Regulating the Costs of Extraordinary Circumstances

24 May 2013

Executive Summary

The Commerce Commission is evaluating a proposal from Orion Networks Limited ("Orion") for a Customised Price-quality Path (CPP). Orion's proposes to increase its prices from 2014-2019 to recover the costs of rebuilding its network after the Canterbury earthquake, including costs that have already been incurred. Vector has asked Castalia to provide our advice on how the Commission should treat Orion's proposal to claw-back past losses.

We find that **Orion should be entitled to recover past costs associated with the earthquakes that have been prudently incurred.** This conclusion is the only way to sensibly apply the rules that were in place at the time of the earthquakes, and is also consistent with the Commerce Act and principles of good regulation.

The costs of recovering from an extraordinary event such as an earthquake need to be dealt with in line with the regulatory regime existing at the time of the event (whether or not this is now considered the best way to recover the costs). Put another way, a regulator cannot determine liability for post-event costs in isolation because the allocation of costs has already been determined by the pre-event regulatory regime.

In this case, Orion's current prices do not recover the costs associated with the Canterbury earthquakes:

- **The regulatory WACC has not compensated Orion for the risk of the Canterbury earthquakes.** In theory, the WACC should compensate suppliers for systematic risks, including unforeseeable, asymmetric risks such as a major earthquake in Canterbury. The Commission has explicitly stated that no adjustments have been made to WACC to reflect such risks, and in our view an appropriate adjustment would be difficult to estimate.
- **Orion has not received any allowance for self-insurance.** Another common way to compensate suppliers for uninsurable risks is to build in an explicit allowance to the supplier's cash flows. These funds can be held in reserve to deal with major asymmetric risk events when they occur. No such allowance is provided in Orion's current prices.

This means that Orion (and other regulated suppliers) can legitimately expect to recover the costs of responding to extraordinary circumstances *ex post*. However, this should not give suppliers a blank cheque to invest with impunity—there should be some review of the prudency of those investments. To strike the right balance between compensating suppliers for reasonable investments made in trying circumstances and providing incentives to manage costs, we recommend:

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- **Explicitly limiting the *ex post* review to the information available to Orion at the time the investments were made.** This approach (adopted by the AER) limits the risk to suppliers that investments will be disallowed due to the benefit of hindsight
- **Adopting a lower standard of proof for prudency than would be applied to other investment reviews** (such as the *ex ante* reviews undertaken for a CPP). This means that in effect, the Commission should allow the costs unless it is shown that the expenditure was clearly imprudent. This approach appropriately reflects the risk that by incorrectly disallowing investments *ex post* the Commission would send signals to other suppliers to be overly cautious when considering investments to recover from a natural disaster.

The Commission's treatment of Orion's CPP application has impacts that extend well beyond the Canterbury region. The decision will create a precedent for how other distributors will act following a natural disaster in their service area. If the Commission takes an overly restrictive approach to this application, then other distributors will not invest quickly to rehabilitate or rebuild their networks. Conversely, if the Commission is too permissive, then distributors may pay insufficient attention to ensuring that costs are prudent. We consider that the *ex post* approach to cost recovery described above is the best way to navigate this challenging issue.

1 Introduction

Castalia has been engaged by Vector to provide an opinion on how the costs incurred by monopoly suppliers to recover from major unanticipated events should be regulated. This work arises in the context of Orion's application for a Customised Price-quality Path (CPP). This section provides background information on the context for this report, and describes the specific purpose of this report.

Relevant background on Orion's CPP application

In 2010/2011, the Canterbury region experienced a series of devastating earthquakes. The earthquakes caused extensive damage to the electricity distribution network owned by Orion. In the weeks and months following the earthquakes, Orion invested a significant amount of capital to restore services and rebuild its network. The earthquakes also caused Orion to earn lower than expected revenues because demand was lower than forecast.

Orion has asked the Commerce Commission (the Commission) to adjust its prices to recover these costs. Orion has submitted an application for a CPP for 2014-2019 that requests a 15 percent initial price increase, followed by further 1.2 percent increases each year (all amounts expressed in real terms).[1]

The Commission has released an issues paper that identifies a number of areas where the Commission plans to further analyse Orion's application to change its prices and quality standards.[2] The issues paper identifies areas where the Commission has formed initial views, and poses a series of specific questions for stakeholders to consider.

Purpose of this report

Vector has asked Castalia to comment on aspects of the Commission's issues paper. Vector is New Zealand's largest electricity distribution company, and serves the Auckland region. Vector therefore has a strong interest in ensuring the appropriate treatment of the costs of recovering from natural disasters given the presence of specific (but uninsurable) risks inherent in its business.

This note focuses on the regulatory treatment of two types of cost incurred by Orion before the pricing period is set to begin in April 2014:

- **The costs of ensuring a speedy recovery.** Orion has spent considerable sums of money to quickly restore "acceptable" levels of electricity distribution service after the earthquakes. Given the need for fast action, these costs were not explicitly approved by the regulator before the money was spent.
- **The revenues foregone due to lower than anticipated demand.** Orion's prices were set to enable the company to recover its costs given a particular level of forecast demand. Actual demand has been considerably lower than forecast, due to the impact of the earthquakes.

Orion proposes to recover through its future prices (known as "claw back").

[1] Orion Networks (2013) "Executive summary of our customised price-quality path proposal", 19 February 2013, available online at: http://www.comcom.govt.nz/orion-cpp/

[2] Commerce Commission (2013) "Invitation to have your say on Orion's proposal to change its prices and quality standards", available online at: http://www.comcom.govt.nz/orion-cpp/

Structure of this report

Section 2 of this report summarises the key aspects of Orion's CPP proposal, and the initial responses made in the Commission's issues paper. Section 3 provides some high-level principles for evaluating the best way to regulate under uncertainty, drawing on previous work and experience in this area in the United Kingdom and Australia. Section 4 then describes the options available for regulating the costs of extraordinary circumstances, and Section 5 evaluates which option is best suited to Orion's application. Section 6 concludes by directly answering the first two questions in the Commission's issues paper.

2 Evaluating Orion's Proposal

Following the earthquakes, Orion spent a lot of money to get its network back on its feet. Some of this expenditure has been funded through insurance pay-outs—Orion's proposal indicates that it received $22.3 million in insurance settlement revenues in 2012. However, some of the expenditure has no corresponding insurance pay-out. This is because lines and cables are uninsurable (the amount that would be charged to insure lines and cables makes such insurance uneconomic).

Why Orion believes its application should be approved

Orion's proposal details how the company spent $37.2 million in additional operating and major capital expenditure to restore its network after the earthquakes. Orion claims the expenditure was needed because customers demanded that their electricity supply be restored quickly. Customers continue to express a desire for Orion to restore network reliability to pre-earthquake levels, although that is not expected to be achieved until around 2019.

Orion has also earned $23.7 million less in revenue than expected after the earthquakes. This is because the amount of electricity supplied by Orion and the number of customers served by Orion has fallen as a result of the earthquakes.

Orion contends that the regulation of prices under the Default Price-quality Path (DPP) means the prices charged to consumers since the earthquakes do not reflect these costs. This is because Orion started spending money on the rebuild shortly after the first earthquake in September 2010, but has not been able to adjust its prices to recover these costs. Similarly, the reduced revenues started immediately after the first major earthquake and have not yet been compensated by charging higher prices to remaining customers.

Orion's proposal is to recover half of the costs incurred to restore the network after the earthquakes in prices between 1 April 2014 and 31 March 2019. Orion then expects to recover the remaining costs of restoring the network in the following regulatory period starting on 1 April 2019. This deferred recovery aims to minimise the rate shock felt by Orion's customers.

Evidence provided by Orion to support its application

Orion's application is supported by expert evidence, including a report on Catastrophic Event Cost Recovery prepared by Jeff Balchin of PwC, which has been peer reviewed by NERA.[3] We have reviewed those reports in preparing this advice for Vector.

PwC and NERA both conclude that Orion should be entitled to recover costs of resuming services after the earthquakes that have been prudently incurred. PwC reach this conclusion by drawing on principles of good regulation—PwC finds that an approach of dealing with catastrophic costs *ex post* is likely to be more practical than trying to factor the risk of catastrophic costs into regulated prices *ex ante*. NERA focuses on the regulatory "agreement" that existed at the time of the earthquakes, and concludes that the DPP implies an *ex post* treatment of uninsurable risks.

Initial views provided in the Commission's issues paper

The issues paper does not provide a consistent view on whether the Commission agrees with the approach proposed by Orion and its experts. In places (such as footnote 11), the

[3] Orion Networks (2013) "Appendices for CPP Proposal", Appendices 1 and 2, available online at: http://www.comcom.govt.nz/orion-cpp/

Commission seems to acknowledge that the primary question on this issue is whether the costs incurred by Orion were prudent. Focusing on whether the costs borne by Orion meet the 'expenditure objective' defined by the Commission would be consistent with the approach proposed by Orion's experts.

Other statements in the issues paper cast doubt on whether the Commission accepts this principle. For example, the Commission states (at paragraph 91) that it is not clear that consumers in Canterbury are better placed than Orion to bear the risk of not earning a full return following the earthquakes. The Commission notes that other businesses and individuals in Canterbury have suffered losses due to the earthquakes that cannot be recovered. We note that in fact in many cases these losses are limited by the Canterbury Earthquake Recovery Act (in particular Subpart 5), which provides some compensation for uninsurable losses. The Commission also notes that investors in Orion had the opportunity to spread risks beyond the Canterbury region through diversification of their investments.

The Commission's statements about the trade-off between investment certainty and risk (at paragraphs 100-101 of the issues paper) are also relevant. The Commission acknowledges that Orion needs to earn sufficient revenues to cover the costs of its business. If it does not expect to recover all of its costs, then investors will be unwilling to provide further capital for the network. On the other hand, setting maximum average prices for electricity lines companies requires these businesses to bear risk. Although the environment in Canterbury after the earthquakes is not 'normal', the Commission notes that the forward-looking nature of incentive base regulation means that it is uncommon for businesses to recover past costs that were higher than anticipated or revenues that were lower than expected.

3 Principles of Regulating Extraordinary Circumstances

The Commission is not the first regulator to consider the recovery of costs following a major adverse risk event. Indeed, it is not just regulators that need to grapple with this challenge—governments are often called upon to protect against the risk of major adverse events. This section looks at the principles that other regulators have used to deal with the costs of similar events overseas, and examines how the purpose statement in section 52 of the Commerce Act might apply.

In this section and throughout the remainder of this report, we refer to the major risk events as "extraordinary circumstances". This is the terminology adopted in Australia,[4] and is defined as an event that:

- Is so unusual or unlikely that the probability of its occurrence could either not be meaningfully assessed or is assessed as being extremely low; and
- Is or is likely to be severe in its impact on the ability of service providers to deliver agreed services using current infrastructure and practices; and
- Has or is likely to have major social or economic impacts.

The Canterbury earthquakes clearly fall within this definition of an extraordinary circumstance.

3.1 Guidance on Regulating Extraordinary Circumstances from Overseas

The best approach for dealing with the issues raised by the Commission is to address them as an insurance problem. Under this approach, regulators should aim to embed optimal insurance outcomes into on-going regulation as a way to encourage regulated suppliers to efficiently prepare for extraordinary events (Gans and King, 2004).

Ofgem and the Australian Competition and Consumer Commission (ACCC) have previously considered how to operationalize insurance principles to ensure the best regulatory response to the uncertainty that arises from extraordinary circumstances. As noted above, State based regulators in Australia such as the QCA have also done a considerable amount of work in this area. These reviews have distilled the following principles for best practice regulation.

Table 3.1: Principles of Regulating for Extraordinary Circumstances

Principle	Description
Materiality	Significant risks will have greater impacts on the willingness of investors to provide capital to regulated businesses. The more material the risk, the more important it is to allow a regulated supplier to recover the costs of the adverse risk event

[4] The most extensive review of this issue was carried out by the Queensland Competition Authority (QCA) in 2004 (see "General Pricing Principles for Infrastructure Investments made in Response to Extraordinary Circumstances" available online at: http://www.qca.org.au/files/ACF2E0.pdf)

Principle	Description
Predictability	Regulated suppliers should take steps to protect themselves against foreseeable risks. The more predictable the risk, the less likely it is that a regulated supplier should be provided with additional funds to recover the cost of the adverse risk event
Separability of costs	Some extraordinary circumstances will only affect specific parts of a regulated supplier's businesses, while others will create costs that cannot be distinguished from other decisions made by the business. If the costs of dealing with extraordinary circumstances are separable, then it will typically be best to create a specific regime for compensating the supplier for those costs
Controllability	Regulated suppliers should take steps to control the risk of extraordinary circumstances, where possible. The more controllable the risk, the less likely it is that a regulated supplier should be provided with additional funds to recover the cost of the adverse risk event
Diversifiability	Investors in regulated businesses should attempt to diversify their investments away from the risk of extraordinary circumstances. The more diversifiable the risk, the less likely it is that a regulated supplier should be allowed to recover the cost of the adverse risk event
Spatial and temporal correlation	Where the risks of extraordinary events are correlated across the industry or over time it makes more sense to benchmark the efficiency of the costs of responding. Where no such correlation exists then providing compensation for costs is likely to be more appropriate

Source: Frontier Economics (2003) "Regulatory Mechanisms for Dealing with Uncertainty, available online at: http://www.frontier-economics.com/_library/publications/Frontier%20paper%20-%20Frontier%20WSA%20Final%20report%20STC%2013-03-03.pdf

To this list, we would add the principle of "consistency". We agree with the observation made by NERA that regardless of the policy objectives that the Commission wants to achieve (reflected in the purpose of Part 4 of the Commerce Act), Orion's current application should be determined by the rules and legitimate expectations of a supplier faced with the unique challenge of recovering from the earthquakes.

This point has also been made overseas. Gans and King (2004) highlight that it is impossible to separate the pre-event regulatory regime and the post-event liability for costs.[5] It is simply not credible for a regulator to determine the liability for post-event costs in isolation because this has already been determined by the pre-event regulatory regime. This means that the costs of recovering from extraordinary circumstances need to be dealt with in line with the regulatory regime existing at the time of the event (whether or not this is now considered the best way to address the issue).

We also agree with Orion's experts that there is no conceptual difference between unforeseeable costs and unforeseeable impacts on demand (and hence revenue). The way to think about allocating both costs between the supplier and its customers is the same—has Orion been compensated through its past prices for these costs, and if not, is it reasonable for Orion's future prices (including its cost of capital) to compensate the business for the costs.

[5] Gans and King (2004) "Extraordinary Circumstances and Regulatory Pricing" Agenda, Volume 11, Number 4, 2004, pages 349-362, available online at: http://epress.anu.edu.au/wp-content/uploads/2011/06/11-4-A-5.pdf

3.2 Purpose Statement of Part 4 of the Commerce Act

The Commission also needs to consider the statutory guidance provided by the purpose statement to Part 4 of the Commerce Act (in section 52A). The two limbs of the purpose statement that are particularly relevant to Orion's CPP proposal require that suppliers of regulated goods or services:

- Have incentives to innovate and to invest, including in replacement, upgraded, and new assets (section 52A(1)(a)). In our view, this limb requires the Commission to explicitly consider how its decision might affect investment incentives, and look for ways to promote efficient investment.
- Have incentives to improve efficiency and provide services at a quality that reflects consumer demands (section 52A(1)(b)). Here the Commission needs to assess how quickly customers wanted electricity services resumed following the Canterbury earthquakes.

4 Regulatory Options

Before turning to the specifics of how Orion's application should be addressed, in this section we summarise the main options that a regulator has for dealing with extraordinary circumstances. We also refer to international examples where each approach is used.

We agree with Orion's experts that it is useful to separate regulatory options into two types—those that allow suppliers to recover costs before a risk event has occurred (*ex ante* approaches), and those that only provide for cost recovery after a risk event has materialised (*ex post* approaches). This section identifies several options that regulators have to compensate suppliers against the risk of extraordinary circumstances both *ex ante* and *ex post*. Unlike Orion's experts, we conclude that workably competitive markets do rely on *ex post* recovery of the costs of unforeseen events. The essentiality of the good or service being provided is a key determinant of the approach that will be preferred—essential services are more likely to rely on *ex post* cost recovery because the purchaser is highly motivated to have the service restored quickly.

4.1 *Ex Ante* Options

PwC and NERA observe that suppliers in workably competitive markets will generally recover the cost of extraordinary circumstances *ex ante* through a small uplift in prices. This general uplift in prices across the economy is very difficult to observe because the probability of the risk event occurring is very small, even though the consequences can be severe. This type of *ex ante* recovery can have positive incentive effects. Suppliers can increase their profitability by actively managing the impact of extraordinary circumstances.

We identify three different ways that *ex ante* recovery could be implemented through the regulation of prices and quality.

Adjust cash flows to reflect costs of prudently managing risk ("self-insurance")

Orion's proposal states that earthquake insurance for lines and cables could not be obtained at any economic premium. One way to deal with this problem would be to adjust Orion's cash flows to allow the company to self-insure against the risk of damage to lines and cables. This form of regulation may or may not require suppliers to hold the money earned from the self-insurance allowance in an ear-marked account.

Self-insurance may appear counter-intuitive: if insurers that are able to diversify risks are not able to make insurance available at an economic premium, then why should the supplier attempt to cover this risk? The reason is that insurance markets can fail to function properly due to market failures. A common example is the case of information asymmetries. If the insured party has information about a particular risk that the insurer is not prepared to rely on when setting a premium, then self-insurance can lead to lower costs. In the present case, the insurance market fails to provide cover for lines and cables.

Regulators in Australia allow an expenditure allowance for specified risks through a specific provision. For example, SP AusNet is provided with a specific allowance that reflects the particular risks from bush fires that the company faces.[6] "Self-insurance is held as provisions to enable SP AusNet to bear the specified self-insurable risks in the 2008 Revenue Determination, rather than expenditure undertaken. Therefore, this is

[6] SPAusNet "Electricity Transmission Revenue Proposal: 2014/15 – 2016/17", February 2013, available online at: http://www.aer.gov.au/sites/default/files/SP%20AusNet%202014-17%20revenue%20proposal.pdf

equal to the regulatory allowance set to compensate for bearing these risks. Where a claim against self-insurance has been made, this is recorded in the regulatory accounts as a provision for self-insurance costs."

The AER also provides an allowance for self-insurance equal to the cost of financing deductible amounts under supplier's insurance policies. This self-insurance amount only reflects financing costs until the next reset because the capital expenditure incurred for repairing damage to the network is rolled into the RAB at that time.

Where cash flows have been adjusted by an explicit self-insurance allowance, it would not be reasonable to allow actual costs incurred to be added to tariffs. This would result in double recovery. However, this approach does leave open the question of appropriate treatment if the actual costs incurred in the event are substantially greater than the value of the self-insurance provision (which we discuss later as an *ex post* approach to recovering total costs).

Adjust the WACC to compensate for bearing additional risk

Another way to ensure that prices recover the expected value of costs (including the costs resulting from extraordinary circumstances) is to ensure that these risks are reflected in the regulated WACC. In this case, the WACC used to set prices before the earthquakes could have incorporated an element to compensate for the costs of recovering from low probability, high impact events, such as earthquakes.

This approach of adjusting WACC has been tried overseas. For example, in its 1998 Electricity Decisions, the then Office of the Regulator General (ORG) applied an allowance of one percent within the WACC for Victoria's rural electricity distribution businesses, TXU and Powercorp. This increment on the cost of capital was allowed in part due to the business' greater exposure to weather, natural disasters, such as bushfires, and higher general maintenance because of greater line length.

However, the approach appears to have fallen out of favour with Australian regulators. This appears to be for a combination of three main reasons:

- Part of the original thinking was that load growth and thus revenue growth was more volatile in rural areas—more susceptible to economic downturns—and thus a higher WACC was appropriate. This risk appears to have been reduced by more accurate forecasting approaches.
- While costs such as insurance and maintenance may well be higher for rural businesses, if those costs are included—as they should be—in the building blocks calculation then there are no adverse risks to investors that justify a higher WACC.
- WACC estimations are already contentious without introducing *ad hoc* adjustments. The technical basis for defending additional allowances through the WACC was seen as somewhat lacking.

The background to this decision is also relevant. The businesses in 1998 had only recently (around 1996) been spun-out of the previous single Government owned distribution entity for all Victoria. As a result, the companies did not have any real history of the actual level of costs associated with each new business. The regulator therefore took a conservative approach with the rural businesses because there was a real risk that the actual costs would be higher than estimates, based on the allocation of the total costs of the previous single business.

There are clearly difficulties in deciding on an appropriate premium to apply to WACC to compensate suppliers *ex ante* for extraordinary risks. As a technical matter, the asset beta is the only parameter in the Capital Asset Pricing Model (CAPM) that could be adjusted to reflect the unique risks from extreme events that apply to electricity distributors. Asymmetric risks that only face electricity distributors will tend to lower returns from these assets relative to the market (even when market returns increase, the returns earned by electricity distributors may decrease)—implying a higher asset beta. However, as mentioned above, the appropriate adjustment is fraught with difficulty.

The Commission suggests that investors in Orion could have diversified away from the relevant risk—CAPM holds that only non-diversifiable risks should be reflected in the WACC. We see two reasons that in fact investors in Orion would not have diversified the risk of earthquakes:

- **The risk is unforeseeable.** Prior to 2010 many investors would have been unaware of major earthquake risks in the Canterbury area—indeed, an investor at that time may have had a strategy of investing in Canterbury to diversify away from earthquake risks in another area (such as Wellington) known to be prone to higher earthquake risks. Put simply, WACC should compensate investors for "unknown unknowns".[7]
- **The risk is asymmetric.** CAPM assumes a normal distribution of returns, which cannot be met for asymmetric risks. The practical effect of an asymmetric risk is that an investor cannot develop a portfolio of investments in which an unfavourable development in one portfolio area is offset by a favourable development in another area. In this case, diversification would only enable an investor in Orion to earn their expected rate of return if the costs of the risk event could be compensated through other investments, over time and on average.[8]

Even if diversification was possible, diversification may not be the most efficient response to the risk of earthquake damage. The Commission recognises this in allowing the cost of insurance and self-insurance for other risks—such as fire damage to buildings. In theory, investors could decline to take out fire insurance and avoid the risk of damage by investing in a diversified portfolio of buildings. However, this strategy has costs and the presence of an efficient fire insurance market means that insurance (rather than diversification) is the most efficient strategy.

In our view, it is conceptually correct to think of the risk of unforeseeable events as requiring compensation through the WACC. However, WACC adjustments are in fact poorly suited to dealing with asymmetric risks. This is because it is not clear to either regulators or regulated businesses what risks are "normal" and covered by the WACC, and what risks are "abnormal" and therefore not covered. We expect this point to be highlighted through supplier submissions on the Commission's Issues Paper. It is also difficult to assess what risks should be insured and what risks should be diversified away by investors.

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[7] See for example "PwC, "Offshore wind cost reduction pathways study: Finance work stream", available online at: http://www.thecrownestate.co.uk/media/305102/PwC%20OWCRP%20project%20finance%20work%20stream.pdf at page 80

[8] See NECG (2002), "Analysis of the weighted average cost of capital for SunWater: Submission to the Queensland Competition Authority", available online at: http://www.qca.org.au/files/SunWaterAppendix2WACC.pdf

Provide automatic pass-through of costs resulting from defined events

In order to improve regulatory certainty, the regulator can seek to define *ex ante* the specific types of events that will give risk to automatic pass through of costs.

For example, the ACCC has provided Transmission Network Service Provider (TNSP), SPI-PowerLink, with the ability to pass through to customers the effects of four pre-specified asymmetric events, including insurance and terrorism events. Note that terrorism as an event shares some of the characteristics of a major earthquake — it is not insurable, not efficient or practical to diversify and it is a low probability, high impact event.

4.2 *Ex Post* Prudency Reviews

Ex post prudency reviews have a long history in the United States as a common way of regulating capital investment (not just the cost of responding to extraordinary circumstances). These reviews apply the benchmark of assets being "used and useful".

***Ex post* reviews can be used as a general check on efficiency, or be more targeted**

As a general approach *ex post* reviews have considerable problems, particularly by creating risk aversion among investors. This approach effectively requires substituting the supplier's investment decisions with the regulator's view of the most efficient ways to invest in the network. This risks creating an environment where suppliers are reluctant to invest due to the prospect that they will not be able to recover their capital through prices. The approach also raises the risk that regulators will use the benefit of hindsight to disallow expenditure that appeared efficient at the time it was made. While most regulators recognise that it is not desirable to penalise regulated companies for reasonable decisions that turn out badly, preventing this type of regulatory opportunism can be difficult.

The logic of the DPP/CPP regime does not generally call for *ex-post* investment reviews, Instead, businesses receive an allowance for forward-looking capital expenditure and are entitled to spend the allowance (or not) in order to achieve specified quality standards. The supplier's regulatory asset base is adjusted at the end of the regulatory period to reflect actual expenditure—which has the effect of allowing the supplier to benefit from any capital efficiencies within the regulatory period while transferring those gains to customers at the end of the regulatory period.

The situation changes when claw-back is being requested. In this case, Orion is asking future prices to compensate for decisions already made, meaning that the regulator will naturally need to assure itself that the expenditure was prudent.

If Orion was regulated in Australia, the prudency test would check:

> *whether the Distribution Network Service Provider undertook the capital expenditure in a manner consistent with good business practice and so as to practicably achieve the lowest sustainable cost of delivering the standard control services to be provided as a consequence of that capital expenditure*

The AER also explicitly protects against risks of opportunism:

> *In determining the prudency or efficiency of capital expenditure the AER must only take into account information and analysis that the Distribution Network Service Provider could reasonably be expected to have considered or undertaken at the time that it undertook the relevant capital expenditure.*[9]

Ex post reviews are not inconsistent with workable competition

Some workably competitive markets allow suppliers to recover the costs of extraordinary circumstances *ex post*. In our view, the responsiveness of consumers to changes in prices is the key factor determining the ability of suppliers to pass through these costs *ex post*. In the Canterbury region, some products and services are clearly in high demand and there are relatively few suppliers left in the market. For example, in the hospitality industry, premises outside the CBD that have been able to resume normal operations have been able to raise prices. Similarly, firms leasing commercial property or providing engineering and construction expertise have been able to recover their own reconstruction costs by charging higher prices.

The Commission sees long-term contracts as a useful analogue for thinking about what workable competition looks like in infrastructure sectors. In our experience, long term contracts can and do provide for *ex post* review of investment needs. As a recent example, the NSW rail rolling stock PPP contract stipulates that the government can agree to pay higher prices in the event that an uninsurable risk event occurs.[10] Whether the government chooses to exercise this option will depend on the costs of other options available for restoring the rail service (which may be quite limited).

As a more general point, we note that other legal means are available to some businesses that provide *ex post* compensation for recovery costs. As noted above, the Christchurch Earthquake Recovery Act provides some compensation to businesses that operate in a competitive environment. Another example of *ex post* compensation is the government support package provided after the Canterbury earthquakes to AMI—an insurer apparently operating in a workably competitive market.[11]

This is consistent with experience overseas of governments implementing industry assistance packages where certain sectors are severely impacted by extraordinary circumstances. For example, the government provides drought relief assistance and flood relief assistance in Australia. Bushfire compensation in Australia also helps to recover costs *ex post* through low interest loans for business and personal hardship compensation through one-off cash payments.

4.3 Summary of Regulatory Options

We have identified four distinct regulatory options for dealing with the costs of unexpected and unanticipated high impact low probability events:

1. **Insurance.** Where the cost of the risk can be recovered through an economically efficient insurance product, then this would seem to be the preferred approach—this is a market-based risk mitigation measure

[9] From National Electricity Rules, Schedule 6.2.2, available online at http://www.aemc.gov.au/Electricity/National-Electricity-Rules/Current-Rules.html

[10] NSW Transport RailCopr, "RailCorp Rolling Stock Public Private Partnership: Updated summary of contracts" see clause 3.7.10.4, available online at: http://www.railcorp.info/__data/assets/pdf_file/0003/4197/Rolling_Stock_PPP_contracts_summary.pdf

[11] See http://www.beehive.govt.nz/release/government-takes-responsible-approach-ami

2. **Self-insurance**. Where the risk cannot be efficiently insured but is sufficiently predictable, then a self-insurance allowance and a provision for self-insurance would seem to be the preferred approach
3. **WACC.** Where insurance or self-insurance is not suitable, then—in theory such risks could be compensated through the WACC by an increase in the equity beta. However, the drawback of this approach is that it is technically very challenging to parse out what risks are included in the beta. The beta should reflect only those risks that businesses in a workably competitive market would "normally" take into account in setting prices. However, it is not obvious that most businesses take into account high impact, low probability events (this may in fact be a market failure)
4. **Pass-through to customers or taxpayers**. It is not unusual in the case of natural disasters of the scale and magnitude of the Canterbury earthquakes for governments to provide assistance—either from general taxation or such other mechanisms such as industry levies.[12] This is the case in Christchurch for some of the losses suffered by other businesses. This option appears most appropriate where workably competitive markets cannot efficiently manage the situation. This might occur if the risk is either not foreseen or foreseeable, or of such a low probability or magnitude that is not explicitly taken into account by market participants.

[12] Note that in Australia State Governments are moving to recover the costs bushfires, both fighting and assistance packages—previously recovered through house insurance levies from general levies on all houses to correct a market failure—the subsidy to non-insured houses

5 Application of Regulatory Principles to Orion's Proposal

Having identified a range of possible regulatory options, we now consider which option is best when dealing with Orion's CPP application. We find that the *ex post* approach proposed by Orion is the only option that is consistent with legitimate expectations of suppliers operating within the Part 4 regulatory regime. Provided that the expenditure can be adequately reviewed for reasonableness, we also consider that this approach is likely to be the best way to regulate future extraordinary circumstances.

5.1 Applying the Principles of Regulating for Extraordinary Circumstances

In Section 3 we described the principles applied overseas to ensure an appropriate regulatory response to extraordinary circumstances. Table 5.1 applies those principles to the Orion CPP proposal. This analysis suggests that an *ex post* approach is appropriate in this case—the risk of earthquakes in Christchurch led to material costs to Orion. However, the risk was not foreseeable or controllable by Orion, and Orion's investors could not have reasonably been expected to diversify this risk away.

Table 5.1: Applying the Principles of Regulating for Extraordinary Circumstances

Principle	Description
Materiality	The risk of extraordinary circumstances is clearly material in this case. Orion has incurred significant costs, and failing to recover those costs would have a material business impact. Other regulated suppliers in New Zealand (including Vector) also face material risks from natural disasters
Predictability	The risk of a major earthquake in Canterbury was largely unforeseeable prior to September 2010. Although there had been at least one earthquake previously recorded in Canterbury (in the 19th century), the region was seen to be at lower risk than other parts of the country located on known fault lines
Separability of costs	It is very difficult to separate the costs of the Canterbury earthquakes from Orion's general business costs. This suggests that it would be difficult to have set up a specific regime that would compensate Orion for those costs *ex ante*
Controllability	There appear to have been few opportunities for Orion to control the costs of the Canterbury earthquakes (particularly the cost of foregone revenues). Orion describes some steps that were taken to mitigate the damage that was caused by the earthquakes, but additional funds to recover the cost of the adverse risk event are required
Diversifiability	As discussed above, Orion's investors had limited reasons to diversify their investments away from the risk of earthquakes in Canterbury because the risk was unknown. Furthermore, it is not obvious that diversification would be the most efficient strategy for Orion's investors (self-insurance would have been another option in this case if allowed by the Commission)
Spatial and temporal correlation	The risks of earthquakes are not correlated across the industry or over time. As a result, compensation for actual costs after the event is more appropriate in this case

Principle	Description
Consistency	The regulation of lines businesses in New Zealand has never provided an *ex ante* allowance for recovering the costs of unforeseeable, asymmetric risks. Compensation for actual costs after an extraordinary circumstance is the only option available to the Commission that is consistent with the regulatory regime in place at the time of the Canterbury earthquakes

5.2 Are *Ex Ante* Approaches Appropriate?

As highlighted above, it is important that the treatment of costs after an extraordinary event occurs is consistent with the understanding reached prior to the event. The treatment of costs after a natural disaster has not been explicitly dealt with in the development of the New Zealand regime for price/quality regulation.

- The WACC does not compensate Orion for bearing the risk of costs in an extraordinary event. It seems reasonable that while the WACC compensates for some risk of network damage from natural disasters, it does not compensate suppliers for more remote probability events, like the Canterbury earthquakes. While the Commission believed that an allowance or adjustment was appropriate for asymmetric risks, it did not include such an allowance in the WACC IM, concluding that "the IM does not make any adjustments to the cost of capital for Type I asymmetric risk".[13]
- No explicit allowance is provided for self-insurance. Orion's current prices do not provide for an allowance for self-insurance. We understand that in the most recent DPP resets the Commission has allowed the costs of "captive insurance" arrangements to reflect the additional costs incurred where the insurance market does not function in a competitive way. This is a similar concept to self-insurance (allowing suppliers to recover the cost of insurance market failures), but is not incorporated into Orion's current prices.

5.3 How Would an *Ex Post* Prudency Review Work?

The absence of *ex ante* compensation in this case means that it is entirely appropriate for suppliers to expect to recover the costs of prudent investments. This means that an allowance for claw back (an *ex post* approach) is appropriate provided that expenditures are prudent.

As noted above, *ex post* reviews are fraught with difficulty—which is the reason that the DPP/CPP regime is generally forward-looking in its application. There is a real risk that the Commission substitutes its view for Orion's view when in fact Orion's view was reasonable given the information available at the time and its unique knowledge of the network. However, simply because an extraordinary circumstance occurs does not give suppliers a blank cheque to invest with impunity.

Orion's CPP proposal provides an opportunity for the Commission to show that it can strike a balance between compensating suppliers for reasonable investments made in trying circumstances and providing incentives to manage costs. We see two ways that the Commission can achieve this balance:

[13] Commerce Commission, Input Methodologies Reasons Paper, paragraphs H12.10-H12.13

- **Explicitly limiting the *ex post* review to the information available to Orion at the time the investments were made.** This approach (adopted by the AER) limits the risk to suppliers that investments will be disallowed due to the benefit of hindsight
- **Adopting a lower standard of proof for prudency than would be applied to other investment reviews** (such as the *ex ante* reviews undertaken for a CPP). This means that in effect, the Commission should allow the costs unless it is shown that the expenditure was clearly imprudent. This approach appropriately reflects the risk that by incorrectly disallowing investments *ex post* the Commission would send signals to other suppliers to be overly cautious when considering investments to recover from a natural disaster.

One practical application of the lower standard of proof is how the Commission investigates alternatives. In relation to forward-looking costs, the Commission plans to investigate alternatives. The Commission states (at paragraph 77) that the absence of information on alternatives means it is difficult to assess whether Orion's proposed investment represents the most efficient cost that a prudent electricity lines company would incur to manage the expected demand for its services. In our view, such an exercise is not necessary or productive for claw back given the value to consumers of a quick restoration of service.

Given the circumstances, we understand that Orion undertook the recovery work quickly (meaning that it paid high labour costs) and built temporary lines (that therefore needed rework). The value to customers of restoring electricity service is reflected in the value of lost load (VOLL). For a long term interruption (such as an ongoing network failure), VOLL must be very high—the best estimate might be the cost of temporary diesel generation of around $1,000/MWh. There are also a number of benefits to restoring a network that would not be reflected in VOLL, such as the safety and health considerations of ensuring widespread access to electricity (e.g. communications), as well as wider economic impacts of getting the region operating again.

Due to these impacts, it would seem easy to justify the quickest restoration option possible, even if it involves high costs. We suspect that if customers were asked at the time for their preference between restoring the network in three months at a cost of $x, or restoring the network in eighteen months at a cost of $0.5x, they would willingly pay for speedy restoration.

The same approach can be applied to Orion's claim for foregone revenues. The first step would be to divide the lost revenues into "normal" and "abnormal" components. On the basis that businesses are price capped, not revenue capped, businesses are compensated for "normal" demand variations, but not for "abnormal" variations. From our review, the revenue variations presented by Orion appear to be abnormal.

6 Conclusions

This section provides direct responses to two of the questions posed in the issues paper and provides some concluding remarks.

Question 1:

> *Should prices charged to consumers increase from April 2014 to recover costs Orion has already incurred in responding to the Canterbury earthquakes? If so, should all of these costs be recovered from consumers or only some of these costs (with the rest borne by Orion)?*

Orion's future prices should recover all of the costs that have been prudently incurred to restore electricity distribution services and rebuild the network. The test for prudency needs to consider demand characteristics, and the costs that would have been borne by failing to quickly restore services. The regulator needs to actively guard against preventing the recovery of costs that were reasonably incurred, but could have been better managed with the benefit of hindsight.

Question 2:

> *Should Orion be allowed to increase its future prices to consumers from April 2014 to compensate it for the lower than expected revenues it earned over the period from the time of the earthquakes to April 2014? If so, should consumers make up all or only some of the revenues Orion expected to earn?*

Orion's future prices should recover all of the revenues foregone as a result of the earthquakes (unless Orion's actions contributed to a destruction of demand).

If the Commission is not satisfied that this approach is in the long term interests of consumers, then the Commission needs to initiate a review of the regulatory settings. The options for allocating a greater amount of risk to suppliers all require *ex ante* regulatory decisions—either to provide for specific cash flows, increase the WACC, or decide on specific risks that suppliers will bear. The Commission cannot achieve this risk allocation in the context of Orion's CPP application.