4.1)	-0.8	-5.6	(11.0)	-6.1	-1.2	(23.5)	-16.6	-9.8	(17.5)	-10.6	-3.8	(22.1)	-15.3	-8.5	(17.3)	-7.6	-2.1	(12.4)	-2.7	-7.0	(18.7)	-10.7	-2.8
<b>Telecoms Equipment</b>																									
General telecoms equipment	26	(5.1)	-4.2	-3.2	(3.7)	-2.7	-1.7	(3.4)	-2.5	-1.5	(3.5)	-2.5	-1.5	(3.6)	-2.6	-1.6	(3.7)	-2.7	-1.7	(3.7)	-2.7	-1.7	(3.6)	-2.6	-1.6
<b>Utilities</b>																									
Utilities	44	(0.9)	-0.1	-1.0	(0.9)	-0.1	-1.0	(0.9)	-0.1	-1.0	(0.9)	-0.1	-1.0	(0.9)	-0.1	-1.0	(0.9)	-0.1	-1.0	(0.9)	-0.1	-1.0	(0.9)	-0.1	-1.0
<b>Signalling IT</b>																									
Signalling IT	23	(0.7)	-0.2	-0.3	(2.9)	-2.4	-1.9	(4.5)	-3.5	-2.5	(2.9)	-2.0	-1.0	(4.0)	-3.0	-2.1	(4.5)	-2.5	-0.6	(4.1)	-2.2	-0.2	(4.0)	-2.6	-1.3
<b>IT Equipment (Hardware)</b>																									
Office IT equipment (Hardware)	19	(11.3)	-10.8	-10.3	(13.4)	-12.9	-12.4	(13.2)	-12.2	-11.2	(12.9)	-11.9	-10.9	(13.0)	-12.0	-11.0	(14.0)	-12.1	-10.1	(14.0)	-12.1	-10.1	(13.4)	-12.1	-10.7
<b>IT Equipment (Software)</b>																									
Software	31	(1.0)	-0.5	-0.0	(1.0)	-0.5	-0.0	(1.5)	-0.5	-0.5	(1.5)	-0.5	-0.5	(1.5)	-0.5	-0.5	(2.4)	-0.5	-1.5	(2.4)	-0.5	-1.5	(1.9)	-0.5	-0.9
<b>Telecoms</b>																									
General telecoms materials	78	0.1	-0.6	-1.1	(0.6)	-1.4	-3.3	(0.3)	-1.6	-3.6	(0.3)	-1.6	-3.6	(1.2)	-0.7	-2.7	(1.7)	-0.3	-2.2	(1.7)	-0.3	-2.2	(1.1)	-0.9	-2.8
<b>Fixed Zero Inflation</b>																									
Component of concrete sleepers	8	(4.5)	-3.3	-2.1	(3.5)	-2.2	-1.0	(4.2)	-2.5	-0.8	(4.2)	-2.5	-0.8	(4.3)	-2.6	-0.9	(5.1)	-2.7	-0.3	(5.1)	-2.7	-0.3	(4.6)	-2.6	-0.6

**Appendix – Summary of inflation forecast – by forecast categories (3 of 3)**

Plant	Expenditure (06/07) (£m)	07/08	08/09	09/10	10/11	11/12	12/13	13/14	CP4 CAGR L Med H
		L Med H	L Med H	L Med H	L Med H	L Med H	L Med H	L Med H	
<b>Driver wages</b>									
Labour component of plant	235	0.3 - 0.8 - 1.3	(0.1) - 1.8 - 3.8	0.8 - 2.8 - 4.7	0.8 - 2.8 - 4.7	(0.1) - 1.8 - 3.8	(1.1) - 0.8 - 2.8	(1.1) - 0.8 - 2.8	(0.1) - 1.8 - 3.8
<b>PPI</b>									
Capital and maintenance cost components of plant	399	(1.7) - (0.8) - 0.2	(1.0) - 0.0 - 1.0	(1.8) - (0.8) - 0.2	(2.0) - (1.1) - (0.1)	(2.1) - (1.1) - (0.2)	(2.2) - (1.2) - (0.3)	(2.2) - (1.2) - (0.3)	(2.1) - (1.1) - (0.1)
<b>RPI</b>									
Fuel in plant	12	(1.9) - 0.0 - 1.9	(2.0) - 0.0 - 2.0	(2.0) - 0.0 - 2.0	(1.9) - 0.0 - 1.9	(1.9) - 0.0 - 1.9	(1.9) - 0.0 - 1.9	(1.9) - 0.0 - 1.9	(1.9) - 0.0 - 1.9
<b>E&amp;P Plant</b>									
E&P Plant	44	(1.0) - (0.1) - 0.7	(2.1) - (0.7) - 0.6	(3.5) - (2.1) - (0.8)	(1.2) - 0.2 - 1.5	(2.7) - (1.3) - 0.0	(2.1) - (0.8) - 0.6	(1.6) - (0.2) - 1.1	(2.2) - (0.9) - 0.5

**Appendix – Summary of weightings – by forecast categories (1 of 2)**

Labour	CP4 CAGR Relative to RPI L - Med - H	Track Weight	Signalling Weight	Telecoms Weight	Electrification Weight	Plant & Mach. Weight	Civils Weight	Estates Weight	Other R&E Weight	Maintenance Weight	Opex Weight	Enhancements Weight
Civil Engineers	0.0 - 2.0 - 4.5	28%					23%	24%		1%		
Planners and Project Managers	0.6 - 2.9 - 5.7	8%	10%	13%	12%		5%	5%		4%	56%	100%
Skilled Trades	(0.1) - 1.9 - 4.4	31%	10%				43%	49%		31%		
Rail Operatives	0.3 - 2.2 - 4.7	33%								32%		
Operatives	0.0 - 2.0 - 4.5		50%	66%	43%		29%	21%		32%		
Telecom Engineers	(0.7) - 1.2 - 3.8			21%								
OHL Linemen	0.3 - 2.3 - 4.2				31%							
Electrical Engineers	(0.1) - 1.8 - 3.8				14%							
Signalling Designers	2.6 - 4.0 - 6.5		20%									
Signalling Testers	1.9 - 3.2 - 5.8		10%									
Signallers	0.1 - 1.5 - 3.4										44%	
CP4 Labour Relative to RPI CAGR	L Med H	0.1 2.1 4.6	0.8 2.6 5.1	(0.1) 1.9 4.5	0.2 2.2 4.5	n/a n/a n/a	0.0 2.0 4.5	0.0 2.0 4.5	n/a n/a n/a	0.0 2.0 4.5	0.4 2.3 4.7	0.6 2.9 5.7

**Appendix – Summary of weightings – by forecast categories (2 of 2)**

Materials, Plant and Other	CP4 CAGR Relative to RPI L - Med - H	Track Weight	Signalling Weight	Telecoms Weight	Electrification Weight	Plant & Mach. Weight	Civils Weight	Estates Weight	Other R&E Weight	Maintenance Weight	Opex Weight	Enhancement Weight
General Operatives	(1.0) - 1.0 - 3.0	2%								0%		
Average Annual Earnings	(0.1) - 0.9 - 1.9	9%										
Driver Wages	(0.1) - 1.8 - 3.8	13%				34%	22%	9%		17%		
Steel	(8.0) - (0.0) - 8.0	28%	21%		24%		6%			6%		
Concrete	0.5 - 1.4 - 2.4	2%	21%				3%			0%		
Aggregates	(2.1) - (1.6) - (1.1)						18%					
Ballast	(2.0) - (1.5) - (1.0)	7%								2%		
RPI (Fuel and other)	(0.5) - 0.0 - 0.5	7%			5%	2%	1%	1%	75%	1%	100%	
PPI (Plant Capital and Maintenance)	(2.1) - (1.1) - (0.1)	24%				63%	40%	16%		32%		
Construction Materials	(2.1) - (0.5) - 1.0	7%		57%	15%		10%	74%		16%		
Signalling Materials	(3.7) - (2.7) - (1.7)		24%		12%							
Copper	(18.7) - (10.7) - (2.8)		21%		11%							
Telecoms Equipment	(3.6) - (2.6) - (1.6)			43%								
Utilities	(0.9) - 0.1 - 1.0									9%		
Signalling IT	(1.4) - (0.0) - 1.4		13%									
IT Equipment (Hardware)	(13.4) - (12.1) - (10.7)								10%			
IT Equipment (Software)	(1.9) - (0.5) - 0.9								16%			
Telecoms	(1.1) - 0.9 - 2.8									16%		
E&P Plant	(2.2) - (0.9) - 0.5				34%							
Fixed Zero Inflation (Plant)	(4.6) - (2.6) - (0.6)	2%								0%		
CP4 Materials, Plant and Other Relative to RPI CAGR	L Med H	(3.0) 0.0 3.0	(6.9) (2.9) 1.0	(2.7) (1.4) (0.1)	(4.8) (1.9) 0.9	(1.4) (0.1) 1.3	(1.9) (0.3) 1.3	(1.9) (0.4) 1.1	(2.3) (1.2) (0.2)	(1.9) (0.1) 1.8	(0.5) 0.0 0.5	n/a n/a n/a