Annex C to Openreach's Response to the
Ofcom Second Consultation of 5 December 2008
(Non-confidential version)

BT Openreach Efficiency Review

Comments on KPMG report

5 March 2009

NON-CONFIDENTIAL VERSION

ERNST & YOUNG

Third Party Disclaimer

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1. Executive summary

1.1 Background and scope

Ofcom is currently consulting on the regulated financial framework for Openreach[1]. As part of this consultation, Ofcom is proposing to impose charge controls on key Openreach services including Metallic Path Facilities (MPF) and Wholesale Line Rental (WLR). To derive the appropriate level for the charge controls, Ofcom has reviewed cost forecasts provided by Openreach, and is seeking to understand to what extent Openreach is operating efficiently and what scope may exist for future improvements in cost performance.

Ofcom has commissioned KPMG to conduct a benchmarking exercise in respect of Openreach's operating performance[2], with the aim of understanding the annual efficiency gains that Openreach may be expected to achieve over the period of any charge controls. This study is referred to in this document as the "KPMG report". Ernst & Young understands that Ofcom may take into account KPMG's calculations when setting an annual efficiency adjustment to apply to its forecast of Openreach's cost, which, in turn, may play a role in determining the level of the charge controls.

Openreach has commissioned Ernst & Young to provide a qualitative commentary on the approach taken by KPMG and on its views as to the resulting scope for annual efficiency gains within Openreach. Ernst & Young's analysis is based on the confidential version of KPMG's report, as well as a subsequent meeting between Ernst & Young, BT, KPMG and Ofcom on 19 February 2009 to discuss the approach taken by KPMG and the conclusions drawn in its report.

1.2 Principles of efficiency

A standard charge control should, in theory, be set at a level that: a) sets price equal to economic cost by the end of the control; b) encourages efficient competitive entry and exit; and c) creates the right incentives to invest for both new entrants and the regulated firm.

The role of an efficiency adjustment in the context of a charge control is to: a) simulate the effect of the forces that in a competitive market would encourage productivity gains and innovation over time – defined as frontier shift efficiencies; and b) adjust for differences in cost performance that exist at a point in time between the regulated and an efficient firm – defined as catch up efficiencies.

The relative efficiency of a firm can be determined by comparing its cost performance against a representative benchmark. Such a comparison should take into account the environment and industry in which the firm operates (eg, economies of scale, demographics and geography).

1.2.1 KPMG's approach

The range for potential efficiency gains calculated by KPMG has two elements: a) the potential efficiency gain by cost category, when considering Openreach's cost performance against a comparator set, which we refer to as "catch up" and; b) productivity improvements over time, which we refer to as "frontier shift". Its approach to these elements is as follows:

- Catch up efficiency: KPMG compares Openreach's operating cost on a disaggregated basis against a selection of benchmarks and benchmarking studies. Where Openreach's costs are calculated as being higher, the difference is assumed to represent a potential efficiency gain; and

- Frontier shift: KPMG includes an annual frontier shift element of 2.1% - 2.3% based on labour productivity figures for the UK economy sourced from the OECD.

KPMG concludes that:

[1] Ofcom "A New Pricing Framework for Openreach – Second Consultation" 5 December 2008
http://www.ofcom.org.uk/consult/condocs/openreachframework/

[2] The scope of KPMG's analysis is cash operating costs, and hence excludes depreciation

> *"Openreach would need to make efficiency gains of 3.2% - 3.5% cumulatively per annum between 2008 and 2013 on its operating cost base to bring this in line with that of an organisation operating in a competitive environment"*[3]

This range implies an annual reduction in Openreach operating costs of some £700m by 2013 (in 2007/08 prices), a reduction of 21% from current levels (assuming constant volumes).

1.3 Our conclusions

There exists a risk that the efficiency gains calculated by KPMG may not be appropriate in the context of charge control(s) applied to key Openreach services. This is because:

- KPMG's analysis, by excluding capital employed, does not take an holistic view of efficiency, and hence does not take into account the inherent trade offs between capital, labour and other inputs;

- KPMG has identified benchmarks for some 35% of Openreach's operating cost base. KPMG was unable to identify wholly appropriate benchmarks for a further 56% of operating cost and therefore applied a process of "extrapolation", such that it applied its available benchmarks to the remainder of the cost base[4]. As a result of this extrapolation, there is a risk that inappropriate benchmarks are applied to a significant portion of Openreach's cost base, resulting in erroneous conclusions in respect of the scope for efficiency gains;

- The benchmarks identified by KPMG, rather than being drawn from a representative and comparable sample – such as from other fixed telecommunication providers – are taken from general economy-wide operating cost benchmarks. There is therefore a risk that erroneous conclusions are drawn on the scope for efficiency gains as the benchmark data may not be not directly comparable to the telecoms sector generally, and Openreach specifically;

- We understand that KPMG has adopted a labour productivity measure of 2.1% - 2.3% as the basis for its estimate of frontier shift. This measure does not provide an holistic view of efficiency, as it only reflects historic labour productivity gains. Since Openreach's operating costs includes a significant portion of non-labour costs items, the productivity measure may not be consistent with the cost base to which it is to be applied. It may hence be more appropriate for a multi-input measure, such as Total Factor productivity (TFP), to be applied in this context. Such a measure[5] yields a figure of 1.1% for a comparable period to that used by KPMG in respect of its calculation; and

- Regulatory precedent from Ofcom may suggest that a lower figure for frontier shift would be more appropriate. For example, Ofcom has recently adopted a figure of 1.5% in determining the regulated price of WLR services and in relation to the 2005 Network Charge Control.

[3] KPMG report - Section 3
[4] The remaining 9% of cost is excluded on the basis that these costs were not controllable by BT (eg, Cumulo rates)
[5] An average Multi factor productivity figure sourced from the OECD for the years 1985 – 2005

2. Introduction

2.1 Background

Ofcom is currently consulting on the regulated financial framework for Openreach[6]. As part of this consultation, Ofcom is proposing to impose charge controls on the key Openreach services including Metallic Path Facilities (MPF) and Wholesale Line Rental (WLR). To derive the appropriate level for the charge controls, Ofcom has reviewed cost forecasts provided by Openreach and is seeking to understand to what extent Openreach is operating efficiently and what scope may exist for future improvements in cost performance.

As part of the first consultation, Ofcom commissioned NERA, an economic consultancy, to carry out a comparative efficiency assessment of Openreach. In order to assess the relative efficiency of Openreach, NERA collated a benchmark data set that included data on costs, network size and quality of service variables for around 70 US Local Exchange Carriers (LECs)[7]. The upper decile for the LECs is considered the frontier for efficiency[8]. NERA concluded that:

> *"Openreach is somewhat more efficient than the upper decile of the US LECs."*

But:

> *"The difficulty of defining a reliable basis for comparing Openreach with the LECs suggests that the results of this study may be regarded with some caution."*[9]

Ofcom has commissioned KPMG to conduct a benchmarking exercise in respect of Openreach's operating performance[10]. The aim is to understand the scope for real annual efficiency gains that Openreach could achieve over the period of the charge control. This study is referred to in this document as the "KPMG report".

2.2 Scope of our work

Ernst & Young has been engaged by BT to provide a qualitative review of KPMG's analysis. We comment on the overall approach taken by KPMG, as well as providing a qualitative commentary on its calculations and conclusions. It is not within the scope of our work to suggest an alternative range for potential efficiency gains. Our analysis is based on the confidential version of KPMG's report, as well as on a subsequent meeting between Ernst & Young, BT, KPMG and Ofcom on 19 February 2009 to discuss the approach taken by KPMG and the conclusions drawn in its report.

The remainder of this report sets out our comments. In Section 3 of this document we set out the principles of efficiency in the context of charge controls; in Section 4 we provide a review of KPMG's general approach in respect of those principles; and in Appendix A we provide detailed comments on KPMG's approach to individual cost items.

[6] Ofcom "A New Pricing Framework for Openreach – Second Consultation" 5 December 2008
http://www.ofcom.org.uk/consult/condocs/openreachframework/
[7] NERA "The comparative efficiency of BT Openreach" 17 March 2008
http://www.ofcom.org.uk/consult/condocs/llcc/efficiency.pdf
[8] The upper decile has traditionally been seen as the benchmark for efficiency
[9] NERA "The comparative efficiency of BT Openreach" 17 March 2008 – Executive Summary – Conclusions
[10] The scope of KPMG's analysis is cash operating costs, and hence excludes depreciation

3. Efficiency in the context of charge controls

3.1 Introduction

In this section, we set out the principles and role of an efficiency adjustment in the context of charge controls in the telecoms sector, before discussing an appropriate means of determining relative efficiency in such a context.

3.2 Principles of efficiency

The role of an efficiency adjustment in the context of a charge control is to simulate the effects of a competitive market and thereby lead to efficiency of production and prices. There are potentially two elements to an efficiency adjustment;

- Frontier shift: this is the annual improvement in efficiency achieved by already-efficient firms as a result of, for example, innovation in technology or improvements in operating techniques. These efficiencies are separate from reductions in unit costs that are driven by changes in volumes and/or input price changes; and

- Catch up: this represents the difference between the efficiency of the regulated firm against that of a firm operating in accordance with some definition of benchmark efficiency. An efficiency adjustment can be set to reduce this gap and so set the appropriate signals and incentives for cost efficiency over the course of the charge control.

An effective charge control should, in theory, be set at a level that: a) sets price equal to economic cost by the end of the period[11]; b) encourages efficient competitive entry; and c) creates the right incentives to invest for both new entrants and the regulated firm.

There exist risks associated with setting the level of a charge control on the basis of cost forecasts for the regulated firm. If the charge control is set too low then there is a risk of inefficient competition, whereby wholesale inputs provided below cost encourage inefficient levels of entry and investment. Conversely, a charge control set too high results in super-normal profits for the regulated firm and higher charges to end users.

In this context Ofcom, as part of its 2006/07 review of the market for Mobile Call termination, identifies a potential asymmetry of risk in setting charge controls[12]:

> *"there is potentially an asymmetry in the risks and impact of setting charges that turn out to be too low. Charge controls which, in practice, fail to enable recovery of efficient costs may have an adverse impact on investment, which would be detrimental to consumers generally."*

In considering the conclusions drawn by KPMG, it may therefore be appropriate to be mindful of such asymmetries when seeking to identify possible efficiency gains in the face of incomplete or unavailable data.

3.3 Calculating an efficiency adjustment

A common approach used to calculate relative efficiency is to compare the regulated firm against an appropriate benchmark (or set of benchmarks). Various techniques for doing so exist, ranging from a simple cost/unit cost of production or ratio comparisons through to more sophisticated statistical and econometric comparative techniques such as stochastic frontier analysis.

A robust efficiency benchmarking exercise should satisfy the following criteria:

- It should take an holistic approach by considering both capital and operating costs;

- The benchmarks should be based on a representative sample; and

[11] Although within a charge control price may be set equal to cost prior to the end

[12] Ofcom "Mobile Call Termination – Statement" 27 March 2007

- The data from the benchmarks should be normalised where appropriate to ensure that it is comparable.

These attributes are discussed below.

3.3.1 Holistic approach to relationship between inputs and outputs

When making business decisions, a firm will seek an economically efficient input mix, this being the least costly combination of inputs that can produce the required output. This efficient combination is found where the marginal physical products of the inputs are proportional to their respective input prices such that any other combination of inputs, holding output constant, would lead to an increase in total cost[13].

There exist trade offs between capital, labour and other inputs. For example, where labour costs are low, a firm may employ a higher proportion of labour in its operations relative to capital inputs such as plant and machinery. As a result, a simple comparison of operating efficiency (for example number of employees per machine) may give misleading results, as in areas of low labour costs it may make commercial and economic sense to employ relatively more labour than would be efficient in other markets.

Therefore, an holistic approach should be taken when calculating relative efficiency that considers a multi-input measure such as Total Factor Productivity (TFP)[14]. The focus on a single input (or subset of inputs) gives rise to the risk that the calculated scope for efficiency gains does not accurately reflect the relative efficiency of the firm under consideration.

3.3.2 Representative sample

When constructing a sample set for benchmarking purposes, there exist three main considerations:

- Sample size: a benchmark based on an average of a sample of comparators will result in a degree of uncertainty as to the validity of that average as a basis for comparison. This uncertainty can be reduced by increasing the sample size as this reduces the risk of outliers in the data set distorting the results;

- Representative selection: the selection of the sample set in the context of efficiency analysis should consider the degree to which the members of the sample set are materially similar (eg, industry in which it operates, size of firm and so on) to the firm to be assessed. Material differences between the firm and the sample set, unless addressed through normalisation, may give rise to erroneous results, as the efficiency adjustment could reflect uncontrollable differences between comparators rather than true inefficiencies[15]; and

- Consistency: where a series of efficiency comparisons are made on a series of inputs in turn, the sample set should be consistent across all benchmarks to ensure an appropriate base for comparison. In the absence of a consistent sample set there is a risk of bias in benchmark selection that ignores the trade offs that exist between inputs, such as that between labour and capital discussed above.

There is a balance to be struck between sample size and the extent to which the sample is representative. A small but representative sample gives rise to the risk that the average is not statistically valid as basis for comparison. Conversely, a larger but less representative sample is more difficult to normalise to ensure comparability.

A representative sample, in the context of benchmarking the efficiency of a telecoms company such as Openreach, may reasonably consist of other telecoms companies. Use of a general economy wide benchmark is likely to increase the risk that material differences exist between the regulated firm and the benchmark.

[13] An introduction to the economics of a firm can be found, for example, in "Microeconomics – Third Edition" – Katz and Rosen Chapter 9
[14] The growth in total output not explained by growth in inputs
[15] For example, in Section 2.1 we discussed how NERA commented that differences between Openreach and the US LECs meant that the results of its study should be treated with caution

3.3.3 Comparable data

The third step in establishing an appropriate benchmark is to conduct a normalisation exercise in respect of the representative sample set to ensure that the data used is comparable with the firm to be assessed. In general, the more representative the sample, the more straightforward it is to normalise the data.

A number of reasons exist as to why costs may vary between different firms in different industries or countries. These differences in cost can be broadly categorised into two groups:

- Uncontrollable cost factors: cost differences that are the result of specific operating conditions that cannot be avoided and which represent genuine differences across the sample set; and
- Inefficiencies: cost differences which could be eliminated by improved operations, such that the same level of output would be produced for a lower level – or more efficient mix – of inputs.

In order to produce meaningful quantitative results, it is necessary to distinguish between these two sources of potential difference across the sample set and to normalise for uncontrollable cost factors so as to identify genuine inefficiencies. For example, Section 3 of the Ofcom-commissioned NERA report, referred to above, sets out the adjustments (such as the removal of retail costs) made to the data set to ensure comparability between Openreach and the benchmarks[16].

In the context of the telecoms sector, there exist a number of country-and/or operator-specific differences that may need to be taken into account to ensure comparability across operators. These include:

- Economies of scale and scope: the size of organisation, in terms of volumes of lines/minutes, as well as the breadth of the service portfolio, may influence average unit costs;
- Input costs: the relative cost of inputs may be different between countries; for example labour rates differ substantially across countries;
- Allowable return on capital: the differences in the cost of capital resulting from different risk profiles or financing structures will affect the size of the capital element of the cost base;
- Accounting treatment: the accounting policies (eg, asset lives, approach to capitalisation) will affect the level of annualised costs;
- Urbanisation and network structure: higher levels of urbanisation are likely to result in lower network unit costs;
- Network modernisation: a modern network may require less operating support and hence cost, but may have a larger capital base on which a return is required;
- Demand characteristics: highly variable demand may result in lower network utilisation and require additional investment in spare capacity, and hence result in higher unit costs; and
- Required grade of service: the higher the quality of service required, typically the higher the cost.

Rigorous analysis of the systematic differences can help to cleanse the data for the purposes of maximum comparability. In the absence of such adjustments, there exists a risk of incomparability across the sample set which may lead to erroneous conclusions being drawn from the output of the benchmarking analysis. For example, a larger firm may achieve economies of scale in production and therefore generate a higher level of output relative to inputs compared with a smaller firm. This would lead to the larger firm having a lower unit cost relative to the smaller firm as a consequence of exploitation of scale economies which, unless correctly identified as an uncontrollable cost factor, may lead to the potentially erroneous conclusion that the smaller firm is relatively inefficient.

[16] NERA "The comparative efficiency of BT Openreach" 17 March 2008

4. Review of KPMG's approach

4.1 Introduction

In this section, we set out our comments on the general approach taken by KPMG in calculating the efficiency gains that Openreach could achieve between 2008 and 2013. This is initially with reference to the principles set out in Section 3, before providing some additional comments on the use of "extrapolation" by KPMG and its assumptions in respect of productivity improvements.

4.2 Summary of KPMG's aproach

Ofcom has commissioned KPMG to conduct a benchmarking exercise in respect of Openreach's operating performance with the aim of understanding the annual efficiency gains that Openreach may be expected to achieve over the period of any charge controls.

The range for efficiency gains calculated by KPMG has two elements: a) the potential efficiency gain by cost category, which we refer to as "catch up"; and b) productivity improvements over time, which we refer to as "frontier shift". Our understanding of KPMG's approach to these elements is described below.

4.2.1 Catch up efficiency

We understand that KPMG calculates the potential for efficiency gain by cost category by comparing Openreach's operating costs for the financial year 2007/08 with benchmarks obtained for the year 2006/07. To address timing differences KPMG has extrapolated its benchmarks to 2007/08 by applying its annual productivity assumption of 2.1% – 2.3%.

KPMG has identified what it considers to be directly comparable benchmarks for some 35% of Openreach's operating cost base. Then, in an exercise referred to as "extrapolation", KPMG uses these same benchmarks, in the absence of other, potentially more appropriate data, to analyse a further 56% of operating costs. KPMG has excluded 9% of the in scope costs on the basis that they represent cost that Openreach cannot influence (eg, Cumulo rates).

The output of this analysis, which is the percentage that Openreach operating costs are in excess of the calculated benchmark (on a cost weighted average basis), is considered to be the potential for catch up efficiencies.

4.2.2 Frontier shift efficiency

In its analysis, KPMG has assumed that annual productivity improvements for Openreach should be in line with the UK economy as a whole. KPMG has therefore sourced a labour productivity figure (defined as the change in real GDP per worker)[17] from the OECD which gives a range for of 2.1% – 2.3%[18]. KPMG uses this as a basis for the annual efficiency improvements that Openreach is expected to achieve during the charge control period.

4.2.3 Total efficiency gain

The potential efficiency gain (including both catch up and frontier shift elements) is calculated for the five year period 2008 – 2013 for a series of individual cost categories, each taken in turn.

The total potential efficiency gain is then calculated as the cost weighted average of the efficiency gain required for each cost category. Finally, this total gain is compounded over the five year period 2008 – 2013.

The output is a range for annual efficiency gains of 3.2% – 3.5% for the five year period 2008 – 2013. This range implies an annual reduction in Openreach operating costs of some £700m by 2013 (in 2007/08 prices), a reduction of 21% from current levels (assuming constant volumes).

[17] http://stats.oecd.org/WBOS/index.aspx?DatasetCode=CSP2008
[18] KPMG report, paragraph 3.1.1

4.3 Comments on KPMG's approach

In this section, we consider the characteristics of KPMG's approach with reference to a standard approach to assessing relative efficiency, described above.

4.3.1 Holistic approach to the relationship between inputs and output

KPMG has limited its benchmarking exercise to an assessment of Openreach's operating costs (although some capitalised labour has been included in its assessment of in scope costs – see Appendix A.1). This approach fails to recognise the trade offs that exist when firms make investment and operating decisions in relation to the relative proportion of capital, labour and other inputs. For example, Openreach faces a trade off, when considering the number of vehicles to lease (as an operating expense), between leasing more vehicles or investing (as a capital expense) in advanced field force management systems that enable more efficient routing of existing vehicles. The failure by KPMG to take such trade offs into account in its approach, by focusing exclusively on operating costs, results in a risk that the calculated efficiency gains do not reflect the true and holistic relative efficiency of Openreach compared with an appropriate benchmark.

Further, KPMG's approach is to compare Openreach costs against a set of benchmarks without considering the productivity of the various operating inputs. For example, KPMG's assessment of salary costs should be seen in the wider context of labour productivity; Openreach staff may get paid higher salaries than the benchmark but they may also be more productive.

4.3.2 Representative sample

The establishment, maintenance and operation of a telecommunications business, and in particular the provision of functionally separate access and backhaul services (such as the services Openreach provides) involves a number of specific roles, responsibilities, and activities as well as specialised investment.

However, KPMG has used a number of generic or economy wide benchmarks to assess the relative efficiency of Openreach in respect of the individual elements of Openreach's operating costs. Such an approach risks drawing upon a sample which does not take into account the specific characteristics of the telecoms sector, thereby presenting a risk that conclusions drawn from comparisons are erroneous. For example, in considering the efficiency of Openreach pay structure, KPMG has used "Hays Facilities management & infrastructure engineer's salary guide", which is a general benchmark for infrastructure engineers. However, the skills required for Openreach's engineering field force will reflect its specific training, roles and responsibilities. As a consequence, a specific labour market will exist for telecoms engineers distinct from, for example, the water or gas engineer labour markets. Each market will have specific characteristics in terms of demand and supply, and hence the market price for labour will differ by industry. For example, if one sector requires more investment in training, has fewer skilled engineers and demand is high due to, for example, significant investment in new networks, then salaries may be higher than in another sector. A simple comparison of Openreach field force salaries with a UK cross industry average will therefore not fully reflect these industry-specific characteristics, such that the benchmark against which Openreach is compared may be either too high or too low to provide an accurate assessment of Openreach's scope for efficiency gains.

Further, Ernst & Young understands that KPMG has used different benchmarks and studies to assess Openreach's efficiency in respect of individual cost categories, on a case by case basis[19]. There exists a risk in such an approach that Openreach is compared against a level of operating efficiency which is unachievable in the aggregate as it would not reflect the trade offs that exist between different inputs, as describe above.

4.3.3 Comparable sample

KPMG, having identified general benchmarks for Staff costs, IT costs, Fleet costs and Corporate Overheads, does not normalise the benchmarks to ensure that they are comparable with Openreach. For example, Openreach's status as a functionally separate business might be expected to limit its ability to exploit economies of scale in central functions such as HR or Finance compared with any "integrated" comparators, and therefore to ensure comparability the benchmark data may require adjustment to account for this. Absent any appropriate

[19] For example, it uses Hays as a source for Operations and Legal salaries, Huntress for Human resource costs, the Corporate Forum for IT costs and so on

adjustments, there is a risk that the benchmark against which Openreach is compared could be either too high or too low, and therefore conclusions in respect of Openreach's relative efficiency may be erroneous.

4.4 Use of "extrapolation"

KPMG has identified benchmarks for some 35% of Openreach's operating cost base. KPMG was unable to identify fully comparable benchmarks for a further 56% of operating cost and therefore, applied a process of "extrapolation" such that it applied its available benchmarks to the remainder of the cost base[20]. As a result, KPMG's approach gives rise to the risk that inappropriate benchmarks are applied to a significant proportion of Openreach's cost base.

For example, Ernst & Young notes that KPMG extrapolates its IT Services benchmark by applying it to a number of internal cost of sales categories, which account for 32% of total operating costs[21]. The internal cost of sales categories represent transfer charges from other BT Lines of Business for asset related costs such as line cards and other electronics, as well as costs related to accommodation, power and ventilation. Therefore, the use of IT Services as a benchmark for these cost categories may be inappropriate and may therefore give rise to erroneous results and lead to inappropriate conclusions being drawn as to the potential efficiency gains achievable by Openreach.

Further, the fact that inappropriate benchmarks may have been applied to a significant proportion of Openreach's cost base implies that the risk of error, in the conclusion on efficiency gains, may be material.

4.5 KPMG's productivity assumption

4.5.1 Annual productivity gain

KPMG has based its range for the efficiency adjustment of 3.2% - 3.5% on an assumption of annual average productivity gains sourced from the OECD of between 2.1% and 2.3%[22]. In the context of a charge control this represents the frontier shift element of the efficiency adjustment. This range is the annual labour productivity for the UK economy (real GDP per worker)[23]. The lower bound of the range (2.1%) is based on a 20-year historical average (1987 – 2006). The upper bound (2.3%) is calculated over a shorter period to reflect productivity growth during times of recession[24].

The scope of KPMG's analysis includes all operating costs, not just labour costs. Therefore, a labour specific productivity measure is not comparable with the cost to which the productivity measure is being applied, and as such it may represent an s inappropriate measure of frontier shift for Openreach's (labour and non-labour) operating costs.

The OECD also provides information on annual multi-factor productivity[25] improvements in the UK, which have historically been around 1% per annum[26]. This may represent a more appropriate measure than labour productivity, given that the productivity figure is applied to both pay and non-pay operating costs.

4.5.2 Regulatory precedent

The table below sets out recent precedent on frontier shift efficiency adjustments that have been applied by Ofcom in the context of setting charge controls.

Price control	Year	Productivity Factor

[20] The remaining 9% of cost is excluded on the basis that these costs were not controllable by BT (eg, Cumulo rates)
[21] KPMG Report, Appendix I
[22] KPMG report, paragraph 3.1.1
[23] http://stats.oecd.org/WBOS/index.aspx?DatasetCode=CSP2008
[24] An average of the figures for the five year periods of 1974 – 1979, 1980 – 1985, 1990 - 1995
[25] OECD provides information on labour productivity measure as GDP per hour worked and multi-factor productivity, which is computed as the difference between the rate of change of output and the rate of change of total inputs
[26] 1985 – 2005 average Multi-factor productivity for the UK was 1.1%

Review of BT's Network Charge Controls[27]	2005	1.50%
Wholesale Line Rental: Reviewing and setting charge ceilings for WLR[28]	2006	1.50%

Ofcom, in respect of both the 2005 Network Charge Control and its previous charge ceiling for WLR, applied an annual frontier shift efficiency adjustment of 1.5% to its forecast of BT's costs. Ernst & Young notes that Ofcom, in the "Review of BT's Network Charge Controls – Statement 18 August 2005", stated that:

> "*To the extent that possibilities for cost reductions in access are relatively limited, it might be thought likely to be an underestimate of core network cost reductions."*[29]

Openreach is the "access" business of BT and therefore, given that the average frontier shift for BT as a whole is assumed to be 1.5% in the above context, the appropriate measure for Openreach may, in line with Ofcom's statement, be below this average. Ofcom's conclusion may be relevant in the context of the charge controls on Openreach, given that the nature, mix, and level of services provided by Openreach have not fundamentally changed since 2005/06 when the statement was made.

4.5.3 Productivity in a recession

We understand that the high end of KPMG's range for annual productivity improvements (2.3%) is intended to reflect the impact of a recession on productivity gains[30]. This figure is an average of the labour productivity growth over three six year periods in which the UK was in recession, these being 1974 – 1979, 1980 – 1985, and 1990 – 1995. The implication of this analysis appears to be that from the start to the end of a recession annual productivity gains may be higher than under normal economic circumstances.

For the higher end of KPMG's productivity range to be valid in the context of charge control(s) on Openreach services, Ofcom would need confidence that the start and end dates of its charge control are at a comparable point in the current economic cycle to that reflected in the historic averages. This is because short term averages are highly sensitive to the choice of starting and ending year. For example, the average labour productivity for the period 1987 – 1992 was 1.7%, compared with 2.5% for the period 1990 – 1995. There is therefore a risk, given the uncertainty as to the potential scale, duration and timing of the current recession, that the higher end of KPMG's productivity range may not be appropriate to be applied in the context of the charge control(s) on Openreach services.

4.6 Our conclusions

There exists a risk that the efficiency gains calculated by KPMG may not be appropriate in the context of charge control(s) applied to key Openreach services. This is because:

- KPMG's analysis, by excluding capital employed, does not take an holistic view of efficiency, and hence does not take into account the inherent trade offs between capital, labour and other inputs;
- KPMG has identified benchmarks for some 35% of Openreach's operating cost base. KPMG was unable to identify wholly appropriate benchmarks for a further 56% of operating cost and therefore applied a process of "extrapolation", such that it applied its available benchmarks to the remainder of the cost base[31]. As a result of this extrapolation, there is a risk that inappropriate benchmarks are applied to a significant portion of Openreach's cost base, resulting in erroneous conclusions in respect of the scope for efficiency gains;
- The benchmarks identified by KPMG, rather than being drawn from a representative and comparable sample – such as from other fixed telecommunication providers – are taken from general economy-wide

[27] http://www.ofcom.org.uk/consult/condocs/charge/statement/
[28] http://www.ofcom.org.uk/consult/condocs/wlrcharge/statement/statement.pdf
[29] Review of BT's Network Charge Controls – 18 August 2005 – Paragraph A6.82
[30] KPMG report Section 3.1.1
[31] The remaining 9% of cost is excluded on the basis that these costs were not controllable by BT (eg, Cumulo rates)

operating cost benchmarks. There is therefore a risk that erroneous conclusions are drawn on the scope for efficiency gains as the benchmark data may not be not directly comparable to the telecoms sector generally, and Openreach specifically;

- We understand that KPMG has adopted a labour productivity measure of 2.1% - 2.3% as the basis for its estimate of frontier shift. This measure does not provide an holistic view of efficiency, as it only reflects historic labour productivity gains. Since Openreach's operating costs includes a significant portion of non-labour costs items, the productivity measure may not be consistent with the cost base to which it is to be applied. It may hence be more appropriate for a multi-input measure, such as Total Factor productivity (TFP), to be applied in this context. Such a measure[32] yields a figure of 1.1% for a comparable period to that used by KPMG in respect of its calculation; and

- Regulatory precedent from Ofcom may suggest that a lower figure for frontier shift would be more appropriate. For example, Ofcom has recently adopted a figure of 1.5% in determining the regulated price of WLR services and in relation to the 2005 Network Charge Control.

[32] An average Multi factor productivity figure sourced from the OECD for the years 1985 – 2005

Appendix A Detailed comments

In the main body of this report, Ernst & Young provides comments on the general approach adopted by KPMG in assessing the potential efficiency gains achievable by Openreach. In this appendix, we provide comments on the detail of KPMG's approach to identifying benchmarks and establishing its views of potential efficiencies for the individual cost items. Our review provides comment on the following areas:

- In scope costs;
- Application of productivity assumption;
- Staff costs;
- IT costs;
- Fleet costs;
- Corporate Overhead costs – Group; and
- Corporate Overhead costs – Openreach.

A.1 In scope costs

A.1.1 KPMG's approach

Ofcom engaged KPMG to conduct an efficiency review of Openreach's operating costs. Openreach provided 2007/08 cost data to KPMG on 20 August 2008[33]. This information is summarised below:

Cost item	Amount (£millions)
Fixed assets	9,259
Current assets – current liabilities	-218
Depreciation	448
Pension deficit	168
Operating costs	3,444

KPMG makes a number of adjustments to Openreach's operating costs, to arrive at what it considers to be the relevant cash operating cost base for its analysis. Specifically, KPMG adds back income and capitalisation items, in order to arrive at its view of in scope costs, as they were either negative or KPMG considered them to be not relevant. The process is summarised in the table below:

Category	Reason for removal	Amount (£millions)

[33] KPMG refer to total Openreach costs of £13,102 million, but this includes capital employed and hence is not an annualised cost. Openreach has subsequently supplied Ofcom with a revised set of financial information, and we understand it is this latter set that Ofcom will use as the basis for analysis in respect of a charge control(s) on Openreach services

Total operating costs		3,444
Excluded items		
Tran – One IT Dev Capitalisation	Balance sheet item	-109
Field – OOI	Income item	-91
Repayments	Income Item	-3
Own Work Capitalised	Balance sheet item	-29
CIO – OOC	Income item	-9
Subtotal		-242
In scope operating costs		3,687

Thus the total operating cost base analysed by KPMG is £3,687 million.

A.1.2 Ernst & Young's comments

We have identified the following issue with KPMG's approach:

- Inconsistent treatment of capitalised operating costs.

This is discussed below.

Inconsistent treatment of capitalised operating costs

KPMG has excluded a number of "negative" costs that represent capitalised labour and other costs that were capitalised in 2007/08. These cost items are "Tran – One IT Dev Capitalisation" and "Own Work Capitalised", and account for £138 million (3.7% of in scope operating cost). "CIO – OOC" is also removed, which is incorrectly labelled by KPMG as an income item, when we understand it is in fact a capitalised operating cost. The sum of the three capitalisation items is therefore £147 million (representing just under 4% of total in scope operating cost).

Ernst & Young notes that KPMG adds back these capitalised costs, yet excludes from its analysis other capitalised labour and operating cost elements in Openreach's cost base. Ernst & Young understands from Openreach that capitalised labour represents around 40% of Openreach's annual capital expenditure, and as such is a considerable portion of Openreach's capital base. A consistent approach would be one that either included all capitalised labour and other capitalised operating costs (for both Openreach and comparators) or excluded them completely, and indeed adopted a similarly consistent approach to the treatment of capitalised operating costs when normalising the benchmark sample set. Absent any such appropriate adjustments, there is a risk that the benchmark against which Openreach is compared could be either too high or too low, and therefore conclusions in respect of Openreach's relative efficiency may be erroneous.

In addition we note that KPMG has "added back" some income items from its analysis; these amount to £94 million. It is important that the benchmark set against which Openreach is compared includes similar adjustments where appropriate, in order to ensure comparisons are conducted on a like-for-like basis. The absence of such an adjustment may call into question the comparability of the benchmark set.

A.2 Application of productivity assumption

A.2.1 KPMG's approach

KPMG has adopted an assumption in respect of annual productivity of 2.1% – 2.3% to reflect frontier shift efficiencies. Ernst & Young understands that, when calculating the annual total efficiency factor to be applied, KPMG has used a six year period from 2006/07 to 2012/13. This is because the benchmarks it has identified are for the year 2006/07 while Openreach cost information is for the financial year 2007/08. To address timing differences KPMG has extrapolated its benchmarks to 2007/08 by applying its productivity assumption of 2.1% – 2.3%.

A.2.2 Ernst & Young's comments

Ernst & Young recognises that there exist inevitable challenges with availability and timeliness of data. However, we note that using data from different time periods may present a risk of inconsistency in the inputs to the analysis, and that this leads to a risk that the conclusions drawn from any analysis based thereon are erroneous.

A.3 Staff costs

A.3.1 KPMG's approach

Ernst & Young understands that KPMG has obtained figures from Openreach on pay scale by staff grade and category, and compared these with salary benchmarks from a range of different sources[34]. KPMG's approach is to calculate the difference between Openreach and the benchmark by cost category. For example, KPMG calculates that Openreach Operations salaries are 4% above the benchmark, while Sales, Products, and Marketing salaries are calculated to be 38% above the benchmark. On a cost-weighted average basis, Openreach's salaries are 4.7% above the benchmarks.

A.3.2 Ernst & Young comments

We have identified the following issues with KPMG's approach:

- Lack of comparability of benchmarks; and
- Use of extrapolation.

These are discussed below.

Lack of comparability of benchmarks

Ernst & Young understands, from its discussion with KPMG, that KPMG has attempted to compare its obtained benchmark information on average salary bands (to reflect grade/seniority) with information supplied by Openreach.

Ernst & Young notes that the benchmarks selected by KPMG may not be directly comparable to Openreach, as they reflect averages across a number of different industries rather than from firms with similar characteristics to Openreach (eg, other fixed telecoms firms). Further, we are not aware that KPMG has adjusted for this possible lack of comparability by normalising the benchmarks to the extent appropriate. This presents a risk of incomparability of data and consequently, a risk that erroneous conclusions are drawn from this analysis.

KPMG has used different benchmarks in respect of individual cost categories, on a case by case basis. As discussed in Section 4.3.2 there exists a risk in such an approach that Openreach is compared against a level of operating efficiency which is unachievable in the aggregate as it would not reflect the trade offs that exist between different inputs.

Use of extrapolation

KPMG has identified what it considers to be appropriate benchmarks for eight Openreach pay categories out of a total of seventeen, covering 77.4% of total Staff costs[35]. KPMG has been unable to identify fully comparable

[34] KPMG Report – see table in Section 4.2.1

[35] These are labour cost that are expensed rather than capitalised. As discussed in Section A.1.2 a significant proportion of Openreach's labour costs are capitalised

benchmarks for the remaining 22.6% and therefore applies its available benchmarks to the remaining Staff costs. As a result of this extrapolation, there is a risk that inappropriate benchmarks are applied to 22.6% of Openreach's staff costs, resulting in erroneous conclusions in respect of the scope for efficiency gains.

A.4 IT costs

A.4.1 KPMG's approach

KPMG analyses a total IT cost base of £361 million, including £109 million of capitalised development costs. KPMG excludes Equivalence Management Platform (EMP) costs of £71 million on the basis that this is an Openreach-specific cost incurred in keeping with Undertakings in respect of functional separation. This therefore represents an adjustment to normalise Openreach data for comparability purposes. This gives KPMG's view of in scope IT costs of £290 million, and by dividing through by an FTE figure of 37,421 the operating cost per FTE is £7,795.

The efficient benchmark is calculated to be £6,992 per FTE. This is derived from an cost per FTE figure from the Corporate Forum for 2005/06, which is then extrapolated to 2007/08 by applying a 2 year trend on IT spend from a different source; the National Computing Centre (NCC). On this basis, KPMG calculates that Openreach IT costs are 11.5% above the benchmark and uses this figure to derive the potential scope for efficiency gains for IT costs.

A.4.2 Ernst & Young's comments

We have identified the following issues with KPMG's approach:

- Inappropriate definition of the cost base;
- Inconsistent calculation of benchmark;
- Lack of comparability of benchmark; and
- Potential distortions arising from the presence of fixed costs.

These are discussed below.

Inappropriate definition of the cost base

Ernst & Young notes that KPMG has excluded an adjustment for £109 million of capitalised operating costs in its analysis. As discussed in Section A.1.2, a consistent approach would be one that either included all capitalised labour and other capitalised operating costs or excluded them completely, and indeed adopted a consistent approach to the treatment of capitalised operating costs when normalising the benchmark sample set. Absent any such appropriate adjustments, there is a risk that the benchmark against which Openreach is compared could be either too high or too low, and therefore conclusions in respect of Openreach's relative efficiency may be erroneous.

Inconsistent calculation of benchmark

Ernst & Young understands that KPMG may not have been able to identify a fully comparable benchmark for Openreach IT operating costs, and has therefore used information from two different sources to derive a benchmark. There is a risk that that the two sources they have used are not comparable in terms of the costs they reflect, and as such KPMG's approach may give erroneous results.

Further, Ernst & Young understands that KPMG applies a productivity adjustment to all cost items of 2.1% in 2007/08, to account for the fact that their benchmarks are for the year 2006/07. However, we understand that the benchmark for IT costs already reflects 2007/08 costs. In such a situation it would not be appropriate for KPMG to apply an additional productivity improvement factor to IT costs to extrapolate the benchmark from 2006/07 to 2007/08.

Lack of comparability of benchmark

Openreach, as a fixed telecoms firm, will have business-specific IT requirements such as billing systems and network management systems. KPMG has used a general benchmark for IT operating costs which draws its sample from across a number of different industries. KPMG has not fully taken into account these specific Openreach IT requirements[36], for example by constructing a benchmark sample from firms with similar characteristics (such as other telecoms companies) and then normalising the benchmark to correct for any uncontrollable differences. Therefore, there exists a risk that the benchmark data is not truly comparable with Openreach data, and hence the calculated scope for efficiency gains is open to question.

Further, Ernst & Young notes that the approach to capitalisation of IT costs can differ between firms. It is not clear that the benchmarks used by KPMG take a similar approach to capitalisation of IT costs as Openreach, and hence to what extent they are directly comparable. This presents a further risk that calculated scope for efficiency gains is not reflective of Openreach's relative efficiency.

Potential distortions arising from the presence of fixed costs

We understand that KPMG's approach to calculating the scope for efficiency gains for IT costs assumes that Openreach's IT costs are driven by the number of FTEs (ie, the amount Openreach spends on IT depends on the number of FTEs Openreach employs). However, Ernst & Young understands from Openreach that a significant proportion of Openreach's IT costs are fixed in respect of the number of FTEs. In particular, Ernst & Young understands that the cost category "Tran – One IT BAU development", which amounts to £75 million (and is equal to 21%) of total IT costs, Openreach considers to be fixed in respect of FTEs. Further, significant proportions of "Trans – One IT Support" and "Trans – One IT Op integrity", which account for [Confidential information redacted] of IT costs, are also fixed in respect of FTEs.

In the presence of such fixed costs, the use of a cost per FTE as a benchmark may be inappropriate as a basis for comparison, as it does not reflect the causality for a significant proportion of Openreach's IT costs. For example, were Openreach to achieve operating efficiencies elsewhere in the business and reduce the overall number of FTEs, the result would be that total cost per FTE increases (as a result of costs fixed in respect of FTEs) and Openreach would hence appear less efficient against the benchmark. There is therefore a risk that the calculated efficiency gains do not reflect the true and holistic relative efficiency of Openreach compared with an appropriate benchmark.

A.5 Fleet costs

A.5.1 KPMG Approach

Ernst & Young understands that KPMG has considered two elements when benchmarking Fleet costs: a) average total cost per car; and b) overall fleet cost structure.

We understand that KPMG has sourced benchmarks from three large fleet management firms, and concludes from its analysis that Openreach's average total cost per car is lower than the benchmark, while its overall fleet cost structure (in terms of proportion of cost spent on car hire, fuel cost, and insurance cost) is consistent with these benchmarks. KPMG therefore comments that:

> *"Given that our benchmarking should be against the most efficient comparators, the fact that BT is cheaper than the benchmarks effectively means it is the benchmark."*

KPMG has applied an efficiency adjustment factor of 0% in respect of Fleet costs.

A.5.2 Ernst & Young comments

We have identified the following issues with KPMG's approach:

- Limited transparency of benchmark; and
- Inconsistent approach to calculating efficiency adjustment.

[36] KPMG does exclude EMP costs

These are discussed below.

Limited transparency of benchmark

Ernst & Young notes that KPMG has not included the comparison of average total cost per car in its report. We understand this is because such information is commercially sensitive. It is therefore not possible to verify the accuracy of the data used by KPMG and hence the conclusions drawn from that data.

Inconsistent approach to calculating efficiency adjustment

KPMG concludes from its analysis that Openreach is relatively more efficient than the benchmarks it has identified, and then assumes that there is no scope for catch up efficiency gains.

However, a holistic approach to efficiency would recognise that in respect of some costs the assessed firm may appear more "efficient" than in others, but that it is important to assess the full productivity of the firm across all inputs to reflect the trade offs discussed above. In this example, the "super-efficiency" in respect of Fleet costs would be recognised in the overall holistic assessment of business efficiency. This would, other things equal, bring Openreach closer to the overall benchmark efficiency across all cost items, and hence suggest less scope for potential efficiency gains.

Further, Ernst & Young understands that KPMG applies a productivity adjustment to all cost items of 2.1% in 2007/08, to account for the fact that their benchmarks are for the year 2006/07. However, in the case of Fleet costs, KPMG has determined that Openreach is the benchmark and hence its performance represents the efficiency frontier. Therefore, notwithstanding comments above in respect of an holistic assessment, it does not seem appropriate for KPMG to apply a productivity improvement factor to extrapolate the Fleet cost benchmark from 2006/07 to 2007/08.

A.6 Corporate Overhead costs – Group

A.6.1 KPMG approach

Corporate Overheads are costs which are allocated from BT Group to the individual Lines of Business of which Openreach is one. Such costs are allocated on the basis of allocation keys such as FTEs and floor space. Costs include charges for central tax, legal, treasury and financial reporting, and the share allocated to Openreach amounted to £181 million in 2007/08, representing 4.9% of total in scope operating costs.

KPMG has undertaken two exercises in relation to Openreach's allocation of Corporate Overheads: a) a review of the allocation methodology of Corporate Overheads from Group to Openreach[37]; and b) an assessment of their relative efficiency. The scope of Ernst & Young's work only includes an assessment of the latter.

KPMG's initial observation in respect of potential Corporate Overhead costs efficiencies is that:

> *"the scope for Openreach to make efficiency gains with respect to Corporate Overhead charges may be limited, due to the fact that it is likely to be more efficient for the functions concerned to be performed for BT Group as a whole rather than on a stand-alone basis for Openreach."*[38]

KPMG also recognises that benchmarking corporate overhead costs is challenging, as:

> *"different organisations have different definitions of exactly what they include in these costs."*

KPMG does identify two specific reports in which two firms, LECG[39] and Deloitte[40], had undertaken benchmarking in respect of Corporate Overhead costs. KPMG notes that both LECG and Deloitte commented on the difficulty in benchmarking Corporate Overhead costs due to the different definitions of these costs between firms. Therefore KPMG instead considers a number of different approaches to assessing the relative efficiency of Openreach's Corporate Overhead costs. These are summarised in the table below:

[37] KPMG "Review of Openreach Allocation Methodologies" 3 November 2008
[38] KPMG report Section 4.5.2
[39] http://www.ofgem.gov.uk/Networks/GasDistr/GDPCR7-13/Documents1/NGNreportforOfgemversion5 redacted.pdf
[40] http://www.ofgem.gov.uk/Networks/Trans/PriceControls/TPCR4/ConsultantsReports/Documents1/15784-DeloitteNational Grid_pub.pdf,

Cost item	Approach	Efficiency adjustment
Group HQ	Extrapolated from average of Staff benchmarks (excluding engineers)	12.1%
Group CTO	Extrapolated using CIO staff cost	34.7%
One-IT Overheads	Extrapolated from IT costs	11.5%
Property	Assumption that 38% empty space can be eliminated	38%

A.6.2 Ernst & Young comments

We have identified the following issues with KPMG's approach:

- Use of extrapolation and comparability of benchmark;
- The scope for Openreach to make efficiency gains; and
- The treatment of Property costs.

These are discussed below.

Use of extrapolation and comparability of benchmark

KPMG has applied Staff cost benchmarks to "Group HQ" and "Group CTO", and the IT cost benchmark to "One-IT Overheads". As a result, the comments made above in respect of KPMG's approach to Staff (Section A.3) and IT (Section A.4) costs, namely the use of extrapolation, and the possible lack of a representative and comparable sample, apply equally here. There is therefore a risk that inappropriate benchmarks are applied resulting in erroneous conclusions in respect of the scope for efficiency gains.

The ability of Openreach to influence Corporate Overheads

Ernst & Young understands that Openreach has limited control over the allocation of Corporate Overheads it receives from BT Group and hence has little ability to drive efficiencies in the incurrence of these costs. Even in the event that Openreach could materially affect the scale of Corporate Overheads, Openreach's status as a functionally-separate business might be expected to limit its ability to achieve efficiencies in Corporate Overheads. Indeed KPMG comments on this, observing that:

> *"The scope for Openreach to make efficiency gains with respect to Corporate Overheads charges may be limited, due to the fact that it is likely to be more efficient for the functions concerned to be performed for BT Group as a whole rather than on a stand-alone basis for Openreach."*[41]

As a consequence, given the constraints Openreach operates under as a functionally-separate business, there is a risk that the efficiency adjustments calculated in respect of Corporate Overhead costs may not be achievable by Openreach.

Treatment of Property costs

KPMG's analysis of Openreach's relative efficiency with respect of Property costs concludes that the proportion of floor space that is vacant (38%) should be considered to represent the level of efficiency adjustment attainable. We understand this conclusion is based on the assumption that it would be inefficient for a firm to maintain, and continue to incur cost in respect of, this vacant floor space on a forward looking basis.

Ernst & Young notes that the presence of vacant property does not imply *per se* that the costs incurred by Openreach for this property are inefficient. The efficiency of property costs needs to take account of the contractual arrangements, following the sale and long term lease-back arrangement, between BT and Telereal, its property supplier. This would include consideration not only of the amount of vacant space, but also other contract terms such as the price paid per unit of floor space (eg, cost per square metre) compared with the market benchmark, and any other arrangements which the parties have agreed in relation to BT's ability or otherwise to vacate or sublet parts of their property.

Further, even were it possible, under the terms of the contractual arrangements BT has with Telereal, to completely avoid the costs for vacant floor space, it may still be efficient for some portion of office space to be kept vacant to allow for future expansion, and to retain a certain level of flexibility from BT as to where to locate its staff and equipment. There also exist physical, logistical and security considerations which may be expected to limit the optimisation of property usage at any given point in time. There is therefore a risk that assuming that all vacant property can be eliminated over the period of the charge controls reflects an unachievable level of efficiency.

A.7 Corporate Overhead costs – Openreach

A.7.1 KPMG approach

Openreach incurs costs for its Line of Business-specific finance, legal, regulator affairs and HR departments. KPMG has benchmarked the pay costs for these activities as part of its review of Staff costs. KPMG has extrapolated these benchmarks to "Support – Other Operating Costs" which principally consists of agency, contractor and consultancy costs.

A.7.2 Ernst & Young comments

The comments made in earlier sections of this report in respect of the appropriateness of: a) benchmarks for Staff costs (Section A.3); and b) the process of extrapolation (Section 4.4) also apply in this case. We therefore note that there is a risk that the efficiency adjustment applied by KPMG to this cost item may not be reflective of Openreach's relative efficiency.

[41] KPMG report – Section 4.5.2