Aurizon Access Undertaking:

Risk Allocation Analysis

Report to Queensland Resources Council

October 2013

1 Introduction and Overview

1.1 Introduction

Aurizon Networks (Aurizon) owns and operates the below-rail network in the Central Queensland Coal Region. The network has been declared under the Queensland Competition Authority Act and as a result Aurizon has submitted a voluntary draft access undertaking to the Queensland Competition Authority (QCA) for approval.

The undertaking is to apply for a four year period from 2013/14 to 2016/17. The undertaking provides a safety net for access seekers in that it sets out the terms and conditions under which Aurizon will provide access to the service.

In its submission supporting the draft undertaking Aurizon states that it has a higher risk profile than most regulated businesses in Australia and thus requires compensation through the WACC by a higher equity beta.[1] Aurizon suggest an equity beta in the range of 0.9 to 1.0. As Aurizon proposes this equity beta in conjunction with a gearing ratio of 55 per cent, it is in fact higher—in the range of 1.0 to 1.1—when relevered to the standard 60 per cent gearing normally used by Australian regulators for comparable businesses.

For regulated businesses, many of the commercial risks are defined by the regulatory framework rather than by the nature of the business that the company is in. To a significant extent, regulation mutes business risks, while the framework itself introduces new risks.

Thus the evaluation of Aurizon's claim that it faces a higher risk profile than most regulated business should be primarily based on the analysis of the different risks that arise from the different regulatory frameworks.

Accordingly, in this report we compare the allocation of key risks for a range of regulated businesses in Australia with the risk allocation proposed by Aurizon to help assess the reasonableness of Aurizon's claims.

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1.2 Overview of our analysis and conclusions

Our approach to this comparison is to:

- explain why regulated business have different risks to businesses that are subject to competition and to define and explain the key risks we will use to assess the risk allocation in our case studies—Section 2
- look at the way in which regulators compensate regulated firms for risk through the WACC and in particular the role of the equity beta. We also discuss some of the issues faced by regulators in setting the equity beta—Section 3

[1] "2013 Draft Access Undertaking Volume 3: Maximum Allowable Revenue and Reference Tariffs", Aurizon, 30 April 2013, pp 108

- assess the risk allocation in the rail access regime applying to Aurizon for the key risks that we identified in Section 2. We do this in Section 4; and
- compare the risk allocation in the regulatory framework of each of the four case studies for each category of risk against Aurizon's risk allocation. Our case studies cover several sectors (water, electricity transmission, gas transmission and electricity distribution) and several regulators (the Australian Energy Regulator (AER) and the Independent Pricing and Regulatory Tribunal (IPART))—Section 5

In Section 6 we detail our conclusions on the relative risk arising from the regulatory framework of versus the four case study businesses. In Appendix 1 we also respond to the factors cited by Aurizon as key differences between their regulatory framework and other Australian frameworks.

Our analysis shows that when compared across the range of key risks, Aurizon has a lower risk than our case study businesses, but that the equity betas set by regulators for each of the four case study entities are well below the lower end of the range proposed by Aurizon. We have also considered the equity beta and risk profile of Telstra in regard to its fixed line services. Telstra's equity beta is slightly higher than the lower end of the range proposed by Aurizon, and well below the upper end of the range. Telstra's relative risks are significantly greater than those of Aurizon.

This conclusion holds for Aurizon's risk profile both under the previous undertaking (UT3) and under the proposed undertaking (UT4). Under both frameworks, Aurizon has a lower risk than all of our case study businesses and Telstra.

Based on this analysis, we conclude that Aurizon's equity beta should be lower than 0.7 based on 60 per cent gearing, which is equivalent to an equity beta of 0.6 at Aurizon's 55 per cent gearing.

2 Key risks for regulated business

In this section we explain why the risks faced by regulated firms arise primarily from the regulatory framework. We also define and explain the key risks faced by regulated businesses under a generic regulatory framework.

The QCA in its Statement of Regulatory Principles (August 2013) recognises that the choice of pricing structure and the form of regulation can affect the allocation of risk. This has important implications for estimating the cost of capital. The Statement goes on to say that as the choice of a pricing structure or form of regulation affects the allocation of risk, and to the extent that risk is non-diversifiable, the regulator's choice of price control affects the value of the beta parameter in the CAPM and, therefore, the firm's cost of capital.

Risks arise from the regulatory framework

For regulated monopolies, commercial risks—that is risks which may lead to variability in cash flows—tend to be more influenced by the nature of the regulatory framework than by the nature of the business in which the monopoly engages. This is because regulated businesses are to a significant extent protected from business risks by the regulatory framework. As an example, a business regulated within a revenue cap framework has a very low risk of a revenue shortfall compared to an unregulated business, regardless of how variable the level of demand may be.

However, while the regulatory framework may protect the regulated monopoly from the effects of the business variability, it introduces its own risks to the extent that it imposes risks associated with the exercise of regulatory discretion. For example, a regulated business within a revenue cap framework has a low risk of a revenue shortfall but may have a greater risk that the revenue cap set by the regulator could be inappropriate—that is it may be set too high or low.

While, in Australia, there is a high degree of commonality between the various regulatory frameworks that apply to sectors such as rail, energy, water, ports, and telecommunications, there are subtle differences that have a material impact on the risk allocation between the regulated businesses and its customers and thus the level of WACC necessary to compensate businesses.

The way in which these risks are allocated between the business and its customers under the regulatory regime determines the regulated rate of return—that is, the WACC should compensate for the risks that the business is allocated. Of course, efficient risk allocation means that risk should be allocated to the party most able to manage and mitigate that risk.

Risk allocation in regulatory frameworks

Our discussion and analysis of risks is framed against a generic standard Australian regulatory framework—an incentive based building block model. However, we note that there are many differences between all of the various frameworks in Australia—some major and some subtle. Where relevant, we discuss ways in which risks may be mitigated by other features of the regulatory regime.

In setting up regulatory frameworks, policy makers face a large array of design choices and thus all frameworks are a complex interaction of many design features and trade-offs, and need to be considered as an overall whole and not as a series of unrelated components.

In all frameworks, the key risks are either:

- Allocated to the regulated business
- Allocated to customers; or
- Shared between the business and customers.

All Australian regulatory frameworks aim to enable the service provider to recover the full reasonably efficient cost of the service. Hence, many of the risks are some type of forecast risk. These arise because regulatory frameworks usually involve limiting—for a period of time—regulated firms from adjusting prices, inputs and outputs to adjust to changing circumstances. For example a regulator may set prices for a period to recover forecast cost levels whereas in a competitive environment a firm is free to adjust prices to respond to competition, changes in demand or changes in costs.

Key risks for regulated businesses

We categorise the key risks as:

- **Revenue risk**—that demand for the service and thus revenue is different to that forecast
- **Expenditure risk**—that the required service levels and outputs need more or less capital expenditure or operating expenditure than forecast arising from either volume or price variations
- **Inflation risk**—that actual inflation varies from that forecast
- **Stranding or bypass risks**—that demand for certain services falls to zero or users switch to alternative options
- **Regulatory risk**—that the regulator makes an inappropriate decision, for example, on the level of costs or returns required by an efficient firm to perform the service
- **Political risk**—that Government actions increase costs or decrease revenues; and
- **Force majeure risks**—that major unforeseen events outside of the control of the service provider and customers arise, for example natural disasters.

2.1 Revenue risk

Regulatory frameworks in Australia are usually prospective—that is, prices or revenues are set in advance based on forecasts of throughput or activity—rather than retrospective—that is setting prices to recover actual levels of past cost.

For the prospective frameworks this creates the risk that if the actual level of activity is lower or higher than the forecast, then accordingly revenue will also be lower or higher. Of course, this represents both an upside and downside risk—the price for accepting the probability of revenue being less than forecast is the opportunity to benefit if revenue is greater than forecast.

Typically, Australian regulatory frameworks use a price cap, a revenue cap or a hybrid of the two.

If the regulatory framework uses a **price cap**, then the regulated business is—in theory at least—fully exposed to revenue risk. The extent to which this is true in practice depends on:

- The likelihood that the activity will vary from the forecast. If demand for the service if highly inelastic and demand is also relatively insensitive to external influences such as changes in GDP growth, then the degree of risk is small
- The extent to which there are take or pay or otherwise firm contracts between the regulated business and customers. Gas transmission businesses, for example, typically have long term contracts for reservation of capacity with customers; and
- The extent to which the regulated entity has control over the pricing structures and can for example mitigate the impact of demand fluctuations by biasing the pricing structure towards fixed charges rather than throughput charges.

For example, electricity distribution businesses are fully exposed to revenue risk through price caps but have a high degree of control over pricing structures. In practice, we note they haven't generally moved to high fixed charge price structures. The fact that fixed charges are not a significant proportion of revenue suggests that these businesses have determined that the rewards from exposure to demand fluctuations outweigh the risks. Further, fixed charges on a per customer basis don't provide any revenue stability if customer numbers are volatile.

If the regulatory framework uses a **revenue cap**, then the regulated business is largely protected from revenue risk. Under a revenue cap, there are options in the regulatory toolkit to further reduce revenue risk such as a "true up" annual adjustment such that any variation in actual revenue to the allowance is recovered in the subsequent year.

There also many **hybrid schemes** that combine features of both price caps and revenue caps. An example would be a price cap that has annual revisions of forecast volumes—essentially a revenue cap with no true up thus limiting potential variations to within the year only.

The QCA's Statement of Regulatory Principles (referred to above) accepts that a firm's cost of capital would likely be higher under a fixed price cap than an average cost price or revenue cap, as the former exposes investors to greater non-diversifiable risk than the latter.

Service quality incentive schemes

Many regulatory frameworks have mechanisms that provide a system of rewards and penalties associated with the achievement of pre-determined service quality standards. While these may take many forms, the basic concept is that over-performance is rewarded by an increase in the allowed revenue and under-performance a decrease. The schemes usually place a cap on the "revenue at risk" from under-performance.

If the regulatory framework has a service quality incentive scheme, then even if there is a revenue cap in place, the business will still have some revenue risk. This is an example of how the various components of a regulatory framework need to be considered as an integrated whole.

2.2 Expenditure risks

The expenditure risks in a typical prospective regulatory framework arise as a result of regulators in some way setting limits on the operating and capital expenditure of the firm to mitigate the monopoly power of the firm.

In a similar manner to revenue setting, the regulator makes a determination on prospective operating and capital costs to reflect the level of efficient costs required to

deliver the service over the regulatory control period (typically five years). In the Australian frameworks, the regulator typically responds to the service providers' proposals.

This again creates forecast risk: the risk that the actual level of costs required will be different to that allowed by the regulator. This could be because of a combination of two factors:

- The volume of the service required is different to the forecast and thus the total variable costs of providing the service will be different; or
- Actual costs—even at forecast volumes—are different to that expected.

Note that:

- since building block costs are usually expressed in real terms, for actual costs to vary the rate of increase in costs must be greater than or less than the rate of inflation. We cover the treatment of inflation in Section 2.3; and
- we assume that the costs allowed by the regulator are appropriate. We discuss the risks of regulators not making adequate cost allowances in Section 2.5.

There are a number of potential mitigants if a business is exposed to expenditure risks, some that may be under the control of the business and some that may be present in the regulatory framework. For example:

- The regulatory framework may allow for pass through of unforeseen material price increases during a regulatory period
- The regulatory framework may allow for demand forecasts and thus variable costs to be revised during the regulatory period.

Efficiency benefit sharing schemes

If expenditure risks in a regulatory framework are allocated fully to the business, a form of compensation—other than the WACC—may be present in some frameworks in the form of an efficiency benefits sharing scheme. Many Australian regulatory frameworks aren't "cost plus" but incentive based. Under the incentive based framework, a business retains the benefits of any under expenditure—that is the regulatory cost allowance is fixed ex ante and not revisited in the light of actual outcomes. This creates powerful incentives for profit maximising businesses to seek out all opportunities to deliver the service at lower cost. Many regulatory frameworks further enhance this incentive through "efficiency benefits carryover schemes" that share the benefits of efficiency gains made by the firm between customers and the firms beyond the regulatory period in which they occur.

2.3 Inflation risks

This is the risk that actual inflation will be different to that forecast. In many Australian regulatory frameworks, particularly those where prices or revenues are set for a number of years ahead, those prices or revenues determined by a regulator are set in real terms—that is they are escalated by actual inflation.[2] Further the regulated asset base (RAB) is "rolled forward" from one regulatory control period to the next using actual inflation.

[2] While the inflation adjustment for prices and revenues are typically lagged—that is prices in each year are escalated by actual inflation increase in the previous period that is available, this does compensate for all but a minor timing difference.

In this way, all inflation risks are passed to the customers and investors receive a real return on the funds employed. This is common for both regulated infrastructure as well as similar PPP arrangements, such as toll roads, where prices are real and escalated by actual inflation.

2.4 Stranding or bypass risk

While regulated businesses don't usually face competition risks—except at the margin—they do face stranding or bypass risks.

For example, for an electricity network:

- Large energy intensive customers may close down if electricity prices are too high, potentially leaving the network with infrastructure that was dedicated to supplying that customer with no other economic use—that is stranding or
- Large customers located close to generators or the transmission network may be able to bypass all or parts of the network.

In all of these cases, the electricity network is exposed to risk that particular network assets associated with these customers become underutilised.

Regulatory frameworks deal with asset underutilisation in a two broad ways. Some empower regulators to write down asset values—that is optimise the asset base in these circumstances, with assets having to pass a "used and useful" test. While the risk of asset optimisation is only one of many risks, and cannot determine beta by itself, if this is a feature of the framework, clearly this risk would be one of the factors reflected in the equity beta.

Other regulatory frameworks largely eliminate stranding or bypass risk by not allowing any post investment optimisation of the RAB as a result of underutilisation. Once an asset is approved to be added into the asset base, the business will receive return on and return of capital.

Regardless of the approach to optimisation, there are a number of options available to mitigate this type of risk where it is economic to do so, such as:

- prudent discounts where a customer has a realistic option of bypass or cessation of business. For example, since electricity network tariffs typically have large allocations of common costs, prudent discounts such that prices at least cover incremental costs and make some contribution to common costs will result in all customers benefiting more than if there is no supply to the customer
- accelerated depreciation where a customer has a shorter period of operation than the life of the assets serving them—for example assets dedicated to a mine site; or
- long term "take or pay" contractual arrangements with major customers.

Any analysis of the extent to which stranding or bypass risk could affect equity beta should take into consideration the ability of the service provider to manage that risk, and the likelihood of the regulator exercising the relevant powers.

2.5 Regulatory risks

All regulatory frameworks inherently have risks of regulatory error—that is the regulatory makes inappropriate decisions, for example:

- Reducing capital and operating expenditure allowances below the efficient level needed to provide the service
- Setting returns below the level needed to compensate the service provider for the risks allocated or the level required to attract new capital; or
- Making unrealistically low volume forecasts that flow through to prices in a price cap framework.

To some extent, regulatory risk is symmetrical in that regulators may make errors that are favourable to the regulated business. However it is generally considered that favourable errors are rare as regulators tend to be highly sceptical of proposals put forward by regulated firms.

There are a number of options inherent in the framework that may mitigate regulatory risk:

- The regulatory framework may be prescriptive, limiting the regulator's discretion; and
- There may be the option of merits review by an independent body.

While, in theory, the probability of regulatory error may be expected to be lower in these circumstances, in practice it is difficult to find strong evidence to support such a conclusion. Across Australia there are some regulators that operate under highly prescriptive regulatory frameworks where service providers have the option of merits review—for example the AER and the Australian Consumer and Competition Commission (ACCC); and other regulators that operate under less prescriptive frameworks where there is no option of merits review—for example IPART and QCA. It's not obvious that either category of regulators has been more successful in avoiding obvious regulatory errors.

A good example is the regulation of electricity distribution networks. Prior to 2005 these business where regulated by State based regulators (IPART, QCA, ESC, ESCOSA) under a variety of "high discretion" state based frameworks with no merits review. From 2005 they were regulated by the AER under the highly prescriptive National Electricity Rules (NER) and with merits review available from 2008. There is no clear trend that the quality of regulation or the incidence of regulatory error changed as a result of the change in framework.

In fact, the prescriptive NER framework has been criticised for limiting regulatory discretion to such an extent that the AER was constrained from rejecting regulatory proposals that it believed were excessive. Recent changes to the NER have reduced the level of prescription in the key areas of expenditure review and allowed rates of return.

This suggests that a more prescriptive framework introduces a different kind of regulatory risk—not of regulatory error, but of an error in the framework.

Further mitigants of regulatory error regardless of the level of prescription are the precedents and conventions generally followed by regulators, for example:

- the consistent pattern of Australia regulators in following precedents set by other regulators. Following regulatory precedents occurs regardless of the specific regulatory framework
- the recognition by regulators of the importance of stability. This leads to a reluctance of regulators to change parameters set in previous exercises of discretion without appropriate justification. An example of this is in regard to

WACC parameters where regulators once having made a decision on a point estimate within a range for a parameter will not change that estimate in future determinations unless there is "persuasive evidence" that the previous value is incorrect; and

- the recognition by some regulators of the potentially asymmetric consequences of regulatory error.

We also note that all regulators in Australia are subject to judicial review. While this is often characterised as a narrow and ineffective review focussing on process, it does allow review where:

- The regulator has failed to given appropriate weight or consideration to a matter specified in the legislation—for example the legitimate business interests of the service provider
- The regulator took an irrelevant consideration into account
- The regulator failed to take into account a relevant consideration (whether specified in the legislation or not); or
- The regulator's decision is manifestly unreasonable—that is the decision is "so unreasonable that no reasonable authority could ever come to it".

We also note that the National Competition Council has accepted that judicial review is an appropriate form of review for decisions made under the national access regime.[3]

Thus judicial review does serve as at least a partial mitigant to the risk of regulatory error.

2.6 Political risks

This is the risk that Government action will increase costs or decrease revenues of the regulated service provider. Setting aside extreme and highly unlikely events such as expropriation, this mainly occurs through changes to Government charges such as taxes and levies of various kinds. Other Government actions that increase costs include legislated changes to service or safety standards.

Most regulatory frameworks have pass thru or re-opener type provisions for these types of event and these substantially mitigate the risk.

Taxation changes, in particular, may also have legislative support for price changes to occur outside of any contractual or regulatory provision—for example the legislative support for the introduction of the Goods and Services Tax allowed contractual and regulated prices to be increased by the GST.

2.7 Force majeure risks

It's important that regulatory frameworks have a clear risk allocation in regard to high impact low probability events such as damage to a regulated business' assets through natural disasters such as bush fires, cyclones or floods. These events may cause substantial damage to assets and may severely impact on the ability of the service provider to meet service quality standards. Typically these events and their consequences are seen as largely outside the control of both the business and its customers.

Clearly, resolving risk allocation *ex post* in these circumstances is unsatisfactory and problematic so *ex ante* risk allocation should be regulatory best practice.

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[3] National Competition Council, *The National Access Regime: Submission to Productivity Commission Inquiry*, 8 February 2013, pp 15-16.

One approach, used in some frameworks is that these risks aren't compensated through the WACC but through a reopener or pass through provisions on a case by case basis. While there is often considerable regulatory discretion in these matters, the costs and risks are at least to some extent allocated to customers rather than the regulated business. In a normal competitive market, these risks are almost always borne by the business itself and not customers, but equally, in competitive markets, a firm's returns aren't capped by a regulator.

The treatment of such events for regulated firms has parallels with force majeure events in long term PPP contracts.

3 Risk compensation through the rate of return

The key mechanism for compensating regulated firms for the risks that have been allocated to them by the regulatory framework (as well as their normal business risks) is through the regulated rate of return—the WACC.[4] The WACC of a regulated business should represent a good proxy for its risk allocation, thus facilitating comparisons between the different risk allocations from subtly different regulatory frameworks.

However, most of the WACC parameters determined by a regulator are contemporaneous with the regulatory decision—for example the risk free rate and the debt premium—making it not possible simply to compare WACCs across different regulatory decisions or different riskiness of regulated businesses.

The key non-contemporaneous parameter that proxies risk is the equity beta and it is on this basis that valid comparisons can be made.

Setting the equity beta

There is a well-established methodology for the calculation of equity betas for listed firms. However in the Australian regulatory context, as the majority of regulated firms aren't listed entities, it isn't possible to sample sufficient firms to arrive at representative betas with an appropriate degree of statistical confidence. A further complication is that few listed regulated firms are pure plays and of course may operate under different risk allocation frameworks.

There have been attempts to use evidence from international markets to estimate Australian equity betas. For example Aurizon cites an analysis of the betas from listed US railroad companies as part of its claim for a higher beta. Such international evidence should be treated with caution as:

- The comparators chosen are almost always not directly comparable—observed betas for US rail companies relate to vertically integrated businesses with both above rail and below rail activities and thus have a materially different risk profile to a below rail business; and
- Beta can only be derived by reference to the specific market so betas are only comparable between different markets if the markets have similar characteristics—that is the average risk profile of the markets are as comparable as the specific risk profile of the business. A quick comparison of the top 20 stocks in the US and Australia shows that this condition doesn't hold. International betas can only be compared if they were calculated against a counterfactual of a hypothetical weighted average world equity market.

As a result of the lack of hard empirical evidence, the setting of equity betas in Australia tends to be an area where there is a high degree of regulatory discretion. However, it is also an area where regulators take heed of regulatory precedents and the need for regulatory stability and certainty. Thus, in sectors such as electricity networks, equity betas have been stable and have been set with a narrow range over nearly two decades of regulatory determinations.

Asset betas and equity betas

There are in fact two betas for a firm—the equity beta and the asset beta. The equity beta is derived from the underlying asset beta of the firm and the gearing ratio. However,

[4] Some types of risk are compensated through the cash flows—for example through an allowance for self-insurance for certain types of risk.

most Australian regulators in their explanations of their equity beta decisions don't usually estimate the asset beta explicitly, only the equity beta, perhaps because of the near universal use of a standard 60 per cent gearing.

In this note, we generally refer to the beta of a regulated firm as the equity beta unless otherwise noted.

4 Risk allocation in the Aurizon proposal

In this section we describe and discuss the risk allocation inherent in the Aurizon access undertaking proposal for the period 2013 to 2017 across the key risk categories identified in Section 2.

4.1 Revenue risks

The Aurizon access undertaking proposes a revenue cap with a true up mechanism and thus it appears that Aurizon is largely protected from revenue risk. However, the true up mechanism operates separately on each of the five Central Queensland Coal Network (CQCN) rail systems—that is a revenue shortfall on one system cannot be recovered from users of the other systems. This is different to typical true up mechanisms which allow revenue shortfalls to be recovered across all customers, not just a subset.

Thus revenue shortfalls are at least a theoretical possibility if volumes fall sufficiently on a single system such that prices on that system cannot be increased to recover the revenue. However, this is unlikely as for the larger systems which comprise most of the RAB the customer base is very diversified. This is discussed further in Section 4.4 in regard to stranding risk.

Further, there are a number of mitigants available to Aurizon:

- We understand that the majority of customers have long term contracts with Aurizon for access that have "take or pay" arrangements that substantially mitigate even the cash flow timing differences from volume fluctuations;
- Even if a particular mine becomes uneconomic there are relinquishment fees built into the agreement to offset the impact, so that, the main risk is a coal producer failing and not being viable as a going concern. Even in those circumstances the remaining users of the system will pay under the revenue cap
- There is scope for Aurizon to revise its volume forecasts annually during the regulatory control period and adjust the reference tariffs accordingly; and
- In respect of any "lag" periods between a change in circumstances affecting revenue and recovery of that revenue, Aurizon does not need to wait until the next regulatory period but may submit a Draft Amending Access Undertaking at any time.

4.2 Expenditure risks

In regard to ***operating expenditure***, Aurizon has a number of mechanisms to ensure that there is little risk that that they will not be compensated for actual expenditures incurred. The mechanisms are:

- Scope for adjustment to maintenance expenditure to account for changes in maintenance costs that are attributable to differences between the approved volume forecasts and any revised volume forecasts; and
- A general pass thru of increases to maintenance costs where actual prudently and efficiently incurred costs are greater than the approved operating cost allowance, through the ability to either lodge an Amending Undertaking or rely on the review events in the existing Undertaking which may be triggered where Aurizon prudently and efficiently incurs maintenance costs which exceed allowances by more than 2.5%.

In regard to operating costs, these mechanisms essentially make the regulatory framework one of "cost plus" ensuring that the risk of under recovery of operating cost is minimal.

In regard to ***capital expenditure***, Aurizon proposes a pre-approval process as to the scope, standard and procurement methodology of capital expenditure. If the scope, standard and procurement methodology of capital expenditure is pre-approved by either customers and/or QCA and the cost approved as efficient by QCA, then the resulting expenditure must be accepted into the RAB. Thus, Aurizon bears little risk other than that the QCA may deem the final cost to include an inefficiently incurred cost. That risk is further mitigated in that QCA is unlikely to find that a cost incurred wasn't efficient if Aurizon procured the project according to an approved methodology.

Thus for capital expenditure projects there a low risk to Aurizon that capital expenditure will not be added into the RAB.

4.3 Inflation risk

The regulatory framework applying to Aurizon is the standard "building block" model used in Australia in that reference tariffs are set in real terms and the RAB is rolled forward by applying actual inflation between regulatory control periods. In this way, Aurizon is fully protected from general inflation risks.

Aurizon has a further protection from specific cost inflation risks—for example if its maintenance costs rise at a faster rate than the general CPI or Maintenance Cost Index (MCI). This is because it has the ability to seek an adjustment to its reference tariffs where additional costs above a threshold are efficiently incurred.

There is also a mechanism to ensure that Aurizon can vary its reference tariffs to compensate for any differences between forecast and actual energy costs for energy supplied in connection with the electrical traction system.

4.4 Stranding or bypass risks

Clause 1.2(c) of Schedule E of the proposed Undertaking provides that the QCA will not reduce the RAB unless the original inclusion in the RAB of particular assets was based on false or misleading information.

In the previous Undertaking, the equivalent provision (clause 1.4 of Schedule A) had provided broader scope for the QCA to reduce the RAB, including where "demand has deteriorated to such an extent that regulated prices on an un-optimised asset would result in a further decline in demand" or where "it becomes clear that there is a possibility of actual (not hypothetical) bypass" or where assets have deteriorated as a result of bad or imprudent operating practice.

The draft Undertaking now omits the provisions allowing for optimisation where there has been deterioration in demand, where there is scope for bypass, or where there has been imprudent management. The draft Undertaking would only allow optimisation where false or misleading information has been provided.

In other words, while Aurizon faces commercial risks (such as reductions in output from specific mines, or even closure, that might leave it with excess capacity), the proposal eliminates any mechanisms through which excess capacity can lead to stranding risk.

We note that even if the provisions to reduce the RAB from the current Undertaking were re-instated, the actual risk to Aurizon would, in theory, increase slightly but would still be low. This is because unlike electricity or gas networks, for example, bypass is only a theoretical possibility for a rail network as it is more in the nature of a point to point

network rather than a meshed network. Further, Aurizon does have other mitigation options—for example through Ramsey pricing allocating common costs proportionally more to non-price sensitive users.

In regard to reductions in volume, in the proposed Undertaking this risk is mitigated by:

- The use of accelerated depreciation to match average remaining mine life to ensure that capital costs are recovered over the mine life and not the longer asset life. We note that in the draft Undertaking, Aurizon now proposes accelerated depreciation of the legacy assets. If accepted, this would likely see a slight reduction in volume risk compared to the existing Undertaking, but it would not alter this aspect of risk materially.
- The take or pay provisions in the access Undertakings and the revenue cap which essentially allows Aurizon to pick up revenue lost through volume decrease from the relevant Access Holder under the take or pay provisions or other users of that system through the operation of the revenue cap
- The long term agreements with Access Holders; and
- The restrictions on the ability of the QCA to remove assets from the asset base where they do in fact become stranded.

The coal industry in Queensland and generally is facing less buoyant conditions that has been the case recently and thus future volumes are less certain. However, the mines themselves have substantial sunk costs in infrastructure and mine development and in the event of a downturn will continue to produce as long as coal prices cover their variable costs of extraction and make some contribution to fixed costs.

4.5 Regulatory risk

Aurizon suggest that the nature of the Queensland rail access regime means a higher degree of regulatory risk than other regimes as:

- The regime is less prescriptive with only guiding principles and thus there is a higher degree of regulatory discretion; and
- There is no merits review available, only judicial review.

As discussed in Section 2.5, despite wide differences in the specific regulatory frameworks used and thus the degree of discretion available to the different Australian regulators, it's not clear that there is significant co-relation between the degree of discretion and the risk of regulatory error.

The regulatory risk is also mitigated by the strong tendency of regulators to follow precedents and their recognition of the need for regulatory stability to ensure adequate investment.

The lack of merits review does mean that a potential mechanism to correct regulatory error that is available in some other regulatory frameworks isn't available to Aurizon and thus regulatory risk may be higher. However it is debatable just how significant the lack of merits review is, given that judicial review is also generally seen (including by the NCC) as an appropriate and effective review mechanism.

4.6 Political risk

The access undertaking proposed by Aurizon contains a number of re-opener and pass through provisions in regard to operating expenditure. This should substantially mitigate

any risk arising from the imposition of increase in or new Government taxes, charges and levies.

In addition, the proposal provides scope to submit amendments to an accepted undertaking at any time to manage unforeseen risks that may arise.

4.7 Force majeure risks

Aurizon may seek a variation to the reference tariffs where certain force majeure events such as acts of God, fires, floods and earthquakes occur causing Aurizon to incur additional costs of greater than $1.0 million.

This provides substantial mitigation to such high impact low probability events.

5 Risk allocation in other regulated businesses

In this section we look at four case studies covering a range of regulated businesses in Australia. We have selected businesses with a range of different regulators. This is because part of Aurizon's claim of higher risk is the amount of regulatory discretion QCA has under the rail access framework compared to other regulators such as the AER under different frameworks.

The case studies focus on private sector businesses where possible and use the latest decisions and approvals for:

- **Sydney Desalination Plant (SDP)**—a private sector water business regulated by IPART. The latest determination made in December 2011 covers the period from 1 July 2012 to 30 June 2017
- **Electranet**—a private sector electricity transmission business regulated by the AER. The latest determination made in April 2013 covers the period from 1 January 2013 to 31 December 2017
- **Gasnet**—a private sector gas transmission business regulated by the AER. The latest determination made in March 2013 covers the period from 1 July 2013 to 30 June 2018; and
- **Aurora Energy**—a government electricity distribution business regulated by the AER. The latest determination made in April 2012 covers the period from 1 July 2012 to 30 June 2017.

In each case study, for each risk category we assess the relative risk of the regulated business using the Aurizon proposal as a base.

In Table 5.1 we summarise our results:

Table 5.1: Relative risks—case studies versus Aurizon

Risk	SDP	Electranet	GasNet	Aurora
Revenue	-	-	++	++
Expenditure	++	++	++	++
Inflation	*	*	*	*
Stranding and Bypass	+	*	+	*
Regulatory	+	-	-	-
Political	+	*	*	*
Force Majeure	+	*	*	*
Summary	+	+	++	+

+ = Case study greater risk than Aurizon, **++** = significantly greater risk

- = Case study less risk than Aurizon, **--** = significantly less risk

***** = No significant difference between case study and Aurizon

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5.1 Sydney Desalination Plant

Sydney Desalination Plant (SDP) is a private sector water utility that provides water security and water production services to Sydney Water under a long term contract. However the prices under the contract are regulated by IPART but not the contract itself. In many ways this is similar to Aurizon's long term contracts with its customers.

IPART as a regulator operates under a non-prescriptive framework and has a high degree of discretion. A unique feature of the framework is that the relevant Minister can issue IPART with terms of reference (TOR) for a regulatory review that IPART must have regard to, but cannot override IPART's statutory objectives.

5.1.1 Revenue risks

SDP is regulated under a price cap but actually has almost no revenue risk from volume fluctuations. This arises because the tariff structure has a fixed component—an availability charge—that recovers all fixed costs of SDP and a usage charge that recovers all of the variable costs of water production. This arrangement stems from the TOR which asks IPART to make SDP financially indifferent to whether it produces water or not—important as its main role is water security in prolonged periods of low rainfall.

This is an example of how the tariff structure can be used to reduce or eliminate revenue risk from volume fluctuations by careful design of the fixed and variable components.

Revenue risk assessment

SDP's revenue risk is slightly less than (or possibly the same as) Aurizon on the basis that SDP's risk of revenue variation is effectively zero whereas Aurizon has a small theoretical risk.

5.1.2 Expenditure risks

SDP capital and operating expenditure allowances are set at the beginning of each regulatory control period. There is no explicit provision for variation or prescribed pass thru mechanism for unforeseen increases.

There is a small risk sharing mechanism for electricity costs where SDP can pass costs increases above a certain threshold to customers. However SDP must bear the first 5 per cent of cost increases and can only pass 90 per cent of any further cost increase to customers.

Expenditure risk assessment

SDP's expenditure risks are significantly higher than Aurizon as with the exception of a small pass through of energy costs, SDP takes all of the risk for all other operating and capital expenditure that actual costs will be higher (or lower) than forecast. By contrast, Aurizon has a number of mechanisms to adjust reference tariffs to pass on such increases.

5.1.3 Inflation risk

Similar to Aurizon, SDP is fully protected against inflation risks. SDP's prices are expressed in real terms and prices and the RAB are escalated by actual inflation.

Inflation risk assessment

SDP's inflation risks are similar to Aurizon.

5.1.4 Stranding or bypass risks

SDP doesn't face any stranding or bypass risks for the duration of the current long term take or pay contract with Sydney Water. However, since the economic life of the plant is greater than the term of the contract, there is a hypothetical stranding risk in the longer term.

Stranding or bypass risk assessment

While SDP's stranding or bypass risks are about the same as Aurizon's over the next regulatory period, they are higher in the long run .

5.1.5 Regulatory risk

SDP is regulated by IPART under a similar framework to Aurizon's regulation by QCA. Both are required by legislation to take into account a broad range of general factors—for example "the legitimate business interest of the service provider"—in making regulatory determinations but have wide discretion over the form, content and process of regulation. Similarly, there is no merits review available for IPART decisions.

There is nothing in the legislation to prevent IPART, for example, optimising SDP's assets and setting a lower RAB—except common sense and regulatory precedents. The legislation does allow the relevant Minister to issue a TOR for any regulatory review that IPART must have regard to in its determinations but these do not override the statutory matters that IPART must take into account.

Regulatory risk assessment

SDP's regulatory risks are slightly greater than Aurizon's as a result of the potential uncertainty created by the Minister's ability to influence the process through the issuance of terms of reference.

5.1.6 Political risk

In contrast to the Aurizon access undertaking, the SDP determination contains no explicit review events or reopeners or pass-through provisions. As a result events such as a general increase in corporate tax would have to be specifically considered on a case by case basis by IPART. Logically, IPART should approve such a request, but its discretion to even consider the matter is unfettered. They would also have complete discretion over any materiality limits or processes that might apply although they would be expected to follow precedents from other regulators.

We also note that the ability of the Minister to issue a TOR to IPART might be seen as a political risk although we have treated it as a regulatory risk.

Political risk assessment

The lack of any review events, even for increases in Government charges, means that the political risks facing SDP are slightly greater than those faced by Aurizon.

5.1.7 Force majeure risks

Unlike the Aurizon access arrangement, there is no review for a force majeure event in the SDP determination by IPART. If such an event happened, IPART as a matter of

logic might well agree to vary the determination but would be under no obligation to even consider the matter. They would also have complete discretion over any materiality limits or processes that might apply although they would be expected to follow precedents from other regulators.

Force majeure risks assessment

The lack of any explicit force majeure provisions means that the risks facing SDP are slightly greater than that faced by Aurizon.

5.2 Electranet

Electranet is a private sector electricity business that owns and operates the high voltage electricity transmission network in South Australia. It is regulated by the AER under the National Electricity Law (NEL) and National Electricity Rules (NER). The NER is highly prescriptive and detailed and considerably limits the discretion of the AER. All AER regulatory decisions are subject to merits review by the Australian Competition Tribunal.

5.2.1 Revenue risks

The AER has determined that Electranet (and all electricity transmission businesses) are regulated by a revenue cap with a full true up mechanism that is NPV neutral.

As such, Electranet has no risk of revenue variations arising from volume fluctuations.

Revenue risk assessment

Electranet's revenue risk is slightly less than (or possibly the same as) Aurizon on the basis that Electranet has no revenue variation risks whereas Aurizon has a small theoretical risk.

5.2.2 Expenditure risks

Electranet's capital and operating expenditure allowances are set at the beginning of each regulatory control period. There is no explicit provision for variation or prescribed pass thru mechanism for unforeseen increases (or decreases) in operating or capital expenditure. There is a provision for the capital expenditure allowances to be increased for contingent projects that are triggered by certain events such as an above forecast increase in demand or connection request from a major load or generator.

There is an efficiency benefits scheme that allows operating cost savings to be shared between Electranet and its customers.

Expenditure risk assessment

Electranet's expenditure risks are significantly higher than Aurizon as Electranet takes all of the risk that actual costs will be higher than forecast. By contrast Aurizon has a number of mechanisms to adjust reference tariffs to pass on such increases.

5.2.3 Inflation risk

Similar to Aurizon, Electranet is fully protected against inflation risks as their prices are expressed in real terms and the prices and the RAB are escalated by actual inflation.

Inflation risk assessment

Electranet's inflation risks are similar to Aurizon.

5.2.4 Stranding or bypass risks

Electranet faces some commercial bypass risk—for example for major loads that are located near major generators. This is because electricity networks have a high degree of

common costs that are allocated to customers. However, Electranet has a number of options to mitigate this risk, both through price structures (Ramsey pricing) and though prudent discounts according to the provisions of the NER.

In theory, Electranet faces some risk of regulatory stranding as there are provisions in the NER for assets to be removed from the RAB where they serve only one transmission network user and the AER determines that they no longer contribute to the provision of prescribed network services. This might occur if a user ceased to take supply. However, this scenario is highly unlikely as a single radial transmission line serving a single user is likely to be classified as a connection asset and would have been funded by a capital contribution and thus would not part of the RAB to begin with.[5] If such an asset isn't a connection asset, it is unlikely that any transmission network service provider (TNSP) would construct a line dedicated to a single customer without some type of pre-funding or other contractual arrangement.

Stranding or bypass risk assessment

Electranet's bypass risks are similar to those of Aurizon as both face at least the theoretical possibility of bypass but have options to mitigate the risk. For both Aurizon and Electranet, the stranding risk is zero for all practical purposes.

5.2.5 Regulatory risk

Electranet is regulated by the AER under the prescriptive NER framework and the AER is subject to merits review.

There isn't clear evidence that a more prescriptive framework necessarily lowers regulatory risk although a well-designed prescriptive framework that limits regulatory discretion should do so. Further it is also likely that merits review—even the NEL limited merits review—has a role to play in correcting regulatory error.

Regulatory risk assessment

Electranet's regulatory risks are slightly less than Aurizon as a result of the more prescriptive framework and the availability of merits review (although, as noted in Section 4.5 above, it is debatable whether the availability of merits review actually materially affects the degree of regulatory risk).

5.2.6 Political risk

In a similar manner to the Aurizon access undertaking, the Electranet determination contains explicit cost pass thoughts for the following events:

- A regulatory change event
- A service standard event
- A tax change event
- An insurance event
- A terrorism event; and
- A natural disaster event.

These provide a high degree of protection from political risks—that is Government actions that increase costs through changes to regulatory frameworks, service standards or taxation.

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[5] If it isn't a single radial line, then it's almost certainly part of the meshed network as it has other a role in supplying other users.

Political risk assessment

The explicit cost pass through events defined in the determination ensure that the political risks of Electranet and Aurizon are similar.

5.2.7 Force majeure risks

As detailed in Section 5.2.6, the Electranet determination contains explicit pass through provisions for force majeure events such as terrorism or natural disasters.

Force majeure risks assessment

These provisions are similar to those in the Aurizon access undertaking and thus we see these risks as equivalent.

5.3 Gasnet

Gasnet is a private sector gas business that owns and operates the high pressure gas transmission network in Victoria. It is regulated by the AER under the National Gas Law (NGL) and National Gas Rules (NGR). The NGR is highly prescriptive and detailed and considerably limits the discretion of the AER. All AER regulatory decisions are subject to merits review by the Australian Competition Tribunal.

A unique feature of the Victorian gas transmission system owned and operated by Gasnet is that it is a market carriage system—that is users do not enter into long term capacity reservation contracts with Gasnet. Instead, users make daily offers to inject gas into the system and the market operator (AEMO) dispatches the market on the basis of least cost offers. All other gas transmission systems in Australia are contract carriage systems—that is users contract for capacity on a long term basis.

5.3.1 Revenue risks

As a result of the "market carriage" model, the Gasnet network is regulated on the basis of a price cap—that is reference tariffs are set—in real terms—for each type of service offered by the pipeline for the length of the regulatory control period.

As such, Gasnet has full exposure to of revenue variations arising from volume fluctuations, mitigated only by the fixed charge components of the various tariff structures. This isn't a substantial mitigant as the fixed charges relate only to the equipment used by each customer for either injection or withdrawal of gas—that is they recover only the costs of assets dedicated to a customer and not common network costs.

Revenue risk assessment

Gasnet's revenue risk is significantly higher than Aurizon on the basis that Gasnet is largely exposed to revenue variation from volume fluctuation whereas Aurizon has only a small theoretical risk.

5.3.2 Expenditure risks

Gasnet's capital and operating expenditure allowances are set at the beginning of each regulatory control period. There is no explicit provision for variation or prescribed pass thru mechanism for unforeseen increases in operating or capital expenditure.

There is an efficiency benefits scheme that allows operating cost savings to be shared between Gasnet and its customers.

Expenditure risk assessment

Gasnet's expenditure risks are significantly higher than Aurizon as Gasnet takes all of the risk that actual costs will be higher than forecast. By contrast Aurizon has a number of mechanisms to adjust reference tariffs to pass on such increases.

5.3.3 Inflation risk

Similar to Aurizon, Gasnet is fully protected against inflation risks as their prices are expressed in real terms and the prices and the RAB are escalated by actual inflation.

Inflation risk assessment

Aurizon's inflation risks are similar to Gasnet.

5.3.4 Stranding or bypass risks

Gasnet does—in theory—face the risk of bypass because the Victoria gas transmission system is a meshed network more akin to an electricity transmission network than the more normal point to point structure of gas transmission. Thus, in theory, major loads located near major gas fields could bypass Gasnet. Gasnet has a number of options to mitigate this risk through price structures such as Ramsey pricing where common costs are largely allocated to users with less price sensitivity.

Gasnet also faces a theoretical stranding risk as there is provision in the NGR for redundant assets to be removed from the RAB. While these provisions are used sparingly (if at all) by regulators, they remain a theoretical possibility. .

Stranding or bypass risk assessment

We consider Gasnet's risks to be somewhat greater than Aurizon's, as both face at least the theoretical possibility of bypass—with options to mitigate the risk—but Gasnet faces a greater theoretical possibility of regulatory stranding.

5.3.5 Regulatory risk

Gasnet is regulated by the AER under the prescriptive NGR framework and the AER is subject to merits review.

There isn't clear evidence that a more prescriptive framework necessarily lower regulator risk although a well-designed prescriptive framework that limits regulatory discretion should do so. Further it is also likely that merits review—even the NGL limited merits review—has a role to play in correcting regulator error.

Regulatory risk assessment

Gasnet's regulatory risks are slightly less than Aurizon as a result of the more prescriptive framework and the availability of merits review (although as noted in Section 4.5 above, it is debatable whether the availability of merits review actually materially affects the degree of regulatory risk, given the availability of judicial review across the board).

5.3.6 Political risk

In a similar manner to the Aurizon access undertaking, the Gasnet determination contains explicit cost pass thoughts for the following events:

- A regulatory change event
- A service standard event
- A tax change event
- A carbon event
- An insurance event
- A terrorism event; and
- A natural disaster event.

These provide a high degree of protection from political risks—that is Government actions that increase costs through changes to regulatory frameworks, service standards or taxation.

Political risk assessment

The explicit cost pass through events defined in the determination ensure that the political risks of Gasnet and Aurizon are similar.

5.3.7 Force majeure risks

As detailed in Section 5.3.6, the Gasnet determination contains explicit pass through provisions for force majeure events such as terrorism or natural disasters.

Force majeure risks assessment

These provisions are similar to those in the Aurizon access undertaking and thus we see the risks as equivalent.

5.4 Aurora Energy

Aurora Energy is a Government owned electricity business that owns and operates the electricity distribution network in Tasmania. It is regulated by the AER under the National Electricity Law (NEL) and National Electricity Rules (NER). The NER is highly prescriptive and detailed and considerably limits the discretion of the AER. All AER regulatory decisions are subject to merits review by the Australian Competition Tribunal.

5.4.1 Revenue risks

The AER has determined that Aurora Energy and all electricity distribution businesses are regulated by a price cap.

As such, Aurora Energy has full exposure to revenue variations arising from volume fluctuations mitigated only by the fixed charge components of the various tariff structures.

Revenue risk assessment

Aurora Energy's revenue risk is significantly higher than Aurizon's on the basis that Aurora is largely exposed to revenue variation from volume fluctuation whereas Aurizon has only a small theoretical risk.

5.4.2 Expenditure risks

Aurora's capital and operating expenditure allowances are set at the beginning of each regulatory control period. There is no explicit provision for variation or prescribed pass thru mechanism for major unforeseen increases in operating or capital expenditure.

There is an efficiency benefits scheme that allows operating cost savings to be shared between Aurora and its customers.

Expenditure risk assessment

Aurora's expenditure risks are significantly higher than Aurizon as Aurora takes all of the risk that actual costs will be higher than forecast. By contrast Aurizon has a number of mechanisms to adjust reference tariffs to pass on such increases.

5.4.3 Inflation risk

Similar to Aurizon, Aurora is fully protected against inflation risks as their prices are expressed in real terms and the prices and the RAB are escalated by actual inflation.

Inflation risk assessment

Aurizon's inflation risks are similar to Aurizon.

5.4.4 Stranding or bypass risks

Aurora does face the risk of bypass—for example for major loads that are located near transmission substations. This is because electricity networks have a high degree of common costs that are allocated to customers. Aurora has a number of options to mitigate this risk, both through price structures (Ramsey pricing) and through prudent discounts according to the provisions of the NER.

Aurora does not face any stranding risk as there is no provision for asset optimisation in the NEL or NER.

Stranding or bypass risk assessment

Accordingly Aurora's stranding or bypass risks are similar to those of Aurizon as both face at least the theoretical possibility of bypass but have options to mitigate the risk.

5.4.5 Regulatory risk

Aurora is regulated by the AER under the prescriptive NER framework and the AER is subject to merits review.

There isn't clear evidence that a more prescriptive framework necessarily lower regulator risk although a well-designed prescriptive framework that limits regulatory discretion should do so. Further it is also likely that merits review—even the NEL limited merits review—has a role to play in correcting regulator error.

Regulatory risk assessment

Aurora's regulatory risks are slightly less than Aurizon as a result of the more prescriptive framework and the availability of merits review (although as noted in Section 4.5 above, it is debatable whether the availability of merits review actually materially affects the degree of regulatory risk, given the availability of judicial review across the board).

5.4.6 Political risk

In a similar manner to the Aurizon access undertaking, the Aurora determination contains explicit cost pass thoughts for the following events:

- A regulatory change event
- A service standard event
- A tax change event
- An insurance event
- A terrorism event; and
- A natural disaster event.

These provide a high degree of protection from political risks—that is Government actions that increase costs through changes to regulatory frameworks, service standards or taxation.

Political risk assessment

The explicit cost pass through events defined in the determination ensure that the political risks of Aurora and Aurizon are similar.

5.4.7 Force majeure risks

As detailed in Section 5.4.6, the Aurora determination contains explicit pass through provisions for force majeure events such as terrorism or natural disasters.

Force majeure risks assessment

These provisions are similar to those in the Aurizon access undertaking and thus we see the risks as equivalent.

6 Conclusions

Our analysis in Section 5 of the risk allocation of our four chosen case studies compared to Aurizon's proposed risk allocation is summarised in Table 6.1.

We have also included an analysis of the risk allocation in the regulatory framework for the 2011 access determination by the ACCC for Telstra's declared fixed line services—see Box 6.1. Telstra access determinations have very different characteristics to the case study businesses as they determine terms and conditions for access to only part of the infrastructure of a vertically integrated business with both retail and network services. Further the declared fixed line services are clearly subject to competition to a far greater degree that Aurizon or the case study businesses. However, in conclusion, it is instructive to look at Telstra's risks precisely because the beta requested by Aurizon is the same as the beta used by the ACCC for Telstra's declared fixed line services.

Box 6.1: Relative Risks—Telstra versus Aurizon

Telstra's fixed line services are regulated by the ACCC under Part XIC of the Competition and Consumer Act. The legislation sets up a non-prescriptive framework and specifies a number of broad considerations that the ACCC must take into account such as "the legitimate interests of the carrier". The ACCC made a final access determination in July 2011 for a three year period ending June 30, 2014.

Our assessment of the risks relative of the Telstra determination compared to Aurizon is:

- **Revenue—significantly greater risk (++).** Telstra is fully exposed to revenue risk as it's subject to a price cap and further the ACCC—and not Telstra—sets the actual prices. This means that Telstra cannot even protect itself against revenue risk from competition by changes to the price structure such as the fixed and variable split or Ramsey pricing for less demand sensitive services. Further the services are subject to competition so Telstra takes all of the forecast risk
- **Expenditure—significantly greater risk (++)**. Telstra is fully exposed to expenditure risk as the operating and capital expenditure allowances are set in advance and there are no adjustment or pass through mechanisms
- **Inflation—greater risk (+)**. Telstra is only partially protected from inflation risks in that the RAB is rolled forward, but prices are fixed in nominal terms for the three year determination period
- **Stranding and bypass—significantly greater risk (++).** Telstra's fixed lines services are fully exposed to competition from mobile voice and data services, the Optus HFC network and other fibre networks
- **Regulatory—significantly greater risk (++).** Under the telecommunications regulatory framework under the CCA, the Minister can override an ACCC determination
- **Political—greater risk (+).** No specified pass through provisions for such Government actions as a change in taxation or service standards
- **Force Majeure—greater risk (+).** No specified treatment of force majeure events.
- **Summary—significantly greater risks (++).** Telstra rates higher—either slightly or significantly—than Aurizon on all risk categories.

In Table 6.1, we also show the equity betas assigned by the regulator to our case study businesses and Telstra as well as the beta range proposed by Aurizon. We have re-leveraged Aurizon's equity beta range of 0.9 to 1.0 at their proposed gearing of 55 per cent to 1.01 to 1.13 to reflect the 60 per cent gearing assessed by the regulators for each

of the case study businesses.[6] We have also re-leveraged Telstra's equity beta of 0.7 at a 40 per cent gearing to 1.05 at the same 60 per cent gearing.

Table 6.1: Relative risks and equity beta—case studies versus Aurizon

Risk	Aurizon	SDP	Electranet	GasNet	Aurora	Telstra
Equity Beta	1.01 to 1.13	0.7	0.8	0.8	0.8	1.05
Comparative Risk		+	+	++	+	++

+ = Case study greater risk than Aurizon, **++** = significantly greater risk

- = Case study less risk than Aurizon, **--** = significantly less risk

***** = No significant difference between case study and Aurizon

Notes:

Aurizon proposed beta range is 0.9 to 1 at 55 per cent gearing becomes 1.01 to 1.13 when relevered to 60 per cent gearing. While proposing a range, Aurizon uses the top of the range for calculation of reference tariffs in its proposal.

Telstra equity beta of 0.7 at 40 per cent gearing adjusted to standard 60 per cent gearing

While our analysis is high level, we see no grounds for arguing the risk embedded in the regulatory framework that applies to Aurizon is materially higher than in the other Australian regulatory frameworks in our case studies, or Telstra.

In fact, on the basis of the risks allocated by the regulatory framework, Aurizon is at least slightly less risky than the four case study businesses, and is certainly no more risky than any of them.

Telstra's risk is clearly significantly higher than that of Aurizon—Telstra is either slightly or significantly higher risk for each of the risk categories—yet when adjusted for a 60 per cent gearing its equity beta of 1.05 is still lower than the midpoint of the range proposed by Aurizon and significantly lower than the upper value used in pricing calculations.

In our analysis and in particularly in summarising the overall comparative risk of the case study businesses relative to Aurizon, we have endeavoured to take a holistic view rather than cherry pick individual components of the various regulatory frameworks. Our comparison and analysis shows that while the risk allocation may appear different between the various frameworks, there may well be a number of mitigants and other mechanisms that produce largely similar outcomes in practice.

The results do not suggest that Aurizon's risk profile as a result of the risk allocation in the rail access framework is so significantly different as to require compensation in the WACC through a higher equity beta than provided to other regulated businesses in Australia. In fact, our analysis suggests that Aurizon's equity beta should be lower than 0.7 based on 60 per cent gearing, which is equivalent to 0.6 at Aurizon's 55 per cent gearing. We conclude this on the basis that:

[6] We note that while Aurizon quote a range of 0.9 to 1.0 for the equity beta (at 55 per cent gearing), they use a value of 1.0—the upper end of the range to calculate reference tariffs in their proposed Undertaking.

- Aurizon has under UT3 and will continue to have under UT4 a more limited exposure to risk than our case study businesses and they have betas of either 0.7 (for SDP) or 0.8 (for the energy network businesses);
- The "standard" beta of 0.8 used by the AER for regulated energy networks (and which applies to the three energy networks used as case studies) may well be overstated. The AER in its 2009 WACC Review noted that the empirical evidence for these businesses suggested that a beta in the range of 0.41 to 0.68 was appropriate.[7] The AER set the value at 0.8 on the basis of regulatory stability given that previous values set by the ACCC and state regulators were in the range of 0.9 to 1.0; and
- The midpoint of Aurizon's proposed beta range of 1.01 to 1.13 is higher than the beta set by the ACCC for Telstra—but Telstra has substantially more exposure to risk across all of the risk categories than Aurizon.

[7] "Electricity Transmission and Distribution Network Service Providers: Review of the Weighted Average Cost of Capital (WACC) Parameters", AER May 2009

Appendix A: Key differences cited by Aurizon

The key differences citied by Aurizon Network in regard to its regime and the other regimes were that:

Imposition of an X factor

- The ACCC has not imposed an X factor on the Australian Rail Track Corporation (ARTC). In UT3, the QCA has applied an X factor to Aurizon Network that is based on a Western Australian study that is of questionable relevance to the Central Queensland coal network. X factors have also been applied by the ERA (TPI) and the AER.

Response

X factors are common in almost all regulatory frameworks where price caps are set. X factors applied by regulators can be negative—that is allowing for real cost increases. It's not clear that there is any significance in the ACCC not imposing an X factor or that QCA imposed an X factor in the previous process.

Inflation risk

- Aurizon Network is the only business that bears inflation risk on its revenues during the course of the regulatory period, being exposed to the difference between actual and forecast inflation for the purpose of calculating the return on, and of, capital allowances.

Response

The regulatory framework applying to Aurizon is the standard "building block" model used in Australia in that reference tariffs are set in real terms and the RAB is rolled forward by applying actual inflation between regulatory control periods. In this way, Aurizon is fully protected from general inflation risks.

Limits on regulatory review of expenditure

- It is difficult to draw any definitive conclusions regarding each regulator's upfront review of forecast capital, operating and maintenance expenditure. However, the reviews by the QCA and AER would appear to be far more detailed (and intrusive) than the other regimes. Two key differences between the NER and the other regimes are that:
  - the NER places more constraints around the regulator's discretion; and
  - regulated businesses have access to merits review, which by no means eliminates regulatory risk, but serves as an important mitigant.

Response

Agree that the NER framework limits regulatory discretion and that merits review has a role in correcting regulatory error. However QCA like all Australian regulators follows precedents and conventions such as the need for regulatory stability.

Ex post reviews of capital expenditure

- Aurizon Network's capital expenditure is subject to a detailed ex post review by the QCA (unless preapproved under the mechanisms in Schedule A of the 2010 Undertaking, which currently primarily addresses scope). The ACCC will

not undertake an ex post assessment of ARTC's capital expenditure if that expenditure has been approved by the relevant customers. In the case of electricity network businesses, while a detailed review of the prudence and efficiency of the expenditure is done upfront as part of the approval of the forecast, the AER does not revisit this ex post (adjustments are still made for the difference between forecast and actual expenditure as part of the RAB roll-forward).

Response

Under changes to the NER and the NGR the AER now conducts ex post prudency reviews of capital expenditure in excess of the regulatory allowances before it is added to the RAB. The pre-approval mechanism in the Aurizon proposal substantially eliminates this risk.

Service Quality Incentive Schemes

- Aurizon Network and ARTC are both in the process of developing service quality incentive regimes. Electricity network businesses are also subject to a service quality regime. In WA, the inclusion of a KPI regime (and whether there are any rewards or penalties under the regime) is left to negotiation between TPI and access seekers.

Response

It's reasonable (and common in many regulatory frameworks) that service providers should have some revenue at risk to ensure they meet service standards. It's not clear that a generic scheme approved by a regulator is more or less risk than individually negotiated arrangements. The scheme sought by the QCA under the 2010 undertaking (Clause 2.6) was required to feature symmetrical upside/downside risk and put at risk no more than 5% of the System Allowable Revenue.

Penalties for under performance

- Aurizon Network is exposed to a maximum 10% loss in annual revenue for failing to make the network available due to its own breach or negligence. ARTC will also bear this risk, although there is no cap on this liability. However, ARTC's True Up Test is broader, being applied at a pricing zone level, while Aurizon Network's is applied to each origin-destination pair. No such exposure would appear to exist under the other regimes.

Response

Electricity networks are subject to a service quality incentive scheme where there are rewards and penalties, albeit with limits on the amount of revenue at risk. Aurizon can substantially mitigate this risk as breaches or negligence are within its control.

Funding growth capital expenditure

- Aurizon Network is the only service provider that has a commitment to fund investment (under the 2010 Undertaking, but not under the draft 2013 Undertaking). The other businesses reviewed do not have such an obligation, consistent with the terms of their legislation (which also reflects the Competition Principles Agreement).

Response

Electricity networks also have to fund any augmentations to their network that result from growth in customers' consumption. Further new loads and generators are only required to pay shallow connection costs with upstream augmentation fully funded by the network.

Despite the lack of investment obligation in the regulatory arrangements of most regulated entities, most do routinely invest based on the regulated terms and conditions, including the regulated WACC. Aurizon Network, in contrast, has recently obtained special 'access conditions' for major new investments.

Annual WACC Review

- TPI's WACC is reviewed annually for changes in the risk-free rate, inflation and debt margin. This assists in mitigating the interest rate risks on new borrowings undertaken during the regulatory period. The other regimes do not provide for mid-period reviews.

Response

Agree that that TPI has lower risk than businesses that have no mid period review of WACC. However, the arrangement applying to TPI, which provides for updating of the WACC, is unusual.

Optimisation of RAB

- Aurizon Network is exposed to the risk of optimisation for a material reduction in demand, the possibility of actual bypass and a deterioration in asset condition. Neither the ARTC or TPI regimes allow for this. Electricity transmission assets may be removed from the RAB if no longer used (under certain conditions). The asset condition provision is considered unique and is a significant source of regulatory risk to Aurizon Network.

Response

Optimisation risk for demand reduction is at least partially mitigated by long term take or pay contracts with customers. There is no precedent in Australia for a regulator optimising existing assets in the RAB due to reductions in demand. We do not consider that the inclusion of the optimisation triggers in the 2010 Undertaking exposed Aurizon to a material difference in risk compared to regulated entities which do not feature such a condition in their undertaking, for the reasons discussed in Section 4.4

Optimisation for asset condition optimisation is within Aurizon's control as it is obliged to meet good industry practice in regard to asset management.