Price Control of JT :

Final Report

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1. Executive Summary

This report sets out the key conclusion on the project commissioned by the JCRA to advise on the price control of JT. The terms of reference of the project are attached at Annex A.

The scope of the work carried out covers both retail and wholesale (interconnection) pricing for both mobile and fixed telephony services. The limited scope of this project in terms of services, for example the exclusion of leased lines or broadband services, should not be taken as an indication that these products will not be regulated in the future. The Terms of Reference also covered advice on the interconnection negotiations, in particular the advice on the suitability of JT's draft Reference Interconnection Offer (RIO), which forms the basis of the interconnection agreements between JT and other licensed operators. The non-pricing aspects of the RIO are not included in this report.

The approach taken in the project was to adapt international "best practice" for regulatory process to the specific needs of the Jersey market. This adaptation took into account a number of factors including the legal framework in Jersey, the development of the market and competition on the Island and the need to minimise regulatory compliance costs given the limited resources available in a small market.

1.1 Summary of the Proposals

Cost of Capital

We propose 11.0% as the point estimate of the Weighted Average Cost of Capital for JT. This cost of capital has been used as the appropriate level of profitability for JT and hence to estimate the "competitive level" of prices in order to set the proposed price control.

Fixed Retail Market

The terms of reference of the project suggested the use of a price cap in order to control retail prices. We propose an overall fixed price control using an RPI-X formula running until 2006, by which time the evolution of the market following liberalisation should be clear. The RPI used would be the RPI for Jersey, as this will be a better indicator of JT's costs than other measures of inflation.

Given the lack of competition in all markets we propose a broad price control covering the main fixed line telephony services provided by JT. The services included would be the following:

- Exchange line connection fees;
- Exchange line rental;
- Calls to other fixed subscribers within Jersey
- Calls to mobile subscribers within Jersey
- Calls to UK and Guernsey fixed subscribers
- Calls to UK and Guernsey mobile subscribers

- Calls to International fixed and mobile subscribers

Our estimate of the appropriate level of X is 2, implying that JT would have to reduce the overall level of prices by 2% each year in real terms

The prices used to calculate price changes under the formula would be taken from a single tariff specified by JT – the Reference Tariff – at the beginning of the three year price control. The basket weights would be calculated as the product of the prices for this reference tariff and the volume of services for all JT fixed customers. Any bundled call minutes or volume based discounts apply to the Reference Tariff would not be taken into account when calculate price changes or the basket weights.

In addition there would be a cap on the maximum allowed increase for any service to RPI+5 to allow a reasonable rate of rebalancing, while protecting customers and minimising the risk of anti-competitive pricing.

Fixed Interconnection Price Control

JT's draft RIO included prices for conveyance services – call origination, call termination and transit services. JT have stated that "*prices have been derived by identifying the cost of network elements, which can be thought of as the common denominator of Jersey Telecom's existing services and new interconnection services, and estimating the quantity of network elements required to deliver a particular interconnection service*". This suggests that JT have used an Element Based Costing (EBC) approach.

In the absence of detailed calculations from JT, we have attempted to replicate the prices using a similar EBC methodology, using data from JT's management accounts. This produced slightly lower estimates of the cost based level of prices than those included by JT in the draft RIO. While the differences are small enough to be explained by differences in methodology, such as assumptions about the cost of capital, or allocation of common or indirect costs, without full visibility of JT's methodology it is impossible to reconcile the two sets of estimates.

If JT are unable to produce cost justification for their proposed rates than we would propose using the model we have developed to set rate (i.e. the burden of proof should lie with JT). Interconnection rates would remain fixed until 2006, before being reviewed.

No Access Deficit Contribution would be included in the interconnection pricing, as our analysis suggest that ADCs are not necessary on a number of grounds.

Mobile Retail Market

We believe that where possible, fostering sustainable competition will better enable the JCRA to fulfil its duties rather than introducing and maintaining ex ante price control regulation. Given the intention to issue further mobile licences in Jersey we believe that it would not be appropriate to impose a price control on JT's retail mobile services at this point as such a price control could distort the competitive process and discourage market entry.

In the event that a competitive market does not develop in the retail mobile market, we believe that it would be appropriate to introduce a retail price control for JT's mobile services in order to safeguard Jersey customers. Based on the analysis carried out in this project such a price control would result in significant price reductions in real terms, with an X in excess of 25, in order to bring JT's prices down to a competitive level.

Mobile Interconnection Price Control

We believe that a benchmark based on UK mobile termination rates forms the most appropriate basis for setting JT's mobile termination rates, given the lack of appropriate JT specific cost data with which to set rates. We believe using benchmarks is reasonable in this case because JT and the UK operators appear to have similar per unit costs (on a Fully Allocated Historic Cost basis) and because the process for setting the UK rates appears to be best practice.

There would be a cap on the average mobile interconnection price to the level of a simple average of the UK mobile interconnection GSM 900/1800 and GSM 1800 price caps for the next three years.

JT published prices for mobile termination in the RIO. JT has not provided a cost justification of these rates but has instead stated that they are based on a benchmark of termination rates in the EU. In our view the use of EU benchmarks is not appropriate for setting the prices of mobile termination for Jersey Telecom given the lack of transparency in the setting of termination rates for many EU operators.

2. Analysis of the Need for Price Control

2.1 Rationale for Price Control

Price control is generally applied to prevent prices from being set above a "competitive" level when the regulated operator has market power in the corresponding market.

A second potential reason for price control is to ensure universal access to the telecommunications network at an affordable price. In some cases the "affordable" level of prices may be below the competitive level of prices. In this case regulators may intervene to control some prices below the cost based, competitive, level. Indeed in the EU directives the requirement to provide affordable universal service can take precedence over the requirement for regulators to ensure cost orientated prices where appropriate.

A third reason for applying price control is to prevent anti-competitive behaviour. Such controls may have as their aim the prevention of discriminatory pricing between an operator's own use of its network and other operators' use of the network through interconnection.

2.2 Identifying Where Price Control is Needed – Market Analysis

While JT has been issued a Class III licence as an operator with Significant Market Power, this designation covers the licensed activities of the operators rather than being explicitly linked to markets defined in a competition law sense.

In order to identify where price control of JT may be necessary to prevent pricing above a competitive level, we must first identify in which markets JT has market power through a process of market analysis.

We believe that a market analysis would be consistent with the JCRA's duties under the Telecommunications Act and would provide a useful framework in which to make regulatory decisions under the Act. In particular a market analysis framework will enable the JCRA to judge where it is appropriate to impose price controls, and where price controls are not (or no longer) necessary.

The standard market analysis framework consists of two steps:

- Market definition;
- An assessment of the competitiveness of each of the markets defined and the identification of any operator(s) dominant in the market.

Once the market analysis has been complete, suitable remedies can then be applied to those areas where the market is not competitive (i.e. one or more operators is dominant).

2.2.1 Market Definition

There is extensive literature and jurisprudence on the market definition process for the purposes of Competition Law. This framework has been adapted for use in sector specific regulation, such as telecommunication regulation. Some adaptation of the Competition Law framework is necessary due to the fact the sector specific regulation is applied ex ante (regulation applied in order to prevent anti-competitive behaviour), whilst Competition Law is generally applied ex post (after potential anti-competitive behaviour has been identified). The main aim of market definition in an ex ante framework is to divide the total range of goods and services into a number of markets, in order to apply regulation to these markets, or in some cases withdrawal from ex ante regulation.

In order to apply regulation effectively, the number of markets should be sufficient to enable the regulator to identify separate markets where different levels of regulation should be applied, but not so detailed as to make the regulatory process over complex. Markets are defined in terms of both products and services, and geography, and in some cases further differentiation in terms of customer segmentation.

The test generally used to define markets is the SSNIP (Small but Significant Non-transitory Increase in Price) test. The market is defined as the minimum group of products and services and geographic territory for which a hypothetical monopolist could increase prices a small but significant amount above a competitive level for a certain period of time without either customers substituting with another product outside the market (demand substitution) or suppliers of products outside the market offering products in the market (supply substitution). It should be noted that this is a thought experiment, as generally there is not firm econometric and empirical evidence to conduct the SSMIP test.

We propose basing the market definitions for defining price controls in Jersey where appropriate on the set of markets set out by the European Commission in its recent recommendation[1]. It should be noted that this recommendation does not attempt to identify all telecommunications markets, but only those where the Commission believes that ex ante regulation is potentially necessary for structural reasons.

The market definition as set out by the European Commission that we consider appropriate for Jersey for the purposes of this project (with the numbering as used in the recommendations) are:

Retail Level

1. Access to the public telephone network at a fixed location for residential customers.

2. Access to the public telephone network at a fixed location for non-residential customers.

3. Publicly available local and/or national telephone services provided at a fixed location for residential customers.

4. Publicly available international telephone services provided at a fixed location for residential customers.

[1] COMMISSION RECOMMENDATION of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services.

5. Publicly available local and/or national telephone services provided at a fixed location for non-residential customers.

6. Publicly available international telephone services provided at a fixed location for non-residential customers.

Wholesale level

8. Call origination on the public telephone network provided at a fixed location.

9. Call termination on individual public telephone networks provided at a fixed location.

10. Transit services in the fixed public telephone network.

15. Access and call origination on public mobile telephone networks.

16. Voice call termination on individual mobile networks.

In respect of mobile access and origination services, the EU framework has defined a wholesale market for these services. As the Jersey market is structurally different from EU markets in that there is a single cellular operator (whereas there are multiple mobile operators in all EU member states), we believe that it is appropriate to analyse this market at a retail level.

In the case of Jersey, the markets numbered 3 and 5 will refer to calls within Jersey, including calls to mobile, while markets number 4 and 6 will refer to calls to destinations outside Jersey (including the UK, Jersey and other international destinations).

Our view is that the Jersey is the appropriate geographic scope for all markets defined. Any sub-division of Jersey for the purposes of telecommunications regulation would appear to be unnecessary. Clearly there is little scope for demand substitution from outside Jersey, and network providers outside of Jersey are not in a position to offer most services within Jersey hence supply substitution would not exist. In addition we do not believe any further segmentation in terms of customers is appropriate.

2.2.2 Current Assessment of Dominance

Where appropriate, we propose to use the framework for the identification of dominant operators as set out in the European Commission's guidelines on market analysis[2], which in turn are based of European Competition Law jurisprudence. We do not believe that an analysis of potential joint dominance is necessary at this time although the small size of the island may result in joint dominance being a potential outcome in the future.

Under the Commission guidelines, the principal indicator of market power is market share. In general an operator is unlikely to be (single) dominant if it has a market share of less than 25%, while market share in excess of 50% is considered evidence of dominance save in exceptional cases. The trend in market share will also be taken into account, for example where very high market shares are transitory.

When calculating market shares for wholesale markets we will take into account the operator's own use of the network for delivering retail services.

[2] Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (2002/C 165/03)

JT's market share is at or close to 100% for all of the markets defined above. Thus there is a presumption of dominance by JT in these markets.

In addition to market share there are other factors that may be taken into account when assessing dominance. Principal amongst these is the extent to which there are barriers to entry or expansion. In the case of JT, these factors do not provide evidence to overturn the presumption of dominance.

2.2.3 Forward Looking Assessment of Dominance

While JT is dominant in all markets at present, the liberalisation of the market will lead to its market share falling. As the price controls will be set for a number of years we need to assess whether JT is likely to remain dominant in the medium term.

In making judgements about the likely level of competitiveness of markets in the medium term, we have taken into account the empirical evidence from other markets on the competitive of markets in the years after liberalisation.

The definition of call termination services as termination on individual networks, for both fixed and mobile networks, is such that any operator has 100% of the market and thus JT will be dominant in the provision of these services in the future.

We believe that it is highly unlikely that there will be large scale roll out of competing fixed access infrastructure in the medium term. Thus competitive pressures on fixed access and fixed call origination are likely to remain limited. The provision of local calls is strongly tied to the provision of fixed access so these markets are also unlikely to become competitive. In addition the ability of JT to leverage its dominance of the access market into the market for residential calls outside of Jersey is likely to result in JT remaining dominant in this market.

The market for international calls from fixed non-residential customers is likely to be the most competitive retail market, as it has been in most liberalised jurisdictions, with in a number of countries the incumbent's market share dropping below the 50% level for an automatic presumption of dominance. This relatively high degree of competition reflects a combination of the relatively low barriers to entry in this market and the arbitrage opportunity presented by incumbent operators pricing these services well above cost. There is a possibility that this market may become competitive on Jersey in the medium term and any remedies should be so constructed as to not unduly hinder the competitive development of this market.

The market for on-island transit services is likely to be relatively limited as the small geographic size of the market and the small number of operators means that most operators will be able to interconnect directly if necessary. The market for off-island transit may be larger as some operators may not choose to carry all of their own traffic off-island but rely instead on wholesale IDD services. If transit markets do develop it is likely that why will be more competitive than the related retail markets.

The future competitiveness of the retail mobile market is largely dependent on whether there is market entry, a necessary condition for which is the issue of further licences. Until further licences are made available, it is unclear whether competition will develop in the mobile market.

3. Costs

3.1 Cost Basis

The main source of information used to calculate the cost basis of JT and hence set price controls are JT's management accounts, which are in turn based upon JT's statutory accounts. The statutory accounts are calculated on a Historic Cost Accounting (HCA) basis, with the exception of assets purchased before 2000, which were re-valued at current costs at the time of incorporation of JT.

Ideally JT would produce a set of regulatory accounts in addition to the statutory accounts. Such accounts would value assets at current costs and depreciate assets on the basis of some form of economic depreciation rather than using straight line depreciation, with the relationships between costs and services presented on an incremental cost basis. In many jurisdictions, regulated operators are required to produce regulatory accounts.

However the production and validation of regulatory accounts is a complex task, typically taking a number of years to produce reliable results on a fully Current Cost Account (CCA) basis with related Long Run Incremental Cost (LRIC) models. Few EU member states have fully implemented CCA/LRIC systems 5 years after liberalisation, despite the setting up of a cost accounting system being mandatory under the ONP directives and recommendations that such systems should use LRIC. In the short term we have no choice but to rely on existing sources of information in order to set prices. However we need to take account of the potential deficiencies of the statutory and management accounts when setting prices.

3.1.1 Impact of Using Management Accounts

The result of current cost adjustments depends on the distribution of the age of the assets and the profile of price changes for those assets. In low inflation environments the nominal price of technology goods, for example IT hardware and software or transmission and switching equipment, typically falls over time (when adjusted for quality). Thus capital charges for these assets on a HCA basis tends to be higher than CCA in the later part of the assets' lives. Conversely those assets with a high labour input, or where technological progress is minimal (for example trenching costs or copper cable), tend to have a lower capital charge on a HCA basis than a CCA basis. In the case of JT, the revaluation of assets at the time of incorporation is likely to significantly reduce the level of CCA adjustments, especially for long lived assets such as duct.

The impact of a change from straight line depreciation as used in the statutory accounts (and hence the management accounts), to some form of economic depreciation is unclear. In a regulated environment there is some circularity in the definition of economic depreciation as the current value of the assets is equal to the discounted future cash flows generated by the asset which are dependent on future (regulated) prices which are in turn dependent on depreciation. If price regulation is applied consistently over the lifetime of assets, then the regulated operator should be indifferent to the depreciation profile used. In general, regulators have applied depreciation profiles such that capital charges tend to reflect the utilisation of assets in terms of volume of services. Typically in the case of relatively mature services such as fixed services, annuities or tilted annuities are used, so that the capital charge is stable or increases linearly, over the lifetime of the asset. This contrasts with straight-line depreciation which results in capital charges which decrease over the life of the asset. For less mature services, such as mobile telephony, where utilisation may increase significantly over the lifetime of assets, a change to a depreciation profile that better reflects this utilisation my lead to significantly lower capital charges in the early years of the network, and consequently higher capital charges later on.

One final difference between statutory accounts and regulatory accounts may be the capitalisation of intangible assets. However if price regulation is applied consistently over time, the operator should be indifferent as to whether certain expenditure is expensed or capitalised.

3.2 Cost of Capital

The cost of capital is a key input to setting prices at a competitive level as, in perfectly competitive market, will be at a level such that efficient companies will receive a return on capital employed equal to their cost of capital.

Our calculation of the appropriate cost of capital for JT has been based on the practice adopted by UK regulators, particularly OFTEL and the Competition Commission, when setting the cost of capital for regulated companies. The approach of the UK regulators is in turn based on standard economic and financial practice. We have also taken account of the special nature of the Jersey market, and hence JT, in terms of its small size.

The post tax cost of capital is calculated as a weighted average of the cost of debt and the cost of equity. The cost of debt is calculated by applying a debt margin to the risk free rate while the cost of equity is calculated using the Capital Asset Pricing Model. Due to the small size of JT relative to most publicly quoted companies we have added an additional adjustment to the cost of equity as calculated by the CAPM to reflect the potentially higher trading costs of small company equity. This practice is consistent with the approach adopted by the UK regulators

The post tax Weight Average Cost of Capital (WACC) is then converted to a pre-tax WACC in order to set cost based prices.

We have not attempted to produce separate estimates of the WACC for different services or different assets, for example for the fixed and mobile ”businesses”. In practice the difficulty of strictly separating assets and cash flows for different services or assets means that an analysis of the cost of capital at such a level of granularity would be difficult to apply.

Below is a summary of the values of the variable used in the WACC calculation. Further details on the source of the inputs and reasoning behind their use are given in Annex B.

3.2.1 Risk Free Rate

We have taken the yield on 10 year UK debt as a proxy for the risk free rate. This rate currently stands at approximately 5%.

3.2.2 Gearing

We have assumed that JT's gearing will be between 10% and 30%. This estimate is based on a combination of information supplied by JT on its current and future target gearing and estimates of the optimal gearing made by UK regulators.

3.2.3 Debt Premium

The debt premium is based on the average margin above sovereign debt on traded long term bonds issued by incumbent telecommunication operators with a credit rating of A2 and above (the relatively low gearing assumed above would suggest a similar credit rating for JT). Information was supplied for a sample of operators by PWC on behalf of JT. We have then added an upwards adjustment to reflect the higher cost of debt for small companies such as JT, who cannot directly access the capital markets and thus rely on bank loans. This adjustment was based on similar adjustments made by UK regulators when setting the cost of debt for smaller companies.

3.2.4 Equity Risk Premium

We have based our estimate of the Equity Risk Premium on the estimates adopted by UK regulators, rather than conducting and independent review of the literature. As OFTEL uses a point estimate of 5% while the Competition Commission uses a range of 2.5% to 4.5%, we have used a range of 2.5% to 5.5% to include the estimates of both regulators in the range.

3.2.5 Beta

The estimate of beta is based on a simple average of the un-leveraged (asset) beta for publicly traded shares of other incumbent fixed operators with mobile operations, again based on a sample of data supplied by PWC on behalf of JT.

3.2.6 Corporation Tax

We have used the current corporate tax rate of 20% in converting from a post tax WACC to a pre tax WACC.

3.2.7 WACC Calculation and conclusion

The table below shows the range of WACC calculated using the assumptions above.

Table 3-1 : Estimates of JT's Cost of Capital

	Lower	*Upper*
Gearing	30.0%	10.0%
Tax		
Effective tax rate	20.0%	20.0%

Cost of debt		
Risk free rate	5.0%	5.0%
Corporate debt margin	1.2%	1.7%
Small company adjustment	1.0%	1.5%
Cost of debt	7.2%	8.2%
Cost of equity		
Risk free rate	5.0%	5.0%
Asset beta	0.68	0.74
Equity beta	0.97	0.82
Equity market risk premium	2.6%	5.5%
Small company adjustment	0.9%	0.9%
Cost of equity	8.4%	10.4%
WACC		
Post tax	7.6%	10.0%
Pre tax	9.5%	12.5%

Where UK regulators produce a range estimate of the cost of capital, they typically use the mid-point of the range as the point estimate. The mid-point of the range above is 11.0% and we use this as the point estimate of the cost of capital for JT.

3.3 Cost Allocation

JT's management accounts allocate operational expenditure and depreciation to individual services. The management accounts are compiled quarterly using Metify software.

JT's management accounts for 2001 and 2002 have been reviewed by consultants working for the JCRA. This work has fed into the analysis below.

The major methodological shortcoming of the management accounts is that there is no allocation of capital employed. Thus for those services or groups of services making a profit it is not clear whether the return on capital employed is above or below the cost of capital. In the case of fixed assets, this shortcoming can be easily rectified as the allocation keys for the corresponding depreciation can be used. However working capital (current assets less current liabilities) cannot be allocated without further analysis of the drivers for working capital.

The allocation process itself is a multistage process:

1. Costs from JT's accounting system are initially allocated to a range of Activities and Network Elements.

2. Costs of some of the Activities (Support Activities and Network Activities) are allocated to other Activities and to Network Elements. This is an iterative process with Support Activities being allocated to other Support Activities as well as to the final outputs of this stage.

3. Costs of Activities and Network Elements are allocated to services.

The initial allocation to Activities and Network Elements appears relatively robust as detailed information is drawn from the accounting systems, breaking down operational expenditure by department and depreciation by asset.

The Network Elements have been defined in an appropriate way, separating the network components for fixed networks, mobile networks and other networks. The fixed network components largely separate traffic sensitive components from subscriber sensitive components, however the allocation of assets that lie on the boundary between the two parts of the network is unclear. This separation is important for pricing interconnection services, where regulator generally only allocate the cost of traffic sensitive components to interconnection service. In most cases the allocation of assets to Network Elements is direct as the networks are physically separate and are identified separately on the asset register. However in some cases network components such as transmission are shared between PSTN services and other services such as Private Leased Circuits or Internet services. Here allocations have been based on capacity utilisation.

The allocation of Support Activities to other Activities and Network Elements appears to be robust, typically being based on drivers such as the number of staff supported in each department. This should capture the (indirect) causality. The allocation of Network Activities, for example maintenance of the network, has been allocated to Network Elements either directly or according to time use.

The allocation of network elements to services follows a typical Element Based Costing approach. The routing factors used as an input to this allocation appear to be robust – given the relatively limited number of potential routing in JT's network this is unsurprising. However the traffic volume data used in conjunction with the routing factors show some inconsistencies between the various sources of information used to compile the estimates. These inconsistencies have been rectified as far as this is possible when calculating the cost of services in our analyses.

The allocation of non-network costs, particularly retail or "Customer Facing" activities is generally a lower priority issue in regulatory accounting as retail price caps with wide baskets are typically used rather than price control of individual services. In the case of JT however, the allocation of retail costs does have some impact on retail price control as some costs are shared between the fixed telephony, mobile telephony and other products. A wide range of information is used to allocate of Customer Facing Activities to services in the management accounts.

Business Supporting Activities, such as central corporate costs, are largely allocated to services on the basis of revenues. While cost causality is difficult to identify in the case of these activities, we believe that the use of revenues as an allocation key is inappropriate for the following reasons:

- When setting costs based prices it introduces a circularity as revenues are dependent on prices which are dependent on costs which are allocated according to revenues;

- No costs are allocated to new services, even though management time and resources are likely to be disproportionately spent on new and emerging products.

Overall, with the exceptions noted above, the allocations used in the management accounts appear to be well founded, reflecting cost causality and are acceptably accurate given the limited resources available to compile the management accounts. Thus the management accounts provide a reasonable basis on which to set prices.

We should however note that the management accounts have not been audited. While reconciliations with the statutory accounts and the JCRA's consultants' ability to replicate the results to a reasonable degree of accuracy provide give some confidence that the overall level of costs is accurate and that allocation methodologies have been implemented as JT have stated. However there is no independent verification of either the input cost data or the allocation keys themselves.

Below is a high level analysis of the relative profitability of the main fixed telephony and mobile businesses, based on our analysis of the management accounts. This shows that the overall profitability of the business is largely driven by the fixed telephony and mobile businesses while other products as a group are barely profitable (although this conceals a range of profitable products mixed with loss making products).

	Revenue	**Earnings Before Interest & Tax (EBIT)**	**Fixed Assets at Net Book Value (31 December)**	**EBIT/Fixed Assets**
Fixed Telephony	**	**	**	**
Mobile	**	**	**	**
Other products	**	**	**	**
Total	**	**	**	**

Table 3-2 : High Level Analysis of the Management Accounts (£millions)

[Commercially sensitive data removed at request of Jersey Telecom Limited]**

As we have not been able to calculate the Return On Capital Employed (ROCE), as we have not allocated short term assets and liabilities to products, we have included EBIT/Fixed Assets as a proxy for ROCE. On this measure, the mobile business is most profitable, due to its much lower capital base compared to the fixed business.

4. Fixed Retail Markets

4.1 Structure of the Price Control

4.1.1 RPI-X Price Control

There is a clear need for retail price control due to the lack of competition in the retail fixed markets. We believe an RPI-X type price control is appropriate for a number of reasons:

- It provides some degree of predictability for prices over the coming years for both JT, competitors and users;
- RPI-X price controls encourage regulated operators to make efficiency gains, at least in the early years of a price control, as they can benefit from increased profitability that efficiency gains bring (unlike traditional rate of return price control, where efficiency gains result in lower prices with no increase in profitability);
- By controlling the cost of a basket of services, rather than prices of individual services, the regulated operator can make decisions about the optimal recovery of fixed and joint costs (subject to controls on anti-competitive behaviour), rather than have cost allocations determined by the regulator;
- Price control compliance during the price control period requires relatively few resources compared to setting prices on an annual basis.

The key disadvantage of RPI-X type price controls is that they require some degree of forecasting of future costs and revenues to set the X factor accurately, as well as information on the current level of efficiently incurred costs. The X factor should take into account both the difference between the competitive level of prices and the current level of prices but also the trend in the competitive level of prices in real terms (i.e. taking account of efficiency gains over time).

Mis-forecasting the level of efficiency gains over time can be corrected at the end of each price control period, when a new price control is set. Furthermore incumbents have incentives to move their costs down to an efficient level. Thus even if in the medium term prices are set too high (or too low), over the long term RPI-X price controls should move prices to the competitive level.

Setting the duration of the price control is a judgement that needs to balance the risk of forecast errors over longer time period with the need to provide some incentive for the operator to make efficiency gains.

If the price control period is too long, then there is increased risk that by the end of the period prices will be significantly above or below the competitive level. In some cases "Error Correction Mechanisms" (ECM) have been included in prices controls, requiring automatic or discretionary reviews of X if certain variables, for example market growth, differ from the corresponding forecast by a given amount. However setting ECMs adds another level of complexity to the process and may have adverse effects, for example discouraging traffic stimulation efforts by incumbents (due to the risk that increased traffic will result in a higher level of X). For these reasons we do not propose to include any ECM In the price control.

If the price control is too short, the operator will have less incentive to make efficiency gains, as any gains additional to those forecast by the regulator, while producing increased profitability in the current price control period, will lead to a tighter price cap in the following price control period. Thus efficiency gains tend to be concentrated in the early part of the price control period.

Typically UK utility regulators have set price caps of five year durations, with price caps on BT set at four years (with, in later caps, the option to "roll over" the cap into following years if a new cap has not been set). However immediately prior to the duopoly review in 1991, which resulted in full liberalisation in the UK, a shorter time period was used to reflect the difficulties of forecasting through a major policy change.

Given the difficulties of forecasting in the current Jersey environment given both the imminent liberalisation in Jersey and also the recent changes in the rate of demand growth in both Jersey and other countries, we recommend a three year price control period, slightly shorter than that typically used in the UK. By the end of the price control period, in 2006, both the competitive landscape in Jersey and the likely future evolution of the fixed network, should be clearer.

One further disadvantage with RPI-X type controls is the incentive to "game" the system. A price controls are set for a period of years, operators can make excess profits by making price changes which meet the letter of the control, but result in overall prices higher than those forecast – for example by using bundled call with subscriptions or volume related discounts to ensure that prices for customers with usage that differs from the basket see higher prices than forecast by applying RPI-X.

4.1.2 Coverage of the Price Control

We propose to include all the fixed retail markets set out in the market analysis. Thus the services included in the basket would be the following:

- Line connection;
- Line rental;
- Calls to Jersey fixed lines;
- Calls to Jersey mobile subscribers;
- Calls to UK, Guernsey and International fixed geographic numbers and mobile subscribers;

Both residential and business customers would be covered by the price cap. This coverage would be achieved by specifying that the controlled prices be available to all customers, both residential and non-residential and having basket weights based on the usage of all customers.

While off-island calls may become increasingly competitive in the price control period, a wide basket should give JT sufficient degrees of freedom to price international calls, without being unduly disadvantaged.

4.1.3 Sub caps

Sub caps can be imposed for a number of reasons:

- To ensure affordability and a fair distribution of the benefits of price control amongst customers;

- To prevent anti-competitive pricing.

In the case of Jersey, the high level of penetration of both fixed and mobile telephony suggests that access to the telephony network is affordable at the current level of prices.

Looking forwards a combination of price control and competition should ensure that access to the telephony network remains affordable. It is in the interests of JT to ensure that fixed penetration remains high, as the avoidable cost for customers who disconnect from the network is relatively low so that even if net revenues from these customers is relatively low it is worth keeping them connected to the network. For some marginal customers the low subscriber related costs of mobile networks mean that mobile subscriptions, in particular pre-pay mobile subscriptions, can provide a basic level of connectivity (for emergency calls for example) at a lower cost than a fixed subscription. However there is a need for some safeguards to ensure that users do not see their bills rise significantly in real terms, which could lead to telephony becoming unaffordable for some users.

In theory anti-competitive behaviour can be controlled by ex post application of competition law. In Jersey, there is a risk that ex post regulation would not be sufficient for the following reasons:

- The lack of audited regulatory accounts on a CCA/LRIC basis make it difficult to assess whether prices are being set at an anti-competitive level;

- Limited resources are available within the regulator and competitors to identify and correct anti-competitive behaviour;

- Jersey does not currently have a Competition Law. The current lack of modern competition law provisions in Jersey law and telecommunications regulation limits the effectiveness of ex post regulation.

Applying sub caps, while not a substitute for Competition Law, should reduce the risk of anti-competitive pricing by reducing the rate of change of individual prices, discouraging such anti-competitive practices such as "whip-sawing" or predatory pricing.

We recommend applying RPI-X sub caps to all prices, with an X of -5. This would allow any individual price to be increased by a maximum of 5% in real terms (above the rate of inflation) each year during the price control period giving JT considerable freedom to adjust its prices. This would ensure that the bill for any usage pattern would also not rise by more than 5% in real terms, ensuring affordability. In addition the sub caps would prevent rapid increases in prices thus providing some safeguard against anti-competitive pricing behaviour.

4.1.4 Implementation Issues

As JT does not have a single tariff for all customers, but a range of price packages, there will be a number of price changes for each service. There are two approaches to the complexity that this introduces into measuring price changes:

- Only measure the price changes of a single "reference" tariff;

- Measure the implicit price change for all price packages by comparing average revenues per unit (per minute or per line);

While there advantages and disadvantages to both approaches, we believe that the use of a reference tariff will provide most clarity to users and should ensure a more even spread of the benefits of price control, as all customers can choose to use the reference tariff. Using implied price change, there is the risk that the average price will be reduced by only reducing the prices for those customers such as business customers, who are most susceptible to competition. At the extreme, this could enable anti-competitive pricing behaviour, such as margin squeeze. Given the difficulties of applying ex post competition remedies in Jersey, we believe that it is more appropriate to implement a price control that discourages such behaviour.

One problem with the use of reference tariffs is that a reference tariff can be constructed purely to minimise the measured price changes while at the same time being unattractive to the majority of customers. The reference tariff then ceases to be a reasonable proxy for overall price changes and the operator can attempt to ensure that prices overall rise faster than RPI-X. We believe that this "gaming" can be prevented by not taking into account any volume based discounts or bundled calls when calculating price changes in the reference tariff and not allowing changes to the reference tariff during the price control.

The basket weights used to calculate the overall price change should be based on the usage of all customers, both business and residential customers, not just those customers using the reference tariff. Weight should be for the most recent 12 month period available before the start of the price control period.

4.2 Setting the Level of X

The X factor in RPI-X price controls is generally set in order to ensure that the prices of the operator are at a competitive level at the end of the price control period, with the competitive level being that which would lead to an efficient operator making a return on capital employed equal to its cost of capital.

We have constructed a financial model to forecast the financial performance of the fixed telephony part of JT during the price control period. This financial model produces forecasts of the return on capital employed given a particular value of X, under various assumptions about variables such as the changes in JT's cost base, changes in the demand for fixed telephony services, market share loss to alternative operators.

Based on the financial modelling, an X of 2 (overall prices decreasing in real terms by 2% a year) would appear to be appropriate for the price control. The table below shows the forecast level of the Return On Average Capital Employed (ROACE) for each of the three years of the price control with an X of 2.

Table 4-1 : Fixed Business ROACE for RPI-X Control with X=2

	2004	2005	2006
ROACE	14.7%	13.4%	12,2%

One point to note is that we have set X such that the ROACE for the final year is slightly above the WACC. This is because the ROACE is an average for the year, and given the downward trend, the ROACE at the end of 2006 will be lower than the average.

Some of the key inputs to the financial model are discussed below.

4.2.1 The Initial Cost Base

As an integrated business supplying both fixed and mobile telephony as well as other services such as the supply and installation of equipment and packet switched data services, determining the cost base for the retail fixed telephony business is not trivial. There are a number of common costs shared with the other "businesses" and we do not have sufficient information to calculate the optimal recovery of these costs from the different businesses.

One approach to the problem of fixed and common costs across the business would be to set a global price cap for the whole of JT, leaving JT's management free to set prices to recover common costs across the full portfolio of services. However such a global price cap would be excessively complicated due to the wide range of services offered by JT. It would also increase the risk of anti-competitive pricing, with an incentive for JT to recover costs disproportionately from the services where JT retained market power, setting the prices of competitive services below cost.

For modelling purposes we have used Fully Allocated Costs (FAC) as derived from the JT management accounts as the cost basis for the calculation of profitability of the fixed business. Given the high profitability of other parts of JT, in particular the mobile business, JT as a whole may continue to exhibit a return on capital employed greater than its WACC even if on a FAC basis profitability of the fixed business is below the cost of capital. The limitations of FAC should be taken into account when interpreting the results.

The history of JT, as a government owned monopoly, may have led to its cost base being above a competitive level. No downward "efficiency" adjustments have been made to the cost base to take account of any historic inefficiency (although assumptions have been made on future efficiency gains). Thus even if the model forecasts that JT's profitability is in line with JT's WACC, the level of prices may be above the competitive level. This again should be borne in mind when interpreting the output of the model. In the long term a combination of the incentive effects of the price cap, along with competition, should result in JT's cost basis moving towards a competitive level.

4.2.2 Forecasting Operational Expenditure

Many of the costs of operating a fixed network are fixed over the short term, with the marginal cost of increased volumes of traffic and number of subscribers being small. Given that our forecasts of overall demand growth show minimal growth, then the basis of the forecast is that costs will be broadly stable during the price control, growing in line with inflation. In reality there are likely to be offsetting gains and losses, for example increased costs due to the introduction of competition, with some efficiency gains leading to reduced costs.

4.2.3 Forecasting Depreciation and Capital Employed

Future capital charges, both depreciation and the cost of capital, will be dependent on the level of capital expenditure in the future.

JT failed to supply detailed estimates of capital expenditure, and such that it did supply did not provide sufficient granularity to identify the capital expenditure related to delivering fixed telephony services, as opposed to growing services such as ADSL based internet access.

Given that we are not forecasting significant increases in the volume of traffic or the number of lines, future capital expenditure will be driven by the need to replace assets that have reached the end of their useful lives rather than by the need to increase capacity. Thus our forecast of capital expenditure, after adjustment for inflation, is that capital expenditure will be in line with depreciation, with the results that both the net book value of fixed assets and the depreciation charge will be stable, adjusted for inflation.

The level replacement capital expenditure will be volatile from year to year in a small network such as JT's, compared to large networks where upgrades and replacement will be rolled out over a number of years, smoothing the profile of capital expenditure. However this volatility in expenditure will be less apparent in the estimates of capital employed and depreciation which feed through into the final ROACE calculation, which are dependent on investments over a number of years.

Forecasts of working capital in the model are calculated on the basis of the underlying transactions that generate the need for working capital. Thus for example debtors and creditors are estimated by applying a mean debtor days and creditor days estimates to the corresponding transactions.

4.2.4 Number of Lines

Forecasting the number of exchange lines in the medium term is more difficult than in the past, where the number of lines increased each year at a steady rate, as there appears to be a turning point or point of inflection in the trend. In a number of European markets the total number of fixed lines has declined recently. While some of this decline may be cyclical, reflecting reduced employment and reduced household income during the recent economic slowdown, the major drivers would appear to be due to substitution. This substitution comes from a range of sources for example removing lines used for fax machines, substituting dedicated lines used for dial up access by permanent (broadband connections) and at the margin some substitution of fixed lines used for voice by mobile subscriptions, for example in student households or second dwellings.

We would expect this trend of substitution to continue, particularly in the residential sector. In the business sector continued growth in employment and shifts in employment towards services industries where a higher proportion of employees need telephones, should offset any substitution. Businesses are also less likely give up lines used for fax machines, etc., even if they are rarely used.

Our central assumptions on growth in exchange lines are that the penetration of business lines expressed as a percentage of the number of people in employment will remain stable, while the penetration of households will fall by 2% per year. Thus overall there will be a gradual decline in the number of lines.

JT provided their own forecasts of the number of lines showing a significant fall in the number of residential lines, with a 17% reduction between 2003 and 2006, leading to household penetration dropping below 85%. We do not believe it is credible to assume that more than 15% of households in Jersey will not have a fixed telephone by the end of 2006.

JT also forecast that the number of business lines would continue to grow at a relatively slow rate. This forecast is broadly in line with the forecast we have used.

4.2.5 Call Volume Growth

Forecasting medium terms growth in the volume of calls is also difficult due to the effects of substitution, coupled with the recent downturn in the global economy making recent trends an unreliable indicator of future trends.

Our view is that the use of residential fixed telephony for conversation will continue to grow, albeit slowly, with other forms of communications, such as email or mobile telephony only having a marginal impact. However the use of fixed telephony for Internet access is likely to fall quickly as users, particularly heavy users, migrate to broadband networks.

For business users, we believe the migration from fax to email and to a lesser degree voice to email, will lead to a gradual decline in the volume of voice calls. Again the use of the fixed telephony for Internet access is likely to fall rapidly.

Below are our forecasts of annual growth rates for fixed telephony minutes. These forecasts also take account of some degree of income elasticity (the relationship between wealth and consumption) and demand elasticity (the relationship between prices and consumption), as well as the substitution effects described above.

Table 4-2 : Traffic Growth Assumptions 2003-2006 CAGR

	Business	Residential	All Customers
To Local Fixed	-4%	1%	-1%
To Local Mobile	1%	1%	1%
To local Internet	-24%	-24%	-24%
To UK Fixed	-3%	2%	-1%
To UK Mobile	2%	2%	2%
To International	-3%	2%	0%
Other Calls	1%	1%	1%
Total	-4%	-3%	-4%

JT supplied forecasts showing much faster declines in the use of fixed telephony, particularly for businesses. They argued that this was due to the substitution of voice traffic by other forms of communications such as email. However, the use of these other forms of communication is already widespread and there is little evidence that it has led to significant falls in voice telephony.

4.2.6 Market Share Forecasts

We do not believe that there will be significant roll out of mass market fixed access networks, for example cable telephony or fixed wireless, in the medium term. Empirical evidence suggests that alternative fixed networks do not make a reasonable return with current technology. Thus we believe that the majority of competition will come through indirect access, with only some of the larger business customers being directly connected to alternative networks, either through leased lines or through access networks concentrated in areas with high concentration of large customers.

Thus we assume that JT will maintain 100% of the market for exchange lines, with those larger customers with direct connections to alternative networks continuing to use their JT lines for on island calls and incoming calls.

Competition for call services is likely to be more intense for business users than residential users as the much larger calls volumes of the larger business customers will make them an attractive target for new entrants, and will provide a greater incentive for the customer to consider alternatives. We believe that competition will focus on calls off the Island, as competitors will not be able to offer significant efficiency gains for traffic that currently both originates and terminates on the JT network.

Below are our assumptions for the JT's call market share for 2006.

Table 4-3 : Assumptions about JT Market Share for 2006

	Business	Residential	All Customers
To Local Fixed To Local Mobile To Local Internet	100%	100%	100%
To UK Fixed To UK Mobile To International	74%	88%	82%
All Calls	92%	98%	96%

The reduction in JT's revenues due to market share loss will be partially offset by the interconnection payments, for origination from indirect access operators, and for termination for those operators carrying traffic onto the island.

5. Fixed Interconnection Markets

Interconnection services are wholesale services bought and sold by operators in order to provide end to end call services. Three fixed interconnection markets were defined, with JT having market power in all three markets:

- Call **origination** on the public telephone network provided at a fixed location. Originations services allow JT customers to access other operators for long distances services, typically by dialling a short code before the number they wish to call.

- Call **termination** on individual public telephone networks provided at a fixed location. Call termination allows other operators to complete calls originated outside the JT network, to JT subscribers.

- **Transit** services in the fixed public telephone network. Transit services allow an operator to deliver a call to a third party network via the JT network.

5.1 Form of Price Control

Some form of price control is clearly necessary for interconnection services. The need for price control stems not just from the fact that JT has market power, with JT by definition dominant in the termination markets, but also because these services are essential inputs for competitors. Thus there is a dual risk:

- That JT will set the prices for interconnection services above cost;

- That JT will allocate costs to interconnection services in a discriminatory way in order to disadvantage operators competing with its own retail business.

Due to the risk of anti-competitive behaviour in setting interconnection prices, regulators generally determine how costs will be allocated to these services in order to ensure non-discrimination. Thus we propose to directly control the prices for individual services.

Typically interconnection prices are set on an annual basis, using the regulatory accounts for the year to set the prices. This procedure has a number of disadvantages:

- Regulatory accounts are not available until well after the end of the period. Thus some form of interim prices are required to account for interconnection transactions during the year with a final settlement taking place well after the end of the year;

- Annual price setting exercises requires significant resources from both the regulator and the industry;

- The industry does not have visibility of future price changes in order to plan their business;

For this reason we would suggest fixed the interconnection rate now until 2006. Given that volume growth on the fixed network has slowed considerably, the rapid unit cost declines typical in the past are unlikely to occur in the medium term and as such current estimates of interconnection costs are likely to be a reasonable basis for setting prices.

5.2 Structure of Prices

In most liberalised markets, operators with market power are required to offer interconnection services on non-discriminatory terms. In order to ensure that the operator with market power does not discriminate between operators, they are often required to publish a Reference Interconnection Offer (RIO), which sets out the common terms and conditions under which the operator supplies interconnection services

The traffic related prices for interconnection services in JT's draft RIO are separated into two components:

- Conveyance charges. Per minute charges reflect the usage of JT's network for calls originating or terminating on or transiting JT's network.
- Access Deficit Contributions. A charge added to the per–minute charge.

These two components are discussed below.

5.3 Conveyance Charges

While there is a degree of variation in the accounting base used to set interconnection prices, there has generally been general agreement on the allocation of costs to interconnection services for the purpose of price setting. The following steps are generally applied.

- Separation of network from non-network costs;
- Allocation of costs to network elements;
- Allocation of the costs of network elements to services using EBC;
- Allocation of some non-network costs.

This Element Based Costing (EBC) process has the great advantage that it ensures non-discrimination, in that network costs are recovered evenly from all services, both interconnection services and retail services, depending on their use of the network. One potential disadvantage is that common and joint costs are recovered evenly from all types of service whereas "optimised" prices such as Ramsey Prices require disproportionate cost recovery. However in the absence of sufficient information with which to optimise prices, due to both a lack of information about demand cross elasticity and the lack of a LRIC model, the benefits of preventing undue discrimination against wholesale customers are likely to outweigh any potential dis-benefits due to un-optimised prices (if the operator has freedom to set retail prices under an RPI-X price cap then it can still attempt to match Ramsey pricing for its own retail prices).

As noted above JT's management accounts use an EBC allocation methodology for network costs.

In order to produce estimates of the cost of conveyance independently of those included in the Draft RIO we calculated the cost of the interconnection services based on the management accounts with three modifications:

- We have included an allowance for the cost of capital by allocating fixed assets at net book value using the same allocation keys as used to allocated the corresponding depreciation and applying a cost of capital of 11.0%.

- We have used a different set of information on the volume of traffic, attempting to produce the best estimates of overall traffic by bringing together a number of (sometimes inconsistent) sets of information provided by JT.

- The costs of the relevant Business Sustaining Activities have been allocated by applying a simple equi-proportionate market up to the network costs resulting from the EBC costing process.

The results of the costing process above provide an average cost across all days of the week and time of day. JT's retail prices are differentiated into Day, Evening and Weekend prices. JT state that they have de-averaged their cost based interconnection charge into the three time zones using the implied retail tariff gradient. This is a non-discriminatory and robust de-averaging method.

Comparing the estimated costs from our calculation to the RIO prices, it is clear that the costs we have calculated are marginally below the RIO prices. This may be due to a combination of slight differences in calculation and also the use of a lower cost of capital in our calculation. However the burden of proof now lies with JT to justify their RIO prices.

Table 5-1 : Comparison of RIO prices (excluding ADCs) and Coleago calculated costs (pence per minute)

Service	Coleago Cost Estimate	RIO Prices		
		Day	Evening	Weekend
Fixed call origination	0.54	0.69	0.61	0.57
Fixed call termination	0.54	0.69	0.61	0.57

5.4 Access Deficit Contributions

In a number of countries, the incumbent fixed operator has in the past been required cross subsidise access services, that is, line rental and connection fees, from call services. An "Access Deficit" is generally defined as the amount such a fixed incumbent loses in providing access services, that is the cost of local access less the revenues from line rental and connections. Access Deficit Contributions (ADCs) are payments made from other operators to the fixed incumbent to compensate the fixed incumbent for the loss of contributions towards its access deficit from calls now provided by competing operators. These payments are usually collected by adding a surcharge to the cost of interconnection for originating and/or terminating traffic on the fixed incumbent's network.

JT included ADCs in the interconnection prices in the RIO. We do not believe that it is appropriate to apply ADCs to the interconnection rates for three reasons (each of which is sufficient reason to exclude ADCs)

- While JT does have an Access Deficit measured on an FAC basis, it is not clear that JT's line rental and connection prices are below incremental cost. Thus it is not clear that there is true cross subsidy of access prices below a competitive level or solely a different recovery of common and joint costs from that used in the management accounts.

- There will be no requirement on JT to cross subsidise access services as we do not propose specific regulation preventing JT from rebalancing its retail prices. Indeed the sub caps proposed as part of the fixed retail price control would allow JT to raise prices such that even on a FAC basis, the service will make a reasonable return

- Given the relatively small size of the access deficit (even on a FAC basis), it likely that JT would be able to support any access deficit in a liberalised market and remain profitable.

6. Mobile Retail Markets

Currently in Jersey the lack of competition in the mobile market means that JT's prices are not constrained by competition. JT argue that customers in Jersey can compare JT's prices with prices in the UK, placing some constraint on JT's ability to raise prices. However we are not convinced by this argument for several reasons:

- Given the large number of customers and a single supplier of services it is unlikely that retail customers have sufficient countervailing power to constrain prices to a competitive level
- It is not clear that UK prices form a suitable benchmark for the level of competitive prices in the UK given the differences in size and geography
- Customers cannot easily compare prices between the UK and Jersey due to the large number of tariff packages and the difficulties of finding equivalent packages due to the very different geographic availability of services on the home network (i.e. without roaming).

A simple benchmarking of average revenue per minute for Jersey against the UK and other European countries shows that overall Jersey customers are paying significantly more per minute than customers of other operators.

Country	**Period**	**Retail call and subscription revenues (£million w. 1.4 EUR/GBP)**	**Minutes (millions)**	**Average revenue per minute (pence per minute)**
Jersey	2002	**	**	**
Jersey (exc. off-island calls)	2002	**	**	**
UK	2002/03	7,991	53,827	15
France	2002	7,850	51,747	15
Spain	2002	4,639	29,258	16

Table 6-1 : Benchmarks of Revenue per Minute

[Commercially sensitive data removed at request of Jersey Telecom Limited]**

In addition JT's Return On Capital Employed for mobile service (calculated using JT's management accounts) is significantly higher than JT's cost of capital. While some of this apparently excessive profitability may be due to deficiencies in the management accounts and the underlying statutory accounts, this is unlikely to explain all of the differences – looking at the cash flow generated by the mobile business suggests that prices are significantly above costs.

In the majority of jurisdictions, a number of mobile licences have been issued in the expectation that competition between the licensees would lead to prices being set at a competitive level (as well as providing benefits in terms of widespread availability of mobile services and service and network innovation). Thus it has not generally been felt necessary to impose retail price controls on mobile providers (there have been exceptions such as some Latin American countries and cases where the level of retail prices has been a factor in licence beauty contests).

The JCRA have indicated that they propose to offer additional mobile licences in order to enable competition in the mobile services markets.

In the long run, granting additional licences should result in prices overall being set at a competitive level as has occurred in many other jurisdictions. However there is a risk that even the availability of additional licences does not result in a competitive market if either more operators apply for additional licences or the entry of additional operators does not result in a competitive market

While many markets support multiple operators, in most cases competing operators launched when penetration was still relatively low (in the case of the UK there was competition form the start). It will be more difficult to build a successful business when the market is already saturated. In addition JT has a number of competitive advantages having already made significant sunk investments in the (2G) network and in customer acquisition, and thus having a lower cost base going forwards than a new entrant. Thus it is not clear whether entry into the Jersey market will be viable. However this is not a judgement that needs to be made by the regulator. I If licences are made available, the "market" of potential entrants can decide whether there is a viable opportunity.

Even if there are one or more operators willing to enter the Jersey market it may take a number of years before a fully competitive market develops, with prices above a competitive level during that time. With a small number of operators likely, there would remain a risk that the market may not be truly competitive as there would be a risk of joint dominance.

While the short term risks of prices being set above a competitive level are significant, we believe attempting to foster a competitive market in the long term should be the priority. Imposing a price control on JT would act as a disincentive to potential entrants in what is already likely to be a marginal opportunity. For this reason we do not recommend applying a price control to JT's prices before the issuance of a licence. In addition it may be advisable to give assurances that price control will not be imposed in the medium term if one or more new operators enter the market.

If no bidders came forwards for additional licences, then a retail price control on JT would be appropriate in order to ensure that Jersey subscribers are offered mobile services at a competitive price.

Price discrimination is likely to be beneficial in the mobile market as it is likely to lead to greater overall usage and is unlikely to lead to anti-competitive practises in a monopoly market. In order to allow a wide variety of price packages and the resulting price discrimination, a control on the overall revenue per minute across all price packages would probably be appropriate. An approach based on using a "reference tariff" to measure price changes would encourage the prices for other packages to converge on this tariff in order to maximise revenues, reducing the benefits available through price discrimination.

The level of X could be set using a similar mechanism to the price control setting for the fixed market. . The current return on capital employed is likely to be greater even than the very high returns in 2002, when penetration was still increasing, due to higher revenues and lower customer acquisition costs than in 2002. Our modelling work suggests that a level of X in excess of 25 would be necessary to result in the Return on Capital Employed falling to the cost of capital over a three year price control to 2006. However, some allowance may be necessary to take account of differences between costs calculated from JT's statutory and management accounts and true economic costs.

There would be little need for any sub caps to maintain affordability as JT is likely to continue the practice of providing pre-paid packages with low or no periodic fees. In addition if JT had a monopoly on mobile services, there would be little scope for anti-competitive actions.

7. Mobile Termination Market

7.1 Price Control of Mobile Termination

In general ex ante regulation is not applied to fast growing, emerging markets due to the risks of stifling innovation. With mobile telephony initially seen as a niche service, aimed at more wealthy segments of the market, there was not felt to be a need for price control in order to protect consumers. Thus, when cellular services were in their infancy, mobile termination rates were initially unregulated and were set by "commercial" negotiation between the fixed incumbent and the mobile operator(s). This arrangement was acceptable to the industry as the mobile operators could set prices at a relatively high level and the fixed operator could add on a mark up (or retention) which was generally significantly higher than the prices of fixed calls using similar network components, as the fixed to mobile retail rate was generally unregulated.

With mobile telephony now being all but universal, and the rate of growth slowing the above arguments for not regulating mobile termination no longer hold. Furthermore empirical and survey evidence suggests that there is little competitive pressure on mobile termination prices in a Calling Party Pays (CPP) market, as the consumer (indirectly) paying for the service - the calling party - does not generally choose the provider. Instead the called party chooses the provider and may have an incentive to choose an operator with high termination rates if those termination rates are used to cross subsidise mobile origination calls rates or to subsidise handsets.

One argument against the regulation of mobile termination is that in a competitive mobile market, the overall level of mobile prices: subscription, mobile origination prices and mobile termination price; will be cost oriented as competitive pressure on subscription and mobile origination prices will prevent the mobile operator generating excessive profits. For example as a group, UK mobile operators do not appear to make excessive profits, even if some operators make returns well above their cost of capital. Following this argument, any regulation to force down the prices of mobile termination, would only make the operators increase other prices to ensure profitability remains at a reasonable level – the so call "waterbed" effect. However regulators are not only interested in the overall level of prices but also in the level of individual prices, either because the unregulated level of prices is inefficient (for example the prices are not "Ramsey" prices) or for social reasons (for example that the distribution of costs is unfairly weighted towards lower income customers). Thus regulators may intervene to ensure a "fair" distribution of costs.

In the case of Jersey, a combination of the high likelihood of market failure in CPP mobile termination coupled with the current lack of competition in the mobile retail market means there is a strong case for regulating mobile termination rates.

7.1.1 UK Benchmark

The most complete analysis of the appropriate level of mobile termination prices would appear to be the Competition Commission's recent report on the cost of mobile termination in the UK.

The cost of mobile termination was derived from a combination of a bottom up LRIC model developed by Analysys, and accounting information supplied by the operators, used to calculate FAC estimates. The LRIC model enabled economic depreciation to be applied, while the accounting information supplied by the operators ensured that the historic expenditure inputs to the model were in line with the actual expenditure by the network operators (in a competitive market there is little reason to believe that operators' expenditure has been inefficient). The LRIC model was also used to adjust the cost to that for a hypothetical operator with market share of 25% (in a four player market). As summary of the results of the modelling is shown in the table below:

Table 7-1 : Comparison of FAC and LRIC Estimates of the Cost of Call Termination in the UK 2000/01

	Pence per minute
Network cost	3.8
Cost of capital	1.4
FAC	5.3
Economic depreciation adjustment	1.4
Adjusted FAC	6.7
Adjusted Oftel LRIC	7.8

In recognition of the benefits to customers calling the mobile network of some customer acquisition costs (benefits consisting of both the possibility of calling customers who would not otherwise have a mobile and the lower unit cost due to the greater volume of traffic) a "network externality" adjustment was also added to the results of the costing exercise.

The resulting rates was termed the "public interest" benchmark. A price control was implemented as an RPI-X price control designed to move the termination prices to the "public interest" benchmark over the lifetime of the control. Under the price control the mobile operators are free to set the tariff gradient and prices such that the average price is less than the price cap.

Table 7-2 : Proposed UK Price Cap

Year	Vodafone & O2	T-Mobile and Orange
2003/04	6.95 ppm average	7.70 ppm average
2004/05	RPI-15	RPI-14
2005/06	RPI-15	RPI-14

7.1.2 Direct Cost Estimates

JT's management accounts can be used to derive an estimate of the cost of mobile termination in the same way that the fixed interconnection costs are calculated. The results of this calculation are compared with the RIO prices in the table below:

Table 7-3 : Comparison of RIO prices and Coleago calculated costs (ppm)

Service	Coleago Cost Estimate	RIO Prices		
		Day	Evening	Weekend
Mobile call termination	5.2	11.5	9.4	8.5

As noted in the UK, there are two principal reasons why the results of a Fully Allocated Historic Cost exercise may not be an appropriate basis for setting interconnection prices.

The first reason is that the costs calculated in the management accounts may be an inaccurate estimate of the underlying economic costs for mobile services, mainly due to the rapid growth in demand over the lifetime of the assets. This rapid growth will result in demand being heavily weighted towards the later part of the lifetime of assets, while straight line depreciation, as used in the management accounts, front weights capital charges. A move to economic depreciation would shift the weight of capital charges towards the end of the lifetime of assets. As we are at the end of the 2G investment cycle this would presumably result in the cost for termination now being higher under economic depreciation than straight line depreciation.

The second reason why the methodology may not be optimal is that a strict separation cost causality may not be appropriate for fast growing services due to externalities which are not captured. The subsidisation of handsets may bring about overall benefits by maximising the number of people on the network.

7.1.3 EU Benchmarking

JT have stated that the prices in the draft RIO are based on a benchmark of EU prices. We have misgivings about this approach for a number of reasons:

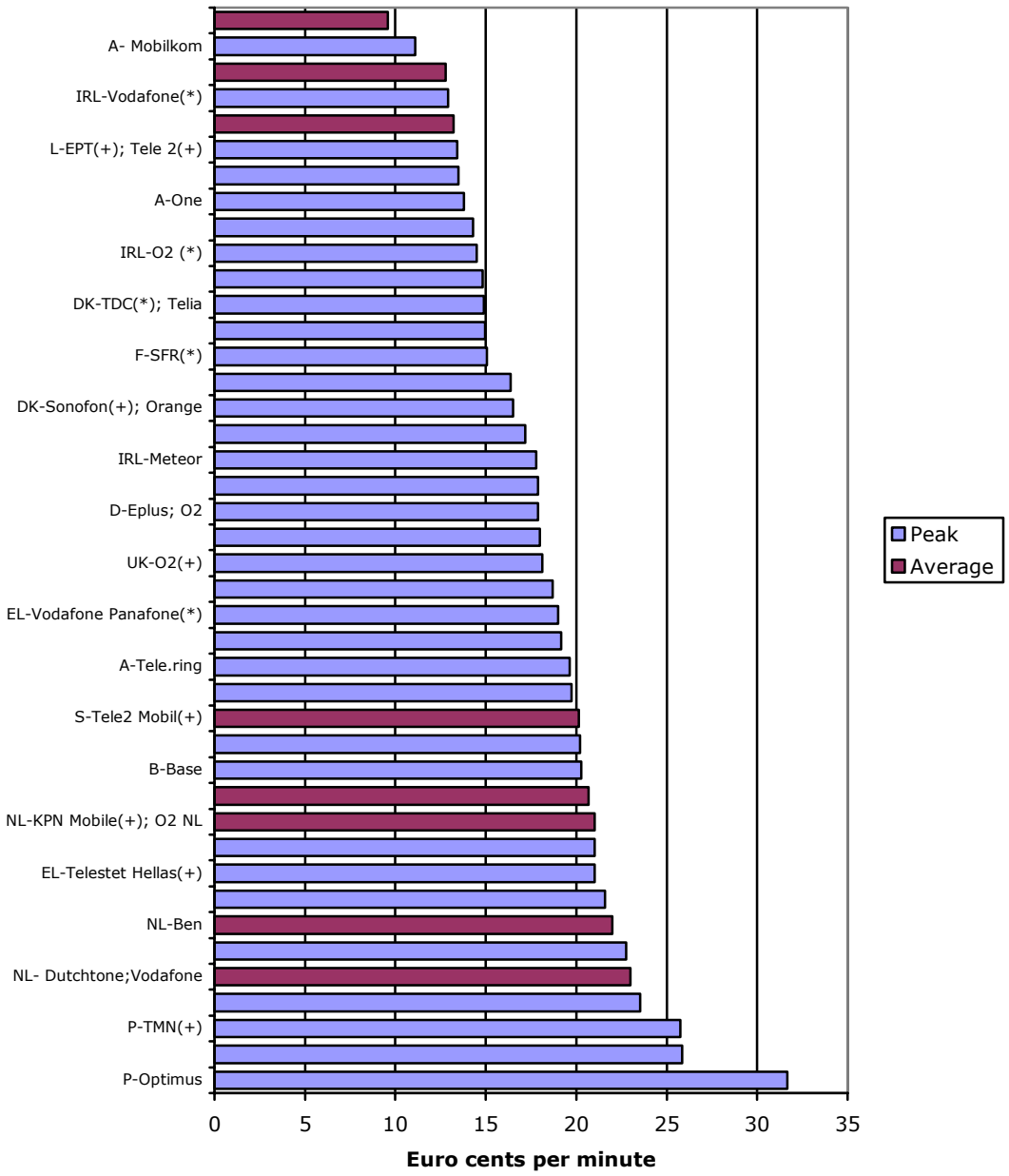
- There is a lack of transparency in the termination rates of EU operators, with some rates not publicly available as termination rates may not be regulated at all in a country, or only some operators in a country may have termination rates regulated. While some third party information providers produce reports of rates, there is no guarantee that these rates are accurate and up to date.

- Not all rates are cost based. Many operators are not regulated, because the operator has not been determined to have SMP or because the transposition of the 1998 ONP directives did not give the regulator sufficient powers to regulate mobile prices. Even in the countries where prices are regulated, a range of methodologies have been used ranging from simple benchmarking to detail economic analysis backed up by both LRIC and FAC models. In general the methodology used to regulate prices is significantly less advanced than for fixed interconnection prices in the same countries.

- The cost of call termination may be different in Jersey. EU countries and mobile networks differ substantially from Jersey in terms of size, geography, number of networks and to some degree technology (about half of EU operators being GSM-1800 only).

The chart below shows termination rates for European operators. The wide variation in rates may be due to both differences in underlying costs but also differences in the regulation of mobile operators.

EU Mobile Termination Rates August 2003



The regulation of mobile termination under the 1998 ONP directives was problematic. Mobile operators who were determined to have Significant Market Power (SMP) on the market for "mobile services" were required to offer interconnection on a non-discriminatory basis, while those mobile operator determined addition to have SMP on the "national market for interconnection" were required to have cost oriented rates. However the "national market for interconnection" was not clearly defined in the directives and did not appear to be a market in the competition law sense of the word. Depending on the transposition of the directives into national law, some regulators had clear powers to mandate cost based interconnection whilst other regulator did not. In the case of the UK, OFTEL used its powers under the 1984 Telecommunications act to mandate cost based termination.

The table attached at annex C gives an overview of the position on regulation of mobile termination rates in the EU as at October 2002.

With the 2003 Electronic Communications Directives and the associated recommendations, regulators will be obliged to regulate mobile call termination. However the need to implement cost accounting systems, as well as the delays introduce by the implementation of the directives themselves, may mean that cost based mobile termination rates will only be implemented in the medium term.

7.1.4 Recommendation

There are three potential sources of mobile termination prices:

- UK benchmarks;
- Information derived from JT's management accounts;
- EU benchmarks;

On a FAHC basis the cost of termination for JT and for the UK operators as a group are to be broadly in line, once definitional differences have been taken into account. Given the potential underestimation of true economic costs and exclusion of customer acquisition costs from the estimates based upon JT's management accounts, we believe the UK benchmarks provide the most appropriate basis for price control.

The most practical way to implement a control based on the UK benchmark would be to simply apply the UK price control to JT. There are effectively two price controls in the UK, for GSM-900/1800 operators and for GSM-1800. We would suggest applying a simple average of the two controls.

The EU benchmarks currently appear to be the least reliable source for setting prices due to the uneven application of regulation under the 1998 ONP directives, although in the medium term once the 2003 Electronic Communications Directives are fully implemented they may provide additional data points for benchmarking.

We would also suggest that the mobile termination control run until 2006 for consistency with the retail price control (mobile termination costs are an important part of the cost base assumed in setting the retail price cap). A medium term price control should also give any potential new mobile entrants predictability for business planning purposes.

By the time the control is reviewed, there should be better benchmark information from the EU as the 2003 directives should be fully implemented. The competitive situation in Jersey should also be clearer at this point and progress may have been made in setting up a regulatory accounting system in Jersey.

8. Annex A : Terms of Reference

The JCRA is tendering for the appointment of consultants to develop a price cap model for the incumbent, JT, which would be used by the JCRA over the regulatory period. The project also includes an analysis of JT proposed interconnection tariffs on its service offerings and advice, including technical and engineering advice, concerning interconnection negotiations in general.

The key driver of the consultancy project is to assist the JCRA in price cap regulation. The JCRA has opted for a regime of price cap regulation as its preferred rule for the regulation of telecommunications on the island of Jersey. The retained consultancy services will be expected to design a system of price controls on wholesale and retail tariffs and to analyse prices on behalf of the JCRA, with a view to determining the optimal tariff structure for Jersey.

As part of the project, the consultants might wish to advise the JCRA on the merits of constructing a costing model, which could be used by the JCRA in determining interconnection tariffs. JT has published a "Reference Interconnect Offer". The consultants will be specifically required to assist the JCRA in agreeing a methodology within JT for the costings and tariffs in the schedule of interconnection services contained within the RIO. A review of the methodology used by JT to derive costs and hence prices for the different interconnection service offerings will be required.

JCRA will require regulatory advice on the cost of capital used by JT, analysing the main cost components, identifying the possible sources of any significant and continuing legacy costs to be borne by JT, which could potentially affect interconnection charges. Technical and engineering advice to JCRA Case Officers concerning interconnection negotiations will be required.

9. Annex B : The Cost of Capital for Jersey Telecom

9.1 Introduction

Determining the cost of capital is essential when making regulatory decisions related to cost as the cost of capital is one of the key components, along with operational expenditure and depreciation, in the cost base of a regulated operator.

This annex sets out the our view on the appropriate cost of capital to use when making regulatory decisions with respect to JT. In arriving at this we have taken account of both regulatory precedents, in particular from the UK, and JT's view of its cost of capital, as submitted to the JCRA.

Recent UK regulatory decisions, such as the recent Competition Commission report on the cost of mobile termination[3], have included thorough reviews of the academic literature. While we have conducted our own review of the academic literature we have, where appropriate, used the conclusions of UK regulators as a guide.

JT supplied to the JCRA a report commissioned from PriceWaterhouseCoopers on the appropriate cost of capital for JT. This report was supplied with a covering letter setting out further views on the appropriate cost of capital. While JT may have incentives to inflate their estimate of the cost of capital, we believe it is appropriate to accept elements of the analysis set out in their submission where we believe the analysis presents a fair, unbiased view of the value of certain inputs.

9.1.1 Structure of this Document

The next section of this document deals with some of the methodological issues surrounding the cost of capital:

- What are we trying to measure?
- How to express the cost of capital?
- How to estimate the cost of capital?

The following section then discusses how we have reached our view on the variables used to calculate the cost of capital.

9.2 Methodological Issues

9.2.1 Government Ownership

The States of Jersey wholly fund JT through both equity and debt investments. The traditional cost of capital framework, for example the Capital Asset Pricing Model (CAPM), has been developed in order to determine the returns that private investors expect and require when investing in a particular asset given the choice of investing in every possible asset. These implicit assumptions about the motivations of investors may not strictly hold for the States of Jersey, which may take into account public policy considerations when making investments.

[3] Vodafone, O2, Orange and T-Mobile: Reports on references under section 13 of the Telecommunications Act 1984 on the charges made by Vodafone, O2, Orange and T-Mobile for terminating calls from fixed and mobile networks.

As the Government of Jersey holds both JT's equity and JT's debt, one solution would be to ask what return the Government requires in the future. However we do not believe this is an appropriate approach as on the one hand the Government could set the cost of capital at a low level. This could be seen as a form of "state aid" for JT or as a subsidy for the end users of the services. On the other hand the Government could set the cost of capital at a high level. If JT was able to produce artificially high returns, for example through the use of market power, this could be seen as a form of indirect taxation. Both outcomes would distort the competitive market.

Instead we propose to calculate a "market" based cost of capital for JT, that is calculating what return private investors would require if they were to invest in JT. While this requires making some assumptions about the structure of JT if it were to be privately owned, we believe that this is the most appropriate approach for the following reasons:

- Transparency. The methodology for calculating the cost of capital is well understood and documented. This should allow all stakeholders to understand and comment on the process and will allow comparisons with other jurisdictions

- Efficiency. Competitors in the market will be privately owned. Setting the cost of capital at a market level will prevent either the inefficient entry that could result if the cost of capital is set at too high a level or the "crowding out" of private investment if the cost of capital is set at too low a level.

- Consistency. The approach used to calculate the cost of capital should be relatively stable over time, with any changes in the financing and ownership of JT having a predictable impact on the cost of capital.

9.2.2 Real vs Nominal Cost of Capital

The cost of capital can be calculated in real or nominal terms. If the models used to set an RPI-X price control are correctly constructed, the choice of a real or nominal cost of capital should be irrelevant. OFTEL uses a nominal cost of capital whilst other regulators, such as OFWAT, use a real cost of capital.

Calculating the cost of capital in real terms (i.e. adjusted for inflation) may be useful when setting an RPI-X price control where there is uncertainty about future inflation. However the calculation of a real cost of capital requires estimating the real risk free return, which in itself requires making explicit or implicit assumptions about future inflation. While the nominal risk free rate will be the same for the UK and Jersey, as they are part of a currency union, the real rates will differ due to differences in the rate of inflation. In the UK the real risk free rate of return can be calculated by comparing the nominal yield on government bonds with index linked bonds of comparable maturity, which provide an implicit forecast of future inflation. However for Jersey there is no comparable security linked to the Jersey CPI. It is also unclear whether the relationship between UK inflation and Jersey inflation will be stable over time and thus it is not possible to make a simple adjustment based on the recent divergence between UK and Jersey rates of inflation.

Because of the difficulty of converting the risk free rate to a real (in Jersey terms) rate, we propose to estimate the cost of capital in nominal terms.

9.2.3 One or Multiple Costs of Capital

In theory there may be multiple costs of capital for different "projects" depending on the volatility of the expected cash flows from each project. For regulatory purposes different costs of capital for have been used for mobile and fixed operators.

However one of the major problems with setting different costs of capital for different projects or businesses is finding suitable data with which to develop these separate costs of capital. As companies generally do not raise capital on a project basis, but at an enterprise level, market data (where available) is only available for the company as a whole. Where estimates of variable, such as equity betas are based on similar companies where market data is available it may be possible to differentiate costs of capital to some extent. For example the cost of capital for the mobile "business" could be based on the data from pure mobile operators while the cost of capital for the fixed "business" could be related to a sample of betas for pure fixed operators.

However we believe that it is appropriate to use a single cost of capital for JT as a whole for the following reasons:

- As the mobile business has matured, it is likely that the asset betas for fixed and mobile have converged to a significant extent. Thus we would not expect the difference between the cost of capital to be significant enough to be accurately determined, given the error bounds surrounding any cost of capital estimate.

- Many assets are common to the fixed and mobile businesses and thus need to be allocated between fixed and mobile services when investigating costs. Attaching different costs of capital to the same asset would appear to be contradictory.

9.2.4 Cost of Equity – the Capital Asset Pricing Model

We have used the Capital Asset Pricing Model (CAPM) to estimate the cost of equity. The CAPM is the most widely used method of calculating the cost of equity. The CAPM is commonly used for regulatory purposes, by investors and internally within companies. While other methods exist for estimating the cost of equity, such as dividend growth models, these models suffer from difficulties in collecting sufficient information to produce robust estimates for individual firms.

9.2.5 Jersey/JT Specific Risks

The variables used to populate the CAPM and WACC equations are not directly measurable for JT or Jersey (with the exception of the corporation tax rate). In using proxies for other markets and other operators we need to consider whether there are any factors specific to JT and Jersey which would lead investors to require a higher return on their investment compared to the investments in other operators.

One factor we have taken account of is the relatively small size of JT, which may result in higher transaction costs compared to the much larger operators used to estimate the cost of debt and equity. For this reason we have increased both the cost of equity and the cost of debt, so that the net return to investors will be comparable.

We have not made any adjustments for any factors specific to Jersey as there is no evidence that investments on Jersey attract greater (non-diversifiable) risks than the similar investments in other developed markets which have been used as proxies.

9.3 Estimates of the Variables

9.3.1 Risk Free Cost of Debt

We propose to use the yield on 10 year UK gilts as the estimate of the risk free cost of debt. We have chosen 10 year gilts as the benchmark as this is broadly in line with the average economic life of telecommunications assets. UK sovereign debt has been used as Jersey and the UK share a common currency.

We propose to use the latest available yield as the estimate of the risk free rate. The latest data point should be the markets best current estimate. While some regulators have used an average yield for a number of months there seems to be no rationale for doing so in what is a market with high liquidity unless there a specific technical factors which indicate that there may temporary mis-pricing.

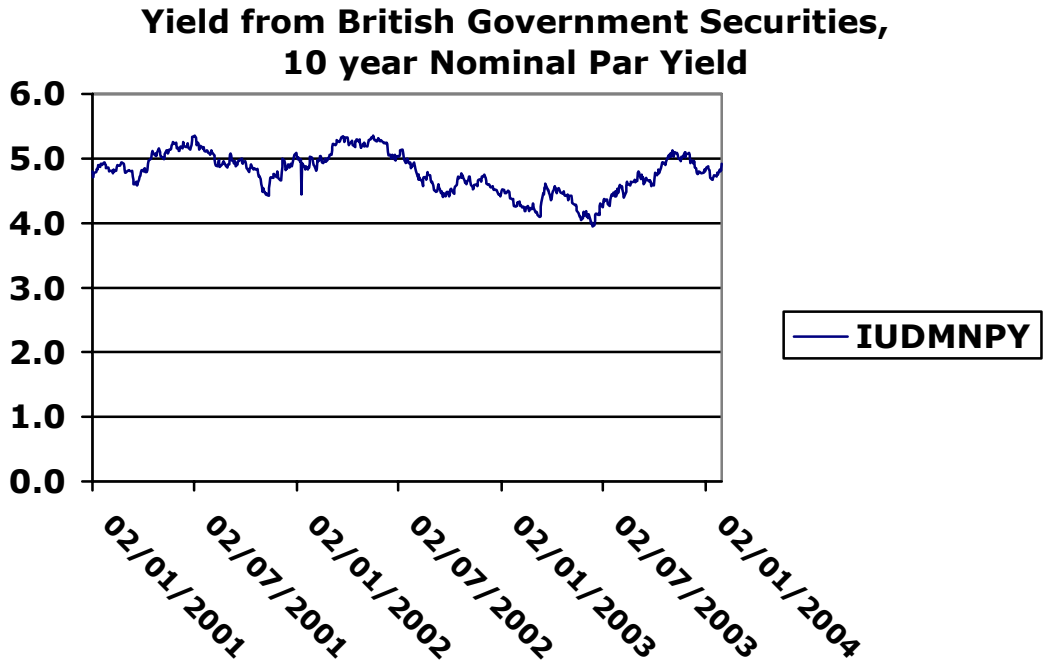


Figure 1 : Yield on UK Gilts (Source - Bank of England)

9.3.2 Cost of debt – Debt Margin

The forward looking cost of debt for many companies, which have traded debt securities in the form of corporate bonds, is directly observable. Even for companies without traded debt securities, the current rate of interest or the spread compared to a benchmark such as LIBOR, can be used to estimate the long term cost of debt. However in the case of JT, the Jersey government is the sole provider of debt as well as being the sole shareholder. Thus, even if we were to directly observe the cost of debt it may not be at market rates.

In cases where the cost of debt is not directly observable the most common approach is to apply a "debt margin" to the risk free rate, with the debt margin based on a sample of similar operators. PWC have taken this approach when calculating the cost of debt for JT, looking at the spread between the risk free rate and yields on corporate bonds for a number of telecommunications operators. This analysis shows the expected strong correlation between the rating of a company and the debt margin. Given the low level of gearing assumed for JT and the lack of any particular risk factors, we would expect the domestic business of JT to have a good rating, and thus the debt margin would be at the lower and of the range proposed by PWC.

One key difference between the sample of operators compiled by PWC and JT, is their size, with all of the operators used for the sample considerably larger than JT. This is inevitable, given that generally only larger operators issue corporate bonds, with smaller operators typically relying on bank loans or shareholder loans. This could introduce a significant bias in the cost of debt as large bond issues are likely to be the lowest cost form of debt, but are not available to smaller operators such as JT.

We propose to base our estimate on the PWC estimates of the debt margin, but to discard the estimate based solely on operators with medium grade investment rates, as we believe that the conservative assumptions made regarding the level of leverage is consistent with a high credit rating. This gives a range of debt premia between 1.2% and 1.7% above the risk free rate. In addition we propose to make an upwards adjustment of between 1.0% and 1.5% to the cost of debt based on larger telecommunication operators, in order to allow for the higher cost of debt finance. This adjustment is based on the analysis carried out be the Competition Commission for Mid Kent water[4], where they compared the cost of bank loans with corporate bonds.

9.3.3 Equity Risk Premium

There are two main approaches to calculating the equity risk premium. The first is to consider the historic premium enjoyed by equities over the risk free rate (an ex post approach). The second is to ask investors what premium they require in the future (an ex ante approach).

As the cost of capital is a forward looking measure, the ex ante approach would seem to be more appropriate, as historic returns may have been consistently above or below the expectations of investors. For example a number of commentators have postulated that the relatively high historic returns enjoyed by US equities compared to other countries may have been in part due to the unexpected success of the US economy compared to other economies. For example Fama and French having compared actual returns against expected returns, calculated using the Gordon's growth model, found that actual returns were considerably in excess of the expected returns.

The volatility of equity returns means that the error margins attached to ex post estimates is considerable depending on the length of sample used. While longer time series minimise the effect of this volatility, there is some evidence that the Equity Risk Premium has not been stable over time, and so more distant data points may not increase the accuracy of an estimate of the current ERP.

Survey based data also has problems in that it may include some response bias, as the respondents surveyed, typically investment managers or company managers, may not accurately estimate the returns required by investors.

[4] Mid Kent Water Plc: A report on the references under sections 12 and 14 of the Water Industry Act 1991

Most regulators have taken into account both ex ante and ex post evidence when setting the ERP, although regulators appear to attach greater weight to ex ante, survey based, evidence. The latest, thorough review of evidence in the UK was the Competition Commission report on the cost of terminating call to mobiles. They estimated the ERP to be in the range 2.5 per cent to 4.5 per cent. However, we note that a number of estimates of the ERP are above the top end of this range, including both PWC's estimate for JT and OFTEL's estimate, used for BT amongst others. Thus we propose to extend the top end of the range to 5.5 per cent, to give a range from 2.5 per cent to 5.5 per cent.

9.3.4 Beta

As JT is not publicly traded, it is not possible to directly estimate the beta for JT.

The approach generally used by regulators to estimate the beta of a company that is not publicly traded is to use a sample of operators with similar characteristics, for example in the same sector. This is the approach that was adopted by JT/PWC in their submission. PWC have chosen as their sample a range of European incumbent telecommunications operators who have both fixed and mobile operations.

PWC have excluded from the sample those operators that "*were rejected for statistical errors in beta*". The exclusion of some operators from the sample may produce a bias in the resulting estimates. In addition the sample include a number of operators which have significant operations outside of their home market, an example being KPN which has considerable investments in E-Plus in Germany. The forward looking cash flow of these investments outside of home markets are likely to be more unpredictable than for the regulated "home" market, as regulation will tend to increase the predictability of cash flows. Thus these operators may have a slightly higher beta than for the regulated part of JT. This potential upwards bias in the estimate of beta may be offset to some extent by the higher beta for small companies such as JT related to their higher operational gearing.

Due to the difficulty of finding any better proxies, we propose to use the PWC range of estimates for beta, which are in the range 0.68 to 0.72 expressed as un-leveraged "asset" betas.

9.3.5 Small Company Premium

UK regulators have increased the cost of equity for small companies in relationship to the higher transaction costs of trading shares in smaller companies (bid-ask spreads tend to be higher). This is distinct from assuming that there are risk factors attached to small companies, as initially suggested by Fama and French, for which investors required compensation. Further work by Fama and French suggested that the empirical evidence of higher returns for small shares was due to the high proportion of "distressed companies" (those with low market/book ratios) rather than an independent small company premium.

Following the UK precedent we propose that a small company premium should be added to the cost of capital and thus propose to add 0.9% to the cost of capital. This is the estimate used by OFTEL for Kingston Communications and is at the upper end of range used by UK regulators.

9.3.6 Gearing

There are two approaches to calculating the correct gearing to use when calculating the cost of capital. The first is to attempt to optimise the gearing in order to minimise the cost of capital. If the gearing is set too low, the business does not take account of the full tax shield benefits offered by debt finance compared to equity. However as gearing increases past a certain point, the overall cost of capital will increase as the increased costs of both debt and equity, reflecting the increase risk for both groups, more than offsets any tax shield advantages. However calculating the optimum gearing requires a large amount of information about the relationship between the cost of debt and to the level of gearing.

Given that operators themselves generally have an incentive to minimise costs, including the cost of capital, an alternative approach is to use the actual gearing of the operator as the basis for calculating the cost of capital.

In the case of JT, the fact that the government is the provider of both debt and equity (and also collects any corporation tax paid) means that JT has little incentive to optimise its gearing. Indeed it could be argued that the government should be indifferent to the gearing, as it receives the tax revenues as well.

In setting the gearing we have used a conservative range of both JT's stated "target" level of debt of 10% and the level of debt for comparable operators, currently of the order of 40%. While comparable operators should provide the best estimate of the optimum level of debt we believe that comparable operators may be over indebted, as demonstrated by their concerted efforts to reduce debt in recent years. Thus we propose to reduce the upper end of the range by 10% to give a range of 10% to 30%.

Our range of debt-equity ratios is somewhat narrower than PWC's as we have discounted JT's lower estimate of 0% based on JT's current net debt, as this is clearly sub-optimal, from the perspective of a market based cost of capital.

9.3.7 Tax Rate

We propose to use the current Jersey rate of corporation tax of 20% in order to convert the post cost of capital to a pre-tax cost of capital cost of capital, and to allow for the tax shield afforded by debt. If and when the corporation tax rates is reduced to 0%, the corresponding pre-tax WACC will need to be revised.

10. Annex C : Regulation of Mobile Termination in the European Union under the ONP Directives

Table 10-1 : Mobile Termination Regulation as at October 2002

	Organisations with significant market power		**Cost Orientation Applied**	
Market segment	**Mobile services**	**National market for interconnection**	**Regulated Operators**	**Method Used**
Obligation in Directive 97/33/EC (Article No)	Access (4.2) Non-discrimination (6)	Cost orientation (7.2)		
Austria	None	none	none	none
Belgium	Belgacom Mobile Mobistar	Belgacom Mobile	Belgacom Mobile	FAC Cost Model
Denmark	TeleDanmark Sonofon	none	none	none
Finland	Sonera Radiolinja Oy Alands Mobiltelefon	none	Sonera Radiolinja Oy Alands Mobiltelefon	Unclear. Does not apply to fixed to mobile calls
France	Orange France SFR	Orange France SFR	Orange France SFR	FAC Cost Model
Germany	none	None	none	none
Greece	Cosmote Vodafone	None	none	none
Ireland	Vodafone O2	Vodafone O2	Vodafone O2	Informal benchmarking
Italy	TIM Omnitel	TIM Omnitel	TIM Omnitel	Unclear
Luxembourg	EPT Millicom	None	None	None
Netherlands	KPN Mobile	None	None	None
Portugal	TMN Telecel	None	None	None
Spain	Telefónica Móviles Airtel Móvil	Telefónica Móviles Airtel Móvil	Telefónica Móviles Airtel Móvil	Benchmarking
Sweden	Telia Vodafone Tele2	Telia Vodafone Tele2	Telia	FAC Cost Model
UK	Vodafone O2	none	Vodafone O2	FAC Cost Model