

## **Terms of Reference for expert opinions on the WACC percentile**

This document compiles the various terms of reference used for the expert reports commissioned for the Commerce Commission's further work on the WACC input methodologies.

The consultants covered in this document are:

- Economic Insights
- Ingo Vogelsang
- Julian Franks
- Martin Lally
- Oxera

## Economic Insights

The terms of reference for Economic Insights are contained in their contract. The relevant sections are set out below.

### Extracts from contract with Economic Insights

#### *Context*

The High Court decision on the merits appeals of the input methodologies, *Wellington International Airport Ltd & Ors v Commerce Commission* [2013] NZHC [11 December 2013], made a number of comments related to our use of WACC.

Relevant to this Agreement, the Court set out its expectation that we should consider whether it is appropriate to use a WACC for price-setting purposes that is substantially higher than the mid-point of the estimated WACC range. The Court expected in our consideration we include analysis (if practicable) of the type proposed by MEUG in its submissions to the Court, and we also consider MEUG's two-tiered WACC proposal.

The Commission may decide to review or amend the cost of capital input methodologies prior to the seven year review required by the Act. It may also decide to complete that review prior to the determination of a new default price-quality path for electricity distribution businesses in November of this year.

The Commission has subsequently released, and received submissions, on a consultation paper on whether we should consider amending the cost of capital IMs that set the percentile estimate of WACC (see Commerce Commission "Invitation to have your say on whether the Commerce Commission should review or amend the cost of capital input methodologies" (20 February 2014)).

Relevant sections of the High Court judgment and submissions received on the paper inviting submissions are relevant to, and should be considered in, the provision of the services and deliverables under this Agreement.

The Commission requires expert advice on overseas regulatory decisions (primarily from the UK, Europe, Australia and the US). This will help us understand whether other regulators set the allowed rate of return above, below, or equal to the mid-point of the WACC range.

#### *Services*

The Consultant will provide the Commission with the following Services by the relevant completion dates:

<b>Services</b>	<b>Completion date</b>
Provide advice on the WACC estimates used by overseas regulators in Australia, US, UK and Europe.	As advised by the Commission
Provide assistance to the Commission in drafting documents for consultation and consideration by Commissioners on the cost of capital	As advised by the Commission

### *Deliverables*

The Consultant will supply the Commission with the following Deliverables by the relevant due dates:

<b>Deliverable</b>	<b>Due date</b>
Provide a template showing the information the Consultant will be extracting on overseas regulatory decisions.	Wednesday 21 May
<p>Provide a publishable written report summarising overseas regulatory decisions on the use of WACC estimates above, below, or at the mid-point estimate (primarily from the UK, Europe, Australia and the US). This report will include a summary table which should include but not be limited to:</p> <ul style="list-style-type: none"> <li>• the name and country of the relevant regulator, the title of the decision, and the date of the decision;</li> <li>• a comparison of the WACC percentile used by the regulators, on a like-for-like basis;</li> <li>• what comparable regulated industry the WACC is applied to;</li> <li>• what type of regulation the WACC is applied to (eg price setting or information disclosure); and</li> <li>• how the regulator implemented any uplift to the mid-point estimate (eg, higher Beta, adjustment to the overall WACC, etc).</li> </ul>	Friday 30 May

## Ingo Vogelsang

The terms of reference for Ingo Vogelsang were contained in his contract, however, one additional piece of work was commissioned separately. The relevant sections of his contract are set out below, along with the description of the additional piece of work.

### Extracts from contract with Ingo Vogelsang

#### *Context*

The High Court decision on the merits appeals of the input methodologies, *Wellington International Airport Ltd & Ors v Commerce Commission* [2013] NZHC [11 December 2013], made a number of comments related to WACC.

Relevant to this Agreement, the Court set out its expectation that we should consider whether it is appropriate to use a WACC for price-setting purposes that is substantially higher than the mid-point of the estimated WACC range. The Court expected in our consideration that we include analysis (if practicable) of the type proposed by MEUG in its submissions to the Court, and we also consider MEUG's two-tiered WACC proposal. Paragraphs 1422 to 1487 of the judgment set out the Court's views regarding the WACC percentile in greater detail.

In considering these comments the Commission may decide to review or amend the cost of capital input methodologies prior to the seven year review required by the Act. It may also decide to complete that review prior to the determination of a new default price-quality path for electricity distribution businesses in November of this year.

The Commission has subsequently released, and received submissions, on a consultation paper on whether we should consider amending the cost of capital IMs that set the percentile estimate of WACC (see Commerce Commission "Invitation to have your say on whether the Commerce Commission should review or amend the cost of capital input methodologies" (20 February 2014)).

Relevant sections of the High Court judgment and submissions received on the paper inviting submissions are relevant to, and should be considered in, the provision of the services and deliverables under this Agreement.

The Commission requires expert technical advice on the cost of capital input methodology. This includes peer reviewing work undertaken internally by the Commission (for use in either public documents or legal proceedings), peer reviewing reports by the Commission's expert advisor Oxera Consulting ('Oxera'), and assisting in the preparation of public documents which explain the way that cost of capital has been estimated.

### *Services*

The Consultant will provide the Commission with the following Services by the relevant completion dates:

<b>Services</b>	<b>Completion date</b>
<p>Peer review of reports issued by the Commission, and its expert advisor Oxera on the potential economic effects associated with over- and under- estimating WACC.</p> <p>The exact terms of reference for each review will be sent to you via email by the Commissions representative before each review commences.</p>	19 December 2014

### *Deliverables*

The Consultant will supply the Commission with the following Deliverables by the relevant due dates:

<b>Deliverable</b>	<b>Due date</b>
<p>Review and provide written comments on Oxera's draft report on the potential economic effects associated with over- and under- estimating WACC.</p> <p>These comments will be communicated to Oxera for consideration when preparing their final report.</p>	21 May 2014
<p>Provide a written report peer-reviewing Oxera's final report on the potential economic effects associated with over- and under- estimating WACC.</p> <p>This report should be written on the basis the Commission may publish it.</p>	6 June 2014
<p>Provide a written report reviewing the Commission's draft Reasons Paper, advising whether the Commission's report has, in your opinion, appropriately addressed the High Court's comments set out in paragraphs 1422-1487 of the judgement.</p> <p>This report should be written on the basis the Commission may publish it.</p>	11 July 2014
<p>Other reports and advice relating to the above services as and when agreed with the Commission.</p>	As advised by the Commission

**On the economic effects of allowing a WACC above the midpoint**

Ingo's report "On the economic effects of allowing a WACC above the midpoint" fell under the last deliverable in the contract regarding "other reports and advice". It had no formal terms of reference.

The report was to be a conceptual piece that would develop some preliminary ideas that Ingo had discussed with us. It would do this by answering the following questions.

- (a) if a general approach could be saved or if a case-by-case approach would be needed;
- (b) what the implications of using a consumer welfare objective versus a total surplus objective would be; and
- (c) how an empirical implementation of the approach for a case like reliability investment in electricity distribution networks would look.

## Julian Franks

The terms of reference for the work undertaken by Julian Franks are covered in the contract we entered into with Oxera. The relevant sections are below.

### Extracts of contract with Oxera Consulting Limited

#### *Context*

The Commerce Commission (Commission) is the economic regulator for telecommunications, airports, electricity lines services, and gas pipeline services in New Zealand.

In New Zealand, airports, electricity lines services, and gas pipeline services are regulated under Part 4 of the Commerce Act 1986.<sup>1</sup>

Part 4 of the Commerce Act requires us to determine ‘input methodologies’ which set the up-front rules, requirements, and processes applying to economic regulation. The main purpose of the input methodologies is to provide certainty for suppliers and consumers regarding the rules, requirements and processes that apply to Part 4 regulation.

The input methodologies were determined in December 2010, and describe our approach to matters such as:<sup>2</sup>

- cost of capital;
- valuation of assets, including depreciation, and treatment of revaluations;
- allocation of common costs, including between activities, businesses, consumer classes, and geographic areas; and
- treatment of taxation.

Under the cost of capital input methodologies, we use the simplified Brennan-Lally capital asset pricing model (CAPM), using the simplified beta leveraging/de-leveraging formula, to estimate the cost of equity. This version of the CAPM reflects New Zealand’s taxation system. Specifically, it recognises the presence of dividend imputation credits and the general absence of taxes on capital gains.

The High Court decision on the merits appeals of the input methodologies, *Wellington International Airport Ltd & Ors v Commerce Commission* [2013] NZHC [11 December 2013], made a number of comments related to our input methodologies governing the cost of capital, and specifically about the appropriate percentile of the weighted average cost of capital range (WACC) used for the purposes of price-quality regulation and information disclosure.

Relevant to this Agreement, the Court set out its expectation that we should consider whether it is appropriate to use a WACC for price-setting purposes that is substantially

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<sup>1</sup> <http://www.legislation.govt.nz/act/public/1986/0005/latest/DLM87623.html>

<sup>2</sup> The input methodologies reasons paper for electricity distribution businesses and gas pipeline businesses is available here: <http://www.comcom.govt.nz/dmsdocument/6499>. Our approach to cost of capital is discussed in Chapter 6 and Appendix H of this document.

higher than the mid-point of the estimated range of WACC. The Court expected that in our consideration we include analysis (if practicable) of the type proposed by the Major Energy Users Group (MEUG) in its submissions to the Court, and that we should further consider MEUG's two-tiered WACC proposal.

In considering these comments the Commission has announced its intention to review, and potentially amend, the cost of capital input methodologies. The Commission proposes to complete this review prior to the determination of a new default price-quality path for electricity distribution businesses in November of this year.

The Commission has subsequently released, and received submissions on, a consultation paper on whether we should consider amending our cost of capital IMs that set the percentile estimate of WACC (see Commerce Commission "Invitation to have your say on whether the Commerce Commission should review or amend the cost of capital input methodologies" (20 February 2014)).

The Commission is also currently in the process of determining the allowed WACC (including the percentile estimate) for two regulated telecommunications services:

- the unbundled copper local loop (UCLL) service; and
- the unbundled bitstream access (UBA) service.

Relevant sections of the High Court judgment, submissions received on the paper inviting views on whether we should review or amend the cost of capital input methodologies, and submissions received on the WACC percentile for UCLL and UBA, are relevant to and should be considered in the provision of the services and deliverables under this Agreement.

In this Agreement, references to the Proposal are references to the Consultant's *Proposal on cost of capital issues: use of 75<sup>th</sup> percentile under the WACC Input Methodologies* (02 April 2014)

#### *Deliverables*

The Consultant will supply the Commission with the following Deliverables by the relevant due dates, which are NZ dates. Where the due date for a Deliverable specifies that another date may be agreed by the Commission and the Consultant, the Consultant will not unreasonably withhold its agreement.

<b>Deliverables</b>	<b>Due date</b>
<p>An explanation, prepared by Professor Julian Franks, setting out in greater detail the reasons for previously:<sup>3</sup></p> <ul style="list-style-type: none"> <li>• agreeing with the Commission's policy of setting the WACC equal to, or greater than, the midpoint of the estimated range, in recognition of the asymmetric</li> </ul>	<p>Prior to 16 May 2014</p>

<sup>3</sup> Professor Julian Franks, Dr Martin Lally and Professor Stewart Myers "Recommendations to the New Zealand Commerce Commission on an Appropriate Cost of Capital Methodology" (18 December 2008), p. 36-37, recommendations 53 and 55.



costs of setting the WACC too low; and

- recommending that the Commission evaluate how far above the mid-point of the range it moves on a case-by-case basis.

The explanation prepared by Professor Franks will respond to paragraph 1436 of the High Court judgment.

## Martin Lally

The terms of reference for the work undertaken by Martin Lally are covered in his contract. The relevant sections are below.

### Extracts from contract with Capital Financial Consultants Ltd

#### Context

The High Court decision on the merits appeals of the input methodologies, Wellington International Airport Ltd & Ors v Commerce Commission [2013] NZHC [11 December 2013], made a number of comments related to WACC.

Relevant to this Agreement, the Court set out its expectation that we should consider whether it is appropriate to use a WACC for price-setting purposes that is substantially higher than the mid-point of the estimated WACC range. The Court expected in our consideration we include analysis (if practicable) of the type proposed by MEUG in its submissions to the Court, and we also consider MEUG's two-tiered WACC proposal.

In considering these comments the Commission may decide to review or amend the cost of capital input methodologies prior to the seven year review required by the Act. It may also decide to complete that review prior to the determination of a new default price-quality path for electricity distribution businesses in November of this year.

The Commission has subsequently released, and received submissions, on a consultation paper on whether we should consider amending the cost of capital IMs that set the percentile estimate of WACC (see Commerce Commission "Invitation to have your say on whether the Commerce Commission should review or amend the cost of capital input methodologies" (20 February 2014)).

Relevant sections of the High Court judgment and submissions received on the paper inviting submissions are relevant to, and should be considered in, the provision of the services and deliverables under this Agreement.

The Commission requires expert technical advice on the cost of capital input methodology, peer reviewing work undertaken internally (for use in either public documents or legal proceedings), and assisting in the preparation of public documents which explain the way that cost of capital has been estimated.

#### Services

The Consultant will provide the Commission with the following Services by the relevant completion dates:

Services	Completion date
Review relevant literature which contains empirical evidence to support a specific percentile above or below the mid-point in setting the cost of capital for price control purposes	Friday 2 May

Explain in greater detail the reasons for your previous recommendation that the Commission adopt WACC values greater than the midpoint of the range.	Friday 2 May
Provide assistance to the Commission in drafting documents for consultation and consideration by Commissioners on the cost of capital	As advised by the Commission
Review and comment on any relevant submissions filed by appellants or interested parties	As advised by the Commission
Consult with Commission staff, external solicitors and other experts relating to the cost of capital.	As advised by the Commission

### *Deliverables*

The Consultant will supply the Commission with the following Deliverables by the relevant due dates:

<b>Deliverable</b>	<b>Due date</b>
Provide a written report of the empirical evidence available within the literature that would be relevant to our selection of the appropriate percentile above, below, or at the mid-point estimate of WACC, taking into consideration the purpose of our price-control regulation set out in s 52A of the Commerce Act 1986”	Friday 9 May
Provide a written report documenting the basis for your previous recommendation the Commission adopts WACC values that are greater than the midpoint of the range.	Friday 9 May
Other reports and advice relating to the above services as and when agreed with the Commission.	As advised by the Commission

## Oxera

The terms of reference for Oxera are contained in the contract the Commerce Commission entered into with them. This contract draws on their proposal to this work. The relevant sections of the contract are set out below, and Oxera's proposal is attached to this document.

### Extracts of contract with Oxera Consulting Limited

#### *Context*

The Commerce Commission (Commission) is the economic regulator for telecommunications, airports, electricity lines services, and gas pipeline services in New Zealand.

In New Zealand, airports, electricity lines services, and gas pipeline services are regulated under Part 4 of the Commerce Act 1986.<sup>4</sup>

Part 4 of the Commerce Act requires us to determine 'input methodologies' which set the up-front rules, requirements, and processes applying to economic regulation. The main purpose of the input methodologies is to provide certainty for suppliers and consumers regarding the rules, requirements and processes that apply to Part 4 regulation.

The input methodologies were determined in December 2010, and describe our approach to matters such as:<sup>5</sup>

- cost of capital;
- valuation of assets, including depreciation, and treatment of revaluations;
- allocation of common costs, including between activities, businesses, consumer classes, and geographic areas; and
- treatment of taxation.

Under the cost of capital input methodologies, we use the simplified Brennan-Lally capital asset pricing model (CAPM), using the simplified beta leveraging/de-leveraging formula, to estimate the cost of equity. This version of the CAPM reflects New Zealand's taxation system. Specifically, it recognises the presence of dividend imputation credits and the general absence of taxes on capital gains.

The High Court decision on the merits appeals of the input methodologies, *Wellington International Airport Ltd & Ors v Commerce Commission* [2013] NZHC [11 December 2013], made a number of comments related to our input methodologies governing the cost of capital, and specifically about the appropriate percentile of the weighted average cost of capital range (WACC) used for the purposes of price-quality regulation and information disclosure.

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<sup>4</sup> <http://www.legislation.govt.nz/act/public/1986/0005/latest/DLM87623.html>

<sup>5</sup> The input methodologies reasons paper for electricity distribution businesses and gas pipeline businesses is available here: <http://www.comcom.govt.nz/dmsdocument/6499>. Our approach to cost of capital is discussed in Chapter 6 and Appendix H of this document.

Relevant to this Agreement, the Court set out its expectation that we should consider whether it is appropriate to use a WACC for price-setting purposes that is substantially higher than the mid-point of the estimated range of WACC. The Court expected that in our consideration we include analysis (if practicable) of the type proposed by the Major Energy Users Group (MEUG) in its submissions to the Court, and that we should further consider MEUG’s two-tiered WACC proposal.

In considering these comments the Commission has announced its intention to review, and potentially amend, the cost of capital input methodologies. The Commission proposes to complete this review prior to the determination of a new default price-quality path for electricity distribution businesses in November of this year.

The Commission has subsequently released, and received submissions on, a consultation paper on whether we should consider amending our cost of capital IMs that set the percentile estimate of WACC (see Commerce Commission “Invitation to have your say on whether the Commerce Commission should review or amend the cost of capital input methodologies” (20 February 2014)).

The Commission is also currently in the process of determining the allowed WACC (including the percentile estimate) for two regulated telecommunications services:

- the unbundled copper local loop (UCLL) service; and
- the unbundled bitstream access (UBA) service.

Relevant sections of the High Court judgment, submissions received on the paper inviting views on whether we should review or amend the cost of capital input methodologies, and submissions received on the WACC percentile for UCLL and UBA, are relevant to and should be considered in the provision of the services and deliverables under this Agreement.

In this Agreement, references to the Proposal are references to the Consultant’s *Proposal on cost of capital issues: use of 75<sup>th</sup> percentile under the WACC Input Methodologies* (02 April 2014)

*Services*

The Consultant will provide the Commission with the following Services by the relevant completion dates:

Services	Completion date
Provision of expert advice to assist us in estimating the WACC percentile for the following (the “Regulated Services”): <ul style="list-style-type: none"> <li>• electricity distribution services, electricity transmission services, gas distribution services, gas transmission services, and specified airport services, regulated under Part 4 of the Commerce Act 1986; and</li> </ul>	1 December 2014

<ul style="list-style-type: none"> <li>the UCLL and UBA services, regulated under the Telecommunications Act 2001.</li> </ul>	
<p>Identification of effects and initial analysis in accordance with Stage 1 of the Proposal, including:</p> <ul style="list-style-type: none"> <li>recommendations on the specific WACC percentile to be used for each of the Regulated Services;</li> <li>consideration of the impact of under- and over-estimating WACC for the Regulated Services on the relevant downstream industries; and</li> <li>consideration of the factors listed in paragraphs 47 and 48 of the Commission's "Invitation to have your say on whether the Commerce Commission should review or amend the cost of capital input methodologies" dated 20 February 2014, and responses to that paper.</li> </ul>	30 May 2014
<p>Detailed analysis of wider economic effects in accordance with Stage 2 of the Proposal, if requested by the Commission.</p>	30 May 2014 or as otherwise agreed with the Commission

### *Deliverables*

The Consultant will supply the Commission with the following Deliverables by the relevant due dates, which are NZ dates. Where the due date for a Deliverable specifies that another date may be agreed by the Commission and the Consultant, the Consultant will not unreasonably withhold its agreement.

<b>Deliverables</b>	<b>Due date</b>
Weekly progress report emails on Fridays with the option of audio conference calls on an agreed day the following week, for a minimum of one hour, with agreed designated individuals.	Fridays or an agreed day the following week, 11 April onwards
Draft expert report containing the review, estimates, and analysis described in Stage 1 of the Proposal for the Regulated Services, including fully evidenced discussion of how the Consultant arrived at its recommendations.	16 May 2014
If requested by the Commission, a draft expert report containing the review, estimates, and analysis described in Stage 2 of the Proposal for the Regulation Services, including fully evidenced discussion of how the Consultant	16 May 2014, unless otherwise agreed with the Commission

arrived at its recommendations.	
Final expert report (in publishable form) containing the review, estimates, and analysis described in Stage 1 of the Proposal for the Regulation Services, including fully evidenced discussion of how the Consultant arrived at its recommendations. This final report should also take Commission feedback from the draft report into account.	30 May 2014
If requested by the Commission, a final expert report (in publishable form) containing the review, estimates, and analysis described in Stage 2 of the Proposal for the Regulation Services, including fully evidenced discussion of how the Consultant arrived at its recommendations. This final report should also take Commission feedback from the draft report into account.	30 May 2014, unless otherwise agreed with the Commission
Publishable copy of all evidence (eg data, reports) and workings (eg spreadsheets) used in forming the Consultant's recommendations.	30 May 2014

Commerce Commission  
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PO Box 2351  
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New Zealand

02 April 2014

Dear \_\_\_\_\_

**Proposal on cost of capital issues: use of the 75th percentile under the WACC Input Methodologies**

Following the request for a proposal in relation to the selection of the point estimate for the WACC, please find below an updated estimate of the work we would propose to undertake as well as an estimate of the price for undertaking this work, our daily rates and CVs for the staff members proposed for this project.

**Overview of our proposed approach**

It is understood that the Commerce Commission currently adopts a point estimate for the WACC at the 75th percentile of the range when setting regulated price-quality paths for electricity distribution and gas pipeline services, reflecting the potentially greater social costs of setting the WACC too low.<sup>1</sup> However, this was challenged by the Major Electricity Users' Group (MEUG).<sup>2</sup> In its judgment, the Court stipulated that when the Input Methodologies (IMs) are next reviewed, the Commerce Commission should consider whether it is appropriate to use a WACC substantially higher than the mid-point for price setting purposes.<sup>3</sup> It is understood that the Commerce Commission intends to finalise any amendment to the WACC percentile by November 2014, in time for the next price reset for the electricity distribution businesses.<sup>4</sup>

<sup>1</sup> Commerce Commission (2010), 'Input Methodologies (Electricity Distribution and Gas Pipeline Services', Reasons Paper', December, paras. H11.1–H11.67 and H13.44.

<sup>2</sup> The MEUG questioned whether the point estimate should be set at the 50th percentile, or if the 75th percentile should be applied to new investment only. Judgment of the High Court of New Zealand [2013] in the matter of under s 52Z of input methodology determinations of the Commerce Commission', para. 1423.

<sup>3</sup> Judgment of the High Court of New Zealand [2013] in the matter of under s 52Z of input methodology determinations of the Commerce Commission', para. 1486.

<sup>4</sup> Commerce Commission (2014), 'Invitation to have your say on whether the Commerce Commission should review or amend the cost of capital input methodologies', 20 February.



We understand that the Commerce Commission is seeking independent expert advice during the amendment process, specifically in respect of the evidence which can be developed to support a decision on the appropriate choice of WACC from the statistical range of potential outcomes. The most likely outcomes of the review are:

- A move to a 'P50' or mid-point approach to setting the WACC, consistent with the proposal within the MEUG appeal;
- Retain the 'P75' or 75<sup>th</sup> percentile approach; or
- Retain an approach of a standard level above the 'P50' mid-point, but move to a new approach to determination of that level.

#### **Background – why choose a WACC above the mid-point**

A key objective of regulation is to ensure that regulated companies have sufficient incentives to undertake the necessary investments. The exact objectives may differ by sector, but underlying fundamentals are similar.

If tariffs are set to exactly cover the WACC, if there is uncertainty about costs, a company may under-recover in some years and in other years over-recover. In the years it under-recovers, the losses will be borne by the company. At such times, there may be a disincentive for the company to invest. Whilst other parameters can impact the case for investment, the WACC is unique in having a consistent effect upon the investment case generally.

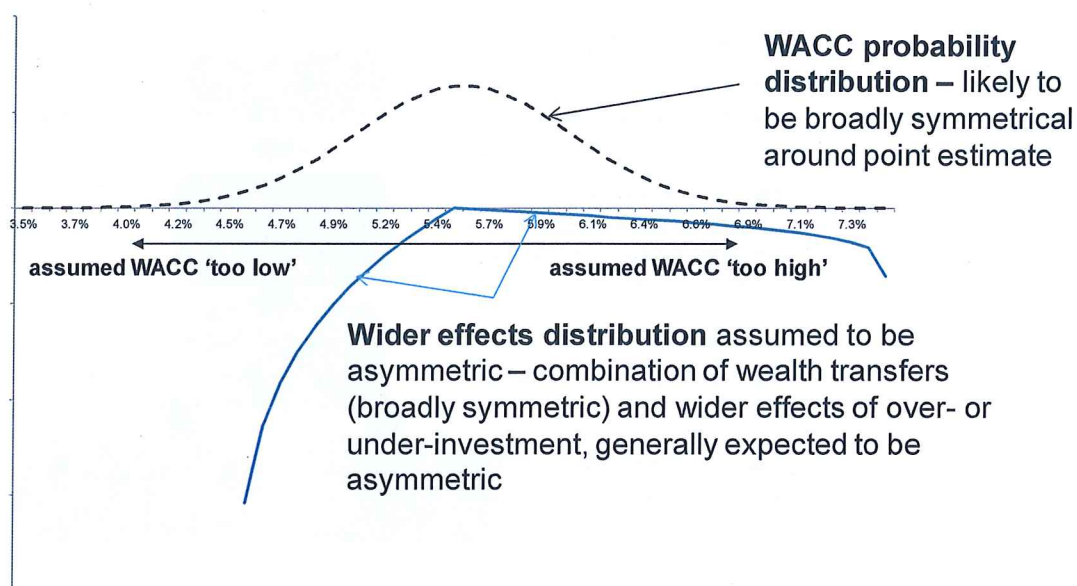
The impact of such under-investment may be severe. In extremis, under-investment over time may result in interruptions to continuing service, which may have wider social and economic consequences, particularly in 'essential services' such as energy and water. Figure 1 illustrates that whilst the level of uncertainty over financial returns may be broadly symmetrical, the wider effects may be far from neutral.

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**Figure 1: Illustration of range of potential financial and wider economic outcomes from the uncertainty over the level of the WACC**



The framework for estimating the WACC—and in particular, the choice of the percentile—therefore needs to be defined to support appropriate investment over time. In particular, the framework needs to create conditions in which the expected return on investments is at least equal to the WACC, minimising any potential under-investment problem. However, whereas this is generally done through judgment, such as that applied by the NZCC in its initial view of the P75 level for the WACC, Oxera understands that the NZCC is now seeking **quantitative evidence** of these effects.

#### **How can these effects be measured?**

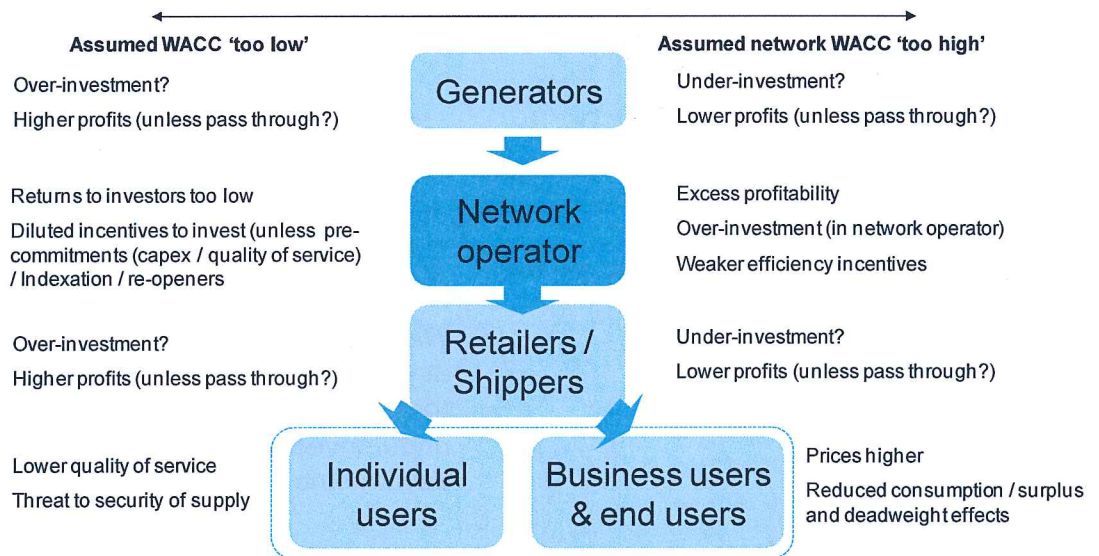
As described above, the effects may be felt throughout the value chain, and a combined economic analysis would need to reflect the effect on all stakeholders, and to do so on a consistent basis – ie that both benefits and costs would include an assessment of the type of wider economic effects which were considered within the choice of a P75 approach. Oxera would assess the evidence which would support quantification of these effects, which are illustrated in Figure 2:

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**Figure 2: Direct and indirect effects of the assumed WACC being different to the actual WACC**



Oxera would then assess the evidence which could be used to support quantification of these effects. These can be characterised as:

- **Direct financial effects (wealth transfers).** If the return is different to the WACC, there is a transfer of value between energy users (and, potentially intermediaries) and investors in the network operator;
- **Indirect financial effects.** The consequences of direct financial effects may also be felt through changes in the conditions in wider markets, and within incentives to invest. This could include distorting incentives to invest, changing demand for energy, and, potentially, adjusting competitive conditions between users and non-users (eg international competitors for New Zealand production);
- **Wider social and economic benefits.** This would be likely to be focussed on the level of assurance over future investment. The continuation of service provision in regulated industries has an economic value. In this case of energy, this economic value is likely to be significant. Interruptions would have a disruptive effect on quality of life for individuals and on the economics of New Zealand businesses.

These effects become increasingly reliant on assumptions and difficult to monetise. However there is precedent. Oxera has worked on a number of economic impact assessments which need to take into consideration comparable issues, including a study announced this week by the Port of Dover,<sup>5</sup> and also reviews on the wider economic effects of other network services. For example, in 2013, Oxera worked on a review of the wider macro-economic benefits of a proposed new development in transport infrastructure as part of the evidence to support investment.

<sup>5</sup> <http://www.doverport.co.uk/?page=News&article=353>

Such studies use proxies for the economic value of services from a range of sources, including market evidence, willingness to pay, and analysis of secondary economic effects. For example, a review of evidence in energy would include a consideration of the prices paid by businesses for 'interruptible' energy services.

Given the limited time frame available, Oxera would prepare an analysis of the direct and indirect economic effects including at least those in the Figure above, and others which emerge within the review, drawing on existing evidence of the scale and volume of the different effects (such as case studies, pricing differentialism, insurance analysis and assessment of proxies more generally). We would also identify areas where further work would be valuable for the NZCC's gathering evidence process. This could relate, e.g. to willingness to pay evidence or econometric statistical analysis that could have the potential to expand the sources of evidence for the scale of different effects.

The aim of this section of the study would be therefore to provide a best estimate of the scale of effects within the 'loss function' illustrated in Figure 1 above and referred to within the Court judgment. We would also, as highlighted within the Figure above, demonstrate the difference between direct measurable economic effects, and estimates of indirect effects which are potentially material but also subject to fundamental uncertainty over their impact and value.

Based on this analysis, we consider that NZCC would be able to take forward an approach to the WACC percentile which is based on a reasonable level of economic evidence, and therefore represents the 'best estimate' from that available evidence.

#### **What percentile is appropriate for the WACC?**

The aim of the previous analysis would be to establish whether there are material economic costs of setting the WACC too low. If these are small, or highly improbable, it may be that the conclusion is that the P50 approach proposed by MEUG is appropriate, with alternative approaches being taken to manage the small risks from under-investment. However, even if these are very significant relative to the comparable economic costs of setting the WACC too high, then there are still limitations on how high the WACC should be, and a number of potential options for managing the risks, including:

- **Regulatory options.** Resetting the price control regularly itself will affect the size of the risk that the WACC will be too low, as it allows the regulator to reflect market changes. However, alternative approaches, specifically indexation, can further reduce this risk;
- **Pre-commitment.** If the company has output or quality requirements which require a 'promise' of investment then this protects against under-investment, but may itself come at a cost, as it will increase risks for investors (eg. lost option value);
- **'Insurance'.** In financial terms, it would be possible to protect against increases in the WACC through purchase of an 'option' on a comparable security. The cost of this protection could form a proxy for the potential maximum cost that would be required to

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cover the risks associated with under-investment, and may yet fail to alleviate the investment incentive problems.<sup>6</sup>

We would highlight the potential effects of these factors on an appropriate range for the choice of a point for the WACC, and, in particular, whether the size of the effects which protect the company mean that, even where economic effect of under-investment is material, that a reduction from P75 may be considered.

### Wider regulatory context

Taking this context into account, an analytical framework could be developed to inform the choice of the WACC percentile. As an illustration, the framework could consider the implications of the following factors that may influence the choice of the WACC percentile:

- **capital investment plans and the nature of the projects**—for example, whether significant capital investment is planned and the extent to which investment spans more than one price control period; the potential for, and the visibility of under-investment offset by possible commitments; the incentives required for investments to be undertaken and the social benefits of these investments;
- **the nature of the regulatory regime and the incentives framework**—in particular, exposure of companies to downside and upside risks; the nature of any penalties if a company's returns exceed the WACC and any claw back if a company's return is below the WACC. It would also be important to consider the broad duties faced by the regulator, and the implications of those duties for the different weights given to the risks associated with the WACC being too high or too low;
- **variations in risks by sector**—for example, whether it would create inconsistency problems to adopt different point estimates for the WACC by sector;
- **measurement error in the key WACC parameters**—if there are limitations associated with the model of investors' expected return, in terms of data availability, for example, this may affect the selection of the point estimate within the range. If there is fundamental uncertainty around the range for the WACC parameters, it may be more difficult to accurately assess what the 75th percentile will be, and therefore there may be a greater risk that the actual 75th percentile is above the best estimate of the WACC.

The above factors, and their interplay with selecting an appropriate point estimate for the WACC, would impact the tradeoffs between incentives to invest, expected (excess) rewards to investors, and prices charged to customers.

Oxera would therefore be able to recommend a practical approach to the NZCC covering:

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<sup>6</sup> In practice, this may need to be associated with a form of pre-commitment, as otherwise the company can still take the benefit of the premium, but under-invest if the actual WACC falls

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- What are the economic impacts of the effects which would impact NZCC's decision on where to set the WACC from within a range?
- What is the strength of evidence and level of fundamental uncertainty around the assessment of these economic impacts?
- What is the potential size of the cost to the company of 'insuring' against the risks that the WACC is too low, given the regulatory framework?
- Given the wider regulatory issues, what does this mean for a future policy on setting the WACC from a range, and why?

Depending on the strength of evidence Oxera may also:

- Recommend further primary analysis, including either economic / statistical analysis or potentially bespoke survey evidence, where this is likely to have a material effect on the confidence around the economic value of different options for the level of the WACC

## Budget

It is understood that a draft report is required by 16 May 2014, with a final report, to be published, by 30 May 2014. We understand there is a possibility that the draft report would need to be completed by 2 May 2014, with the final report by 16 May 2014. If this were to be the case, we consider it would make it difficult to complete the analysis for the draft report stage, and we would agree with the Commerce Commission a revised prioritisation for the analysis.

We are proposing a different team structure for this project to the UCLL and UBA WACC work for which we have been provisionally selected. However, there would be a significant degree of overlap across both projects, with

As discussed on the call, we have provided two options, a 'core' proposal which we consider would significantly advance the NZCC's understanding of the relative loss function of the different choice of WACC.

- Stage 1: Identification of effects and initial analysis. In this stage we would:
  - review existing analysis and create the quantitative framework indicated in Figure 1 for comparing the distribution of the WACC to the distribution of economic impacts;
  - estimate the direct effects indicated in Figure 2;
  - analyse the sources of indirect effects, and use existing sources of relevant measures to estimate the economic impact of the indirect effects such as those indicated in Figure 2, but also any others which arise from the analysis;

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- analyse the sources of wider economic and social effects, and research the potential approaches to valuation of these effects, including those indicated in Figure 2 – and where feasible to determine a high-level summary of the scale of these effects relative to the measurable effects above;
- analyse the effects of wider regulatory issues, including the impact of the cost of 'insurance' against increases in the WACC, and other relevant considerations within the regulatory framework.
- based on this analysis provide a view on the appropriate choice of WACC, and a review of the potential impact of further research, with options for NZCC to take forward.

This analysis would be specific to the context of the MEUG appeal, but we would seek to construct the case so that it could be applied more generally, including an explanation of where adjustments might be made for different industries.

The cost of Stage 1 would be

- Stage 2: Detailed analysis of wider economic effects. Under Stage 2, which could be performed simultaneously to Stage 1, Oxera would bring in our experience of the analysis of wider economic effects to create a best estimate of the value of these effects. The calculation of the best estimate would reflect the time available – it would draw on existing analysis of proxy measures for economic effects which could be converted into a realistic assessment of the wider economic effects in this case. We would still be able to potentially identify areas for further research (eg. willingness to pay analysis).
  - Based on this analysis, we would be able to provide a more evidence-based assessment of the loss function, as support to the choice of the level of the WACC. If we performed both Stages together, we would provide a combined conclusions on the appropriate WACC percentile.

The cost of Stage 2 would be

both cases this includes a write-up of the report.

The total cost of Stage 1 and 2 together would therefore be

We are proposing that both Stage 1 and 2 could be completed within the indicated timetable (draft 16 May, final 30 May), if we are able to get agreement to go ahead in the coming days. If Stage 1 is proposed alone, we would still propose to complete this within the original timetable, and then would be able to perform Stage 2 if appropriate as part of the wider evidence-gathering process or at a later date.

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## Team structure

Yours sincerely

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