

Ministry of Fisheries

Peer Review of the Commercial Aquaculture Space Valuation Methodology

28 February 2008



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Mr Roland Daysh
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28 February 2008

Dear Roland

Peer Review of the Commercial Aquaculture Space Valuation Methodology

In accordance with the terms of our engagement letter dated 5 November 2007, we attach our draft report on our peer review of a methodology for the valuation of commercial aquaculture space prepared by LECG.

Our key findings and recommendations are contained in the Summary of Findings at Section 1 of the draft report.

We note that this report is in draft form and may be subject to further work, revisions and other factors which may mean that this draft is substantially different to the final report.

If you require any clarification or further information, please do not hesitate to contact me on (04) 462 7452.

Yours sincerely



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Section 1

Summary of Findings and Recommendations

Summary of findings and recommendations

Purpose

- We have been engaged by the Ministry of Fisheries (“the Ministry”) to undertake a peer review of the methodology (“the Methodology”) for the valuation of commercial aquaculture space and associated infrastructure developed by LECG.
- The Methodology has been developed to enable the Ministry to meet its obligations under the Maori Commercial Aquaculture Claims Settlement Act 2004 (“the Act”).
- The Act requires the Crown to provide the equivalent of 20% of the Pre-Commencement space used for aquaculture in the Coastal Marine Area (“CMA”) to Iwi by 31 December 2014.
- The Ministry is obliged by the Act to “establish processes and methods for determining the appropriate value of the coastal permit” (i.e. to prepare a methodology to determine the value of a Coastal Permit).

The Valuation Methodology

- Under the Methodology, the value of a Coastal Permit is the residual value of a marine farm business after deducting values attributable to tangible and identifiable intangible assets:

Fair market value of marine farm
<i>Less</i>
Market value of tangible and identifiable intangible assets
<i>Equals</i>
Value of Coastal Permits

The Methodology uses the following valuation approaches:

Marine farm business	Present value of forecast cash revenues and costs plus the value of real options calculated using the binomial model
Tangibles assets	Depreciated Replacement Cost (“DRC”), net realisable value or book value as proxies for market value

- LECG has concluded that, given the basis on which the marine farm business will be valued, there will not be any intangible assets of significance.
- LECG has noted that robust data for some of the inputs needed for the valuation methodology, particularly marine farm productivity data, is not readily available. LECG proposes to use the Delphi Method to supplement the available data. The Delphi Method is a process to derive information from the collective experience of a group of individuals.

Summary of findings and recommendations (cont'd)

Assessment of the Methodology

- Ideally, the value of a Coastal Permit should be benchmarked to actual transactions involving the purchase and sale of coastal permits with similar characteristics. However, this approach is impractical at present because there is insufficient publicly available data on such transactions.
- The Methodology reflects the need to find an alternative approach given the absence of sufficient publicly available market transaction data. In our view the methodology is a conceptually sound alternative to benchmarking transaction values.
- We make the following observations about the valuation approaches being used within the Methodology:
 - Fair market value of marine farm business: Ideally, this should be derived by reference to actual market prices paid for similar marine farms. But again, the absence of sufficient publicly available information means it is necessary to employ a methodology to proxy fair market value.
 - > LECG have recommended using the Discounted Cash Flow (“DCF”) approach to derive fair market value. DCF is generally accepted as the most theoretically robust method for valuing assets and businesses where supportable cash flow forecasts are available. DCF is used in practice.
 - Real options are rarely valued explicitly in practice. However, the approach recommended by LECG is theoretically sound.
 - The proxies for market value of net assets are reasonable in the circumstances.
- While DCF is a theoretically sound approach, the results it will produce are only as good as the available inputs. It appears that not all inputs required to apply the DCF approach are readily available or observable. This, combined with the fact that the DCF can appear complicated and arcane to those not familiar with the underlying concepts, creates the risk that the Methodology might be perceived to be overly complicated for what is a relatively simple asset. Adding real options to the equation exacerbates the perceived complexity.
- In our experience, DCF is often not used for valuing small businesses (we assume that a majority of marine farms will be relatively small businesses). This is not because it is an inappropriate methodology. Rather, it is because the complexity of the DCF approach can outweigh the benefits in the circumstances.

Reducing Complexity

- While the Methodology is conceptually sound, there are a number of issues with its practical application. These include:
 - The number of inputs and assumptions required.
 - The added complexity of the binomial real options model.
 - The availability of robust industry data to perform cross checks of the valuation results.

Summary of findings and recommendations (cont'd)

- The common thread to each of these is the availability of sufficient and robust information and the ability to obtain that information in a timely and cost efficient manner.
- The findings of the pilot studies performed by LECG highlight the difficulty in applying the Methodology without robust information. The unexplained differences between the valuations of the mussel and oyster farms serve to reduce the level of confidence in the valuation results.
- We have considered opportunities to reduce complexity in the application of the Methodology. In doing this we have differentiated between the mass valuations and the Coastal Permit option. In our view the valuation of a Coastal Permit option must be specific to the permit being valued. The mass valuations provide greater opportunity for simplification.
- Standardisation could result in a set of “modal valuations” where the key variable to be determined is the level of production. This would significantly simplify the DCF process. In its simplest form standardisation could enable value to be expressed on a per unit basis, for example value per green weight tonne.
- Of course standardisation will come at the expenses “accuracy”. The more standardisation the more implicit averaging. Valuations will tend to reflect average assumptions rather than assumptions specific to the space being valued. There will be a trade-off between simplicity and accuracy.

Standardisation

- There is scope for standardising some input assumptions. For example:
 - Establish standard farm-gate prices for product. These might vary by region but could be standard within a region.
 - Apply standard production and capital expenditure costs – as LECG note, the production methods for the mass valuations should be based on optimal systems and processes. Therefore, the costs on a per unit basis (volume or area) should be relatively standard.

Earnings Multiple

- The marine farm valuation could be derived using an earnings multiple approach, as opposed to DCF. That is, derive the value of a marine farm business by capitalising an estimate of its future maintainable earnings (for example capitalisation of earnings before interest and tax). This approach has the benefit of being widely used, particularly for valuing smaller businesses, and is readily understood.
- However, capitalisation of earnings has a number of weaknesses. For example, it does not transparently address expected changes in cash flow over time. Most importantly, it does not overcome the problem of the lack of data – capitalisation of earnings still requires an estimate of revenue and costs, albeit to derive future maintainable earnings as opposed to the explicit forecast cash flows required for the DCF.

Summary of findings and recommendations (cont'd)

- If a more standardised approach to the DCF is possible, then we would suggest that a capitalisation of earnings approach is not used as the primary valuation approach but is used as a cross check.

Benchmark to Transactions Values

- While there is very little public information on sales of Coastal Permits or marine farm businesses available at present, transactions have occurred. Given the time available before the valuations are required, it might be possible to compile a database of transactions to be used to provide benchmarks for the valuations.
- Assuming the data can be obtained, there will be a significant task to review and possibly manipulate the data to ensure it provides useful comparisons. There will be a range of reasons why each transaction may not of itself provide a meaningful benchmark. However, if a sufficiently large sample of transactions can be compiled then the non-comparability of individual transactions becomes less of an issue.

Other Simplification Procedures

- The practical application of the Methodology could be made easier by some simplification and additional guidance, including:
 - Reconsider the inclusion of real options. The number of real options available to a marine farm will be limited by the terms of the Coastal Permit and attributes of the site. Moreover, we suggest that real options is not a concept that is widely recognised explicitly within a valuation context. The results from the pilot study valuations suggest the value attributable to real options is low.

- Historical annual production records will be the best source of inputs for marine farm productivity. The Methodology would benefit from additional guidance on the levels of productivity for different types of farm for each species.
- Compiling sales price for each species, where available. We understand that there is public information on prices; weekly historical price information is available for mussels at least from NZ Agri-fax since June 2000. This information would provide useful benchmarks.
- Provide guidance on the typical levels of expenditure for a marine farm for each type of species (i.e. in the form of common sized income statements for the efficient marine farm)

Recommendations

- The Methodology is conceptually appropriate for valuing Coastal Permits. However, there will be challenges in applying it in practice.
- We have identified some areas where the Methodology could be enhanced and simplified. There are summarised below:

Summary of findings and recommendations (cont'd)

- The Ministry carries out further investigation on transactions involving the purchase and sale of marine farms. If sufficient data can be obtained, a standard value should be derived to provide a cross check to the output of the DCF valuation of the marine farms;
- The Ministry investigates the feasibility to standardise the DCF approach for the mass valuations, including standardisation of input assumptions as far as possible.
- Where possible the Methodology should include analysis of financial information relating to the marine farm subject to valuation. Analysis of historical financial information provides a reasonableness check on the inputs to the DCF valuation;
- That valuation cross checks be used wherever possible. The cross checks should, as minimum, enable comparison between the valuations. They might also enable assessment of the overall reasonableness of the valuations. Cross checks should include:
 - > Implied earnings multiples for the marine farm DCF valuations (for example implied EBIT of EBITDA multiples)
 - > Value per unit (e.g. per tonne, per hectare etc.)
- The Methodology makes an assumption of “Optimal Site Management” for the valuation of a marine farm. We recommend that the acquisition price of a marine farm under the Coastal Permit Option should be determined under the assumption of current site management. If an assumption of “Optimal Site Management” is used the price paid to the vendor might be too high
- A handbook be prepared to provide a step-by-step guide to the practical implementation of the Methodology. This would include guidance on:
 - > The possible ranges of farm gate prices
 - > Indicative productivity ranges by species and region;
 - > Indicative operating costs and margins for each species based on the assumption of optimal site management;
 - > The rate of biological transformation by species and region for crop valuation purposes;
 - > Any recognised industry benchmarks or rules of thumb, such as value per tonne, value per hectare;
- On the following page we summarise our recommendations for the mass valuations and the Coastal Permit options.

Summary of findings and recommendations (contd)

	Mass Valuations	Coastal Permit Options
Preferred approach for valuations of Coastal Permits and/or marine farm businesses	▪Comparable transactions	▪Comparable transactions
Assuming that there will be insufficient transaction data, apply the Methodology as follows:		
Valuation of marine farm businesses	▪DCF with as much standardisation of inputs as possible (modal valuations if feasible)	▪DCF value for the specific marine farm being valued
Real options	▪Exclude	▪Exclude
Cross checks	▪Implied earnings multiples ▪Value per unit	▪Implied earnings multiples ▪Value per unit (e.g. value per green-weight tonne)
Handbook	▪Step-by-step application guide ▪Standardised assumptions ▪Guidance on other input assumptions for the DCF	▪Step-by-step application guide ▪Guidance on input assumptions for the DCF

Section 2

Introduction

Introduction

Introduction

- We have been engaged by the Ministry of Fisheries (“the Ministry”) to undertake a peer review of a valuation methodology (“the Methodology”) for the valuation of commercial aquaculture space and associated infrastructure.
- The Methodology has been developed to enable the Ministry to meet its obligations under the Maori Commercial Aquaculture Claims Settlement Act 2004 (“the Act”).
- The Act requires the Crown to provide the equivalent of 20% of the Pre-Commencement space used for aquaculture in the Coastal Marine Area (“CMA”) to Iwi by 31 December 2014.
- The Ministry is obliged by the Act to “establish processes and methods for determining the appropriate value of the coastal permit” (i.e. to prepare a methodology to determine the value of a Coastal Permit).
- The purpose of our review is to assist the Ministry in its consideration of the merits of the Methodology.
- Our peer review does not constitute an “independent business valuation” in the manner prescribed by the New Zealand Institute of Chartered Accountants (“NZICA”) Advisory Engagement Standard No. 2 (AES-2).

Scope

- The scope of our review is limited to assessing whether the Methodology:
 - Meets minimum professional valuation standards;

- Is documented to an appropriate level;
 - Is practical to apply to existing situations;
 - Contains processes that are flexible enough to respond to industry developments;
 - Identifies all required inputs, including the source of inputs;
 - Will be enduring; and
 - Allows the Crown to comply with its obligations under the Act to provide Maori with the equivalent of 20% of the Pre-commencement aquaculture space created from 21 September 1992 to 1 January 2005.
- The Ministry has also requested that we comment on any alternatives or refinements to the Methodology.

Limitation on the scope of the peer review

- The scope of our review is limited to commentary on the Methodology. We make no comment on the settlement process proscribed by the Act.
- Unless specifically stated otherwise, we make no comment on the accuracy of individual inputs used within the valuations.

General

- This report should be read in conjunction with the Important Notice included in Appendix A.

Introduction (cont'd)

Our approach

- We have performed the following steps in undertaking the peer review:
 - Held meetings with LECG and Ministry officials;
 - Reviewed documentation provided by LECG; and
 - Attended a pilot study for application of the Delphi Method.
- The information we have relied upon is presented in Appendix 3.

Content of our report

- The report is laid out in the following manner:
 - Explanation of the requirements of the Act and implications for the Methodology;
 - Discussion on the approach to value a Coastal Permit;
 - Discussion on the approach to carry out the valuation of all the Coastal Permits in a CMA, Region or Harbour;
 - Comment on the pilot valuations.

Section 3

Overview of the Act and the requirement for valuations

Overview of the Act

Overview of the Act

- The Crown must ensure that 20% of the space used for aquaculture (as defined in the Act) in the Coastal Marine Area (“CMA”) is transferred to Maori by 31 December 2014.
- The Crown’s obligation applies to each region and each harbour as set out in the Act.
- The Act allows the Crown to satisfy its obligations by:
 - Authorising new space;
 - Purchasing established marine farms and transferring the Coastal Permit to Maori (“the Coastal Permit Option”); or
 - Paying a financial equivalent to the value of the aquaculture space (as defined in the Act) on or after 1 January 2013 (“the Financial Equivalent Option”).
- The Coastal Permit and Financial Equivalent options will require valuations to be undertaken.
- The Act requires the Ministry to establish “processes and methods” (i.e. the Methodology) for determining the appropriate value of a Coastal Permit. It also requires the Methodology to:
 - Avoid increasing demand for Coastal Permits which would increase the value of the space;
 - Reduce the risk of collusion among sellers of the Coastal Permits;

- Be cost effective for the Crown ; and
- Assess the average current value of space in the part of the CMA concerned.

Valuations required by the Act

- The following valuations are required for the Coastal Permit Option (detailed requirements are summarised on the next page):
 - Valuation of Coastal Permits to be purchased and transferred to Maori per the Coastal Permit option;
 - Estimation of the average value of all Coastal Permits in the part of the CMA concerned; and
 - A valuation to ensure the average value of all Coastal Permits that have been transferred to Maori in each region or harbour under the Coastal Permit Option is not less than the average value of all Coastal Permits in the region or harbour as at 31 December 2014.
- A valuation is required for the Financial Equivalent Option to determine the value of the financial equivalent of aquaculture space not already settled by the Coastal Permit Option.

Implications for the Methodology

- The requirements of the Act are complex. The complexity arises from the need for valuation of all Coastal Permits (“Mass Valuations”) in a region, harbour or part of a CMA and the timing of the valuations.

Summary of the valuations required given the approaches to settlement available to the Crown under the Act

Settlement Approach	Valuation	Purpose	Valuation Date
<i>Authorisation</i>	Not required	n/a	n/a
<i>Coastal Permit</i>	Acquisition value of a Coastal Permit for transfer to Maori	Valuation of Coastal Permits for specific sites to be acquired by the Crown and transferred to Maori	Any time prior to acquisition between 1 January 2008 and 31 December 2014
<i>Coastal Permit</i>	Average value of the Coastal Permits in the part of the CMA	Valuation of the Coastal Permits for aquaculture space in the part of the CMA. This is required by the Act. LECG assume this is as a cross-check for the process.	When the acquisition value of the Coastal Permit is performed as noted above.
<i>Coastal Permit</i>	Average value of <u>all</u> Coastal Permits in the Region or Harbour	Valuation of all Coastal Permits for each Region or Harbour. This valuation is to ensure that the average value of all Coastal Permits that have been transferred to Maori in each region or harbour under the Coastal Permit Option is not less than the average value of all Coastal Permits in the region or Harbour	31 December 2014
<i>Financial Equivalent</i>	Valuation of all Coastal Permits for aquaculture space (as defined in the Act)	To determine the financial equivalent for settlement of aquaculture space not already settled under the Coastal Permit Option.	At some point between 1 January 2013 and 31 December 2014

Section 4

Valuation Approach

Valuation approach

Valuation approach

- The key valuation approaches considered by LECG are discussed briefly below.

Comparable transactions of Coastal Permits

- Under this approach the value of Coastal Permits is benchmarked to market transaction data. This approach was rejected by LECG due to insufficient available data on transactions involving Coastal Permits. We note that this approach was preferred by interviewees in LECG's consultation within the sector.
- We understand that a number of transactions of marine farms that have occurred in the market. However, information regarding these transactions and the value attributed to relevant Coastal Permits is not currently in the public domain.

Capitalisation of lease payments

- The annual lease price for water space is capitalised using a Weighted Average Cost of Capital ("WACC") to estimate a value for the Coastal Permit. This approach was rejected by LECG due to insufficient available information on lease terms.
- We understand that it is not uncommon for Coastal Permits to be leased to vertically integrated operators who farm the site. There is limited information on lease terms in the public domain.

Cost

- The value of a Coastal Permit could be referenced to the legal and administrative costs incurred by a marine farmer to obtain the necessary rights to operate a marine farm.
- However, the cost of obtaining a Coastal Permit may not include the expected future value that may arise from use of the Coastal Permit.

Residual value approach

- The value of a Coastal Permit is calculated as the value of the marine farm, plus the value of real options less the value of tangible and identifiable intangible assets i.e. it is the residual value of the marine farm after deducting the value of all tangible and other intangible assets.
- The residual value approach makes use of the following valuation approaches:
 - The DCF methodology to value the operations of a marine farm;
 - The binomial model for the valuation of real options related to the marine farm; and
 - DRC for the tangibles assets.
- The residual value approach is the Methodology recommended by LECG for valuation of the Coastal Permits.

Valuation approach (cont'd)

DCF methodology to value the marine farm

- The DCF methodology is a generally accepted valuation approach. It is widely used in a number of industries and applications.
- A number of inputs and assumptions are required for the DCF methodology. The accuracy and integrity of the input data has a significant bearing on the accuracy and integrity of the valuation output.
- We understand that there is limited publicly available operational and financial information for the aquaculture industry in New Zealand. The information that is available may not be sufficiently robust for valuation purposes. The inputs and assumptions used in the preparation of the DCF approach could be subject to a significant amount of scrutiny by the Trustee.
- The Methodology is limited to a single valuation approach with no cross-check of the output. This is a weakness of the approach. We recommend further analysis to establish a set of benchmark data (e.g. implied EBIT multiples, value per tonne of annual production, value per hectare) to be used as a cross-check to the DCF approach.
- It may be difficult to reconcile the DCF valuation of the marine farm to any available transaction data for the following reasons:
 - The cash flow based approach will not capture the scarcity value of a Coastal Permit. No new Authorised Marine Areas (“AMA”) have been created for some time. We understand that no further AMA are expected to be created in the foreseeable future. Transaction data may include additional value due to the perceived scarcity of Coastal Permits that is not recognised in the DCF approach.
 - Returns observed in the agriculture and horticulture industries are often low relative to the opportunity cost of investment, suggesting that there are benefits to the investor (e.g. lifestyle choices) in addition to the intrinsic value of the asset. If this principle applies to the aquaculture industry, then the value of a marine farm using the DCF approach (which does not capture these additional benefits) will differ to the value derived from transaction data in some instances (which may include additional benefits in transaction prices).
 - Prices paid for marine farms by vertically integrated processors or geographically diversified farmers could include an element of strategic value because of the benefits a new farm brings to the purchasers portfolio of assets. This additional value, due to the Special Interest Purchaser, could distort value comparisons.

Valuation approach (cont'd)

- The value of a marine farm is assumed to be separable from other activities in the value chain. In practice, allocating revenues and costs across the value chain for a vertically integrated operator could be difficult. We discuss this further in the next section.
- A WACC is used to discount the projected cash flows for the marine farm valuation using the DCF approach. Differentiation in the WACC between the type of species (i.e. shellfish, fin fish) was contemplated by LECG in the “Statement of Issues”[44-5.8]. However, due to the practical difficulties a common WACC was used in the Methodology. We agree with LECG that it is not sensible to differentiate the WACC between the species.
- In relation to the valuation of the crop the Methodology makes reference to reference to NZ IAS41: Agriculture (“NZ IAS 41”). NZ IAS 41 requires “biological assets” (i.e. a living animal) to be recognised at fair (market) value less estimated point-of-sale costs for financial reporting purposes. Point-of-sale costs include commissions, levies and duties. The Methodology does not make allowance for point-of-sale costs in the valuation of the crop.
- NZ IAS 41 allows cost to be used as an approximation for fair (market) value where little biological transformation has taken place. The Methodology applies a threshold of 12 months as the point in time after which the crop is valued using fair (market) value (crop less than 12 months old is valued at cost). We recommend that further specific guidance be given in the Methodology on the period of biological transformation for each species allowing for regional differences.

Approach to value the Infrastructure and Intangibles

- The value of the tangible and identifiable intangible assets is to be separated from the value of a marine farm to establish a value for a Coastal Permit.
- Intangible assets include goodwill and other assets such as patents, brand and customer relationships. In practice intangible assets may be limited to goodwill. The Methodology makes use of a farm gate price. This will remove the value of existing customer contracts and relationships from the cash flows. However, the value of intangible assets such as the work-force-in-place and the skills of the farmer are assumed to be included in the value of the Coastal Permit. This may misstate the value of the Coastal Permit.
- Other physical assets (i.e. machinery, boats, lines and structures) are to be valued at DRC. We note that DRC may be difficult to estimate for structures and developed assets. In these cases it may be easier to use the Net Book Value as an approximation of market value.

Valuation approach (cont'd)

Valuation of options

- The Methodology includes the value of real options. These may include options to abandon the site, make further investment or change species.
- The options available for the site are to be valued using the binomial method. The binomial method is a recognised approach to value real options.
- The key inputs to the binomial model are:
 - Forecast of the cash flows for the marine farm (as per the DCF)
 - A measure of the volatility of the cash flows
 - The cash flows arising from the real option
- The added complexity of valuing options related to the site is discussed further in Section 5.

Transaction Price and Value for the Coastal Permit Option

- The Coastal Permit option allows the Crown to acquire existing marine farms and transfer the Coastal Permit to Maori as part of the settlement process. Under this option a valuation is required to determine the price to be paid to the vendor of the marine farm. A separate valuation is required to determine the value of the Coastal Permit to be transferred to Maori.
- The Methodology makes an assumption of “optimal site management” for the valuation of a marine farm (i.e. the marine farm is operated in the most efficient manner). However, a valuation prepared using this assumption would result in an unreasonably high price for a marine farm that is operated in a sub-optimal manner.
- We recommend the price at which the marine farm is transacted be determined with reference to the operations of the site under current management. The assumption of “optimal site management” should only be used for assessing the value of an acquired Coastal Permit to be transferred to Maori. We recommend the Methodology be adjusted to distinguish between the transaction price and the value of a marine farm for the Coastal Permit Option.

Valuation approach (cont'd)

Conclusion

- The Methodology uses the residual value approach for the valuation of Coastal Permits. Under the residual value approach the value of a Coastal Permit is calculated as the value of the marine farm, plus the value of real options less the value of tangible and identifiable intangible assets.
- Our conclusions on the Methodology and valuation approaches are:
 - The Methodology is a theoretically valid approach to value a Coastal Permit;
 - Alternative approaches to value Coastal Permits are constrained by availability of industry information. Therefore, the Methodology is limited to a single valuation approach with no cross-check of the output. We recommend further industry analysis be performed to establish benchmark data to cross check the values produced by the Methodology.
 - The DCF methodology is to be used to derive the value of a marine farm business. A number of inputs and assumptions are required using the DCF methodology. Limitations on available financial data could make the application of the DCF approach difficult.
 - The inclusion of the value of real options in the Methodology increases the level of complexity.

Section 5

Mass valuations

Mass valuations

- In this section we consider the approach set out in the Methodology for the mass valuations (i.e. all Coastal Permits in a CMA or Region) required for the Coastal Permit or Financial Equivalent options.

Financial equivalent

- The value of the financial equivalent is to be determined by extrapolation of valuations of reference sites located in each region or harbour. Sites are to be benchmarked against the value of reference sites in terms of annual productivity.
- This approach to value the financial equivalent has merit in that it would be simple to apply. However, we consider the following issues may impact the valuation using this approach:
 - It is assumed that the conditions attached to Coastal Permits are homogenous. A Coastal Permit contains obligations specific to the site for which it is issued. It may be challenging to identify a suitable reference site that is representative of a region or harbour.
 - In the absence of productivity information by region, LECG propose to make use of the collective knowledge of an expert panel (the Delphi Method) to determine suitable reference sites and assess the relative productivity of sites within a Region or a Harbour. There are advantages and disadvantages of this approach:
 - > Use of the Delphi Method avoids the need to carry out a valuation of each individual site within a Harbour or Region

- > The findings of the Delphi Method could be open to challenge due the composition of the expert panel (different groups may arrive at differing conclusions). However, any approach to determining assumptions where they are not readily observable will be open to challenge. The advantage of the Delphi method is that it will provide a range of views.
- > If actual productivity data of a site were subsequently to become available which was materially different that estimated by the Delphi Method, it may invalidate the process.

Average Value Checks

- Valuations are required to determine the average value of Coastal Permits in a CMA (per S 24(7) of the Act) and to carry out the final check of the average value of Coastal Permits transferred to Maori.
- The Methodology sets out the same approach to perform average value checks as for calculation of the financial equivalent. Our comments noted for the calculation of the financial equivalent apply the average value checks.

Section 6

Evaluation

Evaluation

- We have been requested by the Ministry to assess the Methodology against certain criteria (as set out in Section 1). We set out our comments below on the our assessment of each of the criteria.

1. Meets minimum professional valuation standards

- There are no generally accepted valuation standards that provide specific guidance for the valuation of aquaculture space. However, we consider the Methodology is consistent with generally accepted valuation practices.
- The Methodology is silent on the content of reports to be prepared for valuations that are performed for settlement purposes. We note that the New Zealand Institute of Chartered Accountants Advisory Engagement Standard 2 (“AES 2”) provides guidance on the content of valuation reports and the conduct of valuation assignments for an independent business valuations. We recommend that AES 2 is used to provide guidance to valuers to ensure consistency of application and reporting.

2. Is documented to an appropriate level

- The Methodology is set out in a draft document titled “Methodology: For use in Aquaculture Settlement Valuation”. The theoretical requirements of the Methodology are presented from the perspective of an experienced valuation professional.
- A layperson may have difficulty interpreting the Methodology. A summary of the Methodology in simple language would be helpful.
- We consider that practical application of the Methodology would be assisted by a step-by-step guide setting out inputs to be used in the valuation process. This might include guidance on the range of farm gate prices by region, typical productivity rates by species (allowing for regional differences) and a typical margin for each species. We recommend that a handbook be prepared to assist valuers with practical application of the Methodology.

Analysis of criteria (cont'd)

3. Is practical to apply to existing situations

- In the document “Statement of Issues” (13 July 2007) LECG raise concern about “the complexity of the settlement and the complexity of the valuation.” The scope of our review is limited to the Methodology.
- We agree with LECG that there will be a number of practical issues in applying the Methodology to existing situations. We discuss the key issues below.

Availability and quality of information

- The availability and robustness of information within the aquaculture industry has the following implications for the application of the Methodology:
 - A large number of inputs and assumptions are required for the DCF methodology. Productivity and farm gate prices will have a material bearing on the valuation but data for these inputs may not be readily available. The Ministry needs to be satisfied that input data is accurate and is free from bias or influence. It may be difficult to validate the assumptions for site productivity and the farm gate price given the lack of available information.
 - It is not certain what market data will be available to enable values to be cross checked. We note that the “Statement of Issues” LECG strongly recommend that there is some form of “triangulation” between valuation approaches.

- The valuer will place reliance on productivity and financial information made available for the marine farm being valued. The amount and robustness of information may not be consistent for each marine farm. The lack of consistent information may contribute to inconsistencies between valuations.

Not consistent with the industry approach

- We understand that marine farms are typically valued within the industry using a comparative sales approach or rules of thumb. Valuations using these approaches may include value attributable to Special Interest Purchasers, lifestyle value and scarcity of Coastal Permits. It may be difficult to reconcile the DCF valuation of a marine farm to valuations using typical industry approaches, if the information is available.

Option valuations

- The valuation of the real options related to a site adds additional complexity to the Methodology. The complexity arises from the need for a skilled practitioner to carry out the valuation of options and the need for additional information.
- We note that the options will be site specific and constrained by the terms of the Coastal Permit. We consider it will not be appropriate to include the value of options when extrapolating the valuation for the mass valuations.
- We consider that including the valuation of the options will involve additional cost for little additional benefit (this point is discussed further in Section 6).

Analysis of criteria (cont'd)

Mass valuations

- The rights and conditions of a Coastal Permit vary by site. This will have an impact on the proposal to identify reference sites for the average value check and the final equivalent option.
- LECG make a simplifying assumption that the rights and conditions attached to Coastal Permits are homogenous. In practice there may be differences in the obligations attached to individual Coastal Permits. The mass valuations are an approximation of the underlying value of the Coastal Permits.
- LECG propose to use the Delphi Method to determine suitable reference sites and assess the relative productivity of sites for the mass valuations. As noted earlier there are advantages and disadvantages of the Delphi Method.

The Valuation Date

- A valuation involves an opinion of value at a specific point in time. The value of an asset may vary at different points in time due to changes in prevailing economic conditions and market factors. The dates at which valuations are required are set out in the Act (refer to Section 1). The timing of the valuation dates may give rise to added complexity in the process.
- The Coastal Permit option requires a valuation be performed immediately prior to acquisition of a marine farm to be transferred to Maori. Coastal Permit may be acquired at any time in the period between 1 January 2008 and 31 December 2014. However, the final average value check is not performed until 31 December 2014. It is possible that the valuation of a Coastal Permit acquired and transferred to Maori could be materially different from the valuation performed for the average value check. This may result in a subsequent claim by the Trustee.
- The financial equivalent option requires a valuation of aquaculture space be performed during the two year period 1 January 2013 and 31 December 2014. The market conditions prevailing at the date at which the valuation is performed will impact the estimate of the financial equivalent. The market conditions could change over the course of the two year period. Again, this might result in a subsequent claim by the Trustee.
- We acknowledge that these issues do not arise from a weakness in the Methodology, but rather requirements of the Act.

Analysis of criteria (cont'd)

4. Contains processes that are flexible enough to respond to industry developments

- The Methodology will be flexible enough to respond to industry developments if it is able to take account of changes such as:
 - Changes in operating conditions in the industry (i.e. significant changes in demand or supply);
 - Intervention in the market by the Crown; and
 - Changes to regulation of the industry.
- The Methodology derives a value for a Coastal Permit using the DCF approach for the valuation of a marine farm. Under the DCF approach the impact of industry changes should be included in the cash flow forecast prepared to value the marine farm. The effect of changes in the cash flow forecast flow through to the value of the Coastal Permit.

5. Identifies all required inputs, including the source of inputs

- The key inputs required in the Methodology are for the DCF valuation of the marine farm. The inputs for a DCF valuation include a forecast of expected future cash flows, a discount rate and an estimate of the value of cash flows beyond the forecast period.
- We discuss the key inputs to the DCF valuation below.

Productivity

- Revenue from a marine farm business is a function of annual production and the price received for the product. These inputs will have a significant impact on the valuation result.
- The Methodology is not specific on where annual production data is to be sourced from. We consider that historical annual production records will be the best source of inputs for the productivity of a marine farm. This will require analysis of several years of data to allow for seasonal variations. However, we note the following limitations of this approach:
 - Productivity information may not be available or the information that is available may not be robust;
 - Historical information will not include the effect of expected changes in production as a result of future changes to the industry or the marine farm being valued which are known at the valuation date. The valuer will need to consider all the factors that might give rise to changes in future annual production records; and

Analysis of criteria (cont'd)

- An assumption of ‘optimal site management’ is used in the DCF approach. However, productivity information will reflect current management of the site. Management of a site not only includes farming mussels, but also spat catching and providing water space for movement of crop. Judgement will be required on the level of adjustment (if any) to productivity data to determine ‘optimal site management’.
 - Productivity of a bare site is to be determined on the assumption of Optimal Aquaculture. Optimal Aquaculture is the best currently attainable practice to indicate the highest financial return for the site. In practice, it will be difficult to estimate the productivity of a bare site given the absence of production records. However, we note that given the lack of new AMA, there is unlikely to be a large number of bare sites.
 - We consider the Methodology would benefit from additional guidance on the levels of productivity for different types of farm for each species. This guidance would serve as a benchmark to the valuer on productivity rates.
- Farm Gate Price*
- The Methodology requires that the price received at the “farm gate” should be used in the cash flow projection. The price should exclude the effect of valued added processing. However, LECG do not specify a source for the price.
- We understand pricing information is informally understood within the market. However, there is no published pricing information for aquaculture product in the market. We note that NZ Agri-fax publish a weekly CIF price for frozen half shell mussels.
 - There are a number of practical difficulties in determining a market price, including the following:
 - LECG propose to make adjustments to the wholesale price to derive a farm gate price. This will require additional assumptions which may be difficult to validate from the limited available industry information;
 - Sites operated by integrated processors will have a transfer price. A transfer price may not reflect the price that might be achieved from an arm’s length transaction. This may result in inconsistencies between valuations; and
 - The Methodology requires removal of transport costs from the price used in the projections. However, a factor influencing the value of a site is proximity to processing plant. The Methodology will not attribute value to the Coastal Permit for location to processors.
 - The Methodology would benefit from additional guidance on benchmark prices in the market for each species. Ideally this would be in the form of a historical time series for each region.

Analysis of criteria (cont'd)

Expenses

- The Methodology provides limited guidance on the source of inputs for operating and capital expenditure. The following additional guidance may be beneficial:
 - Guidance on the relative operating costs of an efficient operator for each species. This could be in the form of major expense categories expressed in terms of percentage of revenue. The valuer should be given discretion to vary from the guidance provided where a reasonable case can be made.
 - It may be difficult for the valuer to allocated overhead costs to the marine farm for the vertically integrated suppliers. We recommend that the Methodology provide benchmarks for typical cost drivers relating to the allocation of overhead costs.
- It is assumed in the Methodology that the renewal cost of the Coastal Permits required to operate a marine farm are between \$400 to \$2,000. However, we understand that the cost of renewing consents can be as high as \$50,000. The guidance provided by LECG should be reconsidered.

Inputs to the WACC calculation

- A Weighted Average Cost of Capital ("WACC") is used as the discount rate to calculate the present value of the cash flows of the marine farm. A WACC is calculated using estimates for the cost of debt (which may be observed from assets with a similar credit profile) and the cost of equity for the asset being valued.
- The cost of equity is usually estimated using the Capital Asset Pricing Model ("CAPM"). The Methodology makes use of the Brennan-Lally approach to the CAPM to calculate a cost of equity. We note the following points with regard to certain inputs used in the calculation of the cost of equity:
 - An estimate of the return on the riskless asset ("the risk free rate") is an input to the cost of equity. LECG use the observed yield for 10 year Government bonds as an estimate of the risk free rate. We recommend using a risk free rate observed from forward one year government bond yields.
 - The Tax Adjusted Market Risk Premium ("TAMRP") is the excess return of an equity investment over the risk free rate and is used as an input to the cost of equity. LECG has applied a TAMRP of 8.0% in the calculation of the cost of equity. The source of the TAMRP is taken from Dimeson, who use equity returns observed in sixteen countries since 1900 to estimate the excess equity return of an equity investment. Our research into the TAMRP for New Zealand indicates a TAMRP of 7.5%. Our research is based on equity returns observed in New Zealand since 1925. We consider a TAMRP based on returns observed in the New Zealand market to be more appropriate for valuation of marine space.

Analysis of criteria (cont'd)

- LECG include an adjustment to the WACC of 2% for model error. It is widely argued that assumptions underlying the CAPM understate cost of equity for smaller companies. This is attributed to market frictions and resource constraints within the firm which are assumed away in the CAPM. While we acknowledge that these are valid issues, no evidence is presented to support the quantum of the adjustment made by LECG.
- We consider that it would be more appropriate to adjust the Cost of Equity for a Small Company Risk Premium ("SCRPM"). Several studies have demonstrated that investors in small companies require higher returns than larger firms of equivalent risk (as measured in terms of beta). The SCRPM adjusts the cost of equity for the additional return required by equity investors in a small company. Our interpretation of research performed in the US suggests that an adjustment to the cost of equity in the range of 2% to 5% is appropriate for relatively smaller companies in the New Zealand market.

6. Will be enduring

- As noted above, the DCF methodology is the primary valuation approach set out in the Methodology. The DCF methodology has long been widely accepted as valuation approach. We are not aware of any approach that is likely to supersede the DCF approach or render it obsolete. We consider that the Methodology is likely to be enduring for the term of the settlement process.

7. Allows the Crown to comply with its obligations under the Act

- The Crown's settlement obligation under the Act is to provide Maori with the equivalent of 20% of all space (as defined in the Act) for the purposes of aquaculture activities by 31 December 2014.
- In respect to the Coastal Permit and Financial Equivalent options the Act sets out an obligation for the Ministry to develop a Methodology that meets certain criteria.

The Ministry's obligations

- Certain criteria are set at Section 27(4) of the Act with regard to the Methodology. We discuss each of these in turn.
 - *Avoid increasing demand for Coastal Permits which would increase the value of the space.* The demand for Coastal Permits is governed by market forces. We consider that demand is not likely to be impacted by the Methodology. However, the settlement process and the actions of the Crown in meeting its settlement obligation may influence the demand for Coastal Permits.
 - *Reduce the risk of collusion among sellers of the Coastal Permits.* The aquaculture industry in New Zealand is close-knit. It is conceivable that sellers of Coastal Permit could collude to increase the price at which Coastal Permits are acquired. However, as the inputs to the Methodology should be capable of being validated the risk of collusion among sellers of Coastal Permits is less likely be related to the Methodology.

Analysis of criteria (cont'd)

- *Be cost effective for the Crown.* There will be a cost to undertake valuations using the Methodology. The extent of the cost to the Crown will be influenced by the following factors:
 - > The number of reference sites established by the Ministry. A valuation is required for each reference site. LECG report that there are 614 sites within the parameters of the Crown's obligations. The majority of these sites are located within four regions. However, the number of reference sites within each region (or cluster within a region) has yet to be determined.
 - > We understand that valuations of marine farms are typically performed using the comparable sales approach. The Methodology has the added complexity of a DCF approach. Specialist valuers will be required to carry out each valuation. The use of specialist valuers will carry additional cost.
 - > We anticipate that in the absence of detailed industry data additional analysis will be required to derive inputs for the valuation (i.e. the Delphi Method). The additional analysis will result in additional cost to the Crown.

It is not possible to estimate the likely cost of undertaking a valuation using the Methodology. However, we note that LECG required 7.5 days to perform the pilot valuation for the Salmon farm. In the pilot valuation LECG concluded that "this type of valuation exercise is likely to be relatively time consuming and expensive". We recommend that the Ministry review the cost of carrying out the valuations required by the Act with other possible alternatives for the settlement.

- *Assess the average current value of space in the part of the CMA concerned.* The Methodology includes a process to assess the average current value of space in the CMA concerned. This is discussed in Section 4.

Section 7

Pilot studies

Pilot studies

Introduction

- We reviewed the four pilot studies performed by LECG. Our observations on the pilot studies are noted under the headings below.

Cross check of value

- The table opposite presents a summary of the pilot valuations for each of the species. LECG has cross checked the implied value per hectare (“the Multiple”) from the DCF valuation to transaction multiples where possible. We note the following observations:
 - The multiple for the DCF valuation of the mussel farm is materially below the multiple observed for recent transactions (including the actual transaction multiple for the farm \$114.0 /ha). The DCF multiple is also below the multiples prepared for rating purposes (although not subsequently used) by QV.
 - The multiple implied from the DCF valuation for the oyster farm is consistent with the actual transaction multiple for the sites (\$91.4 per ha). However, the DCF multiple is significantly higher than the multiples observed by LECG for other transactions of oyster farms.
 - There is no transaction information to cross check the valuation of the salmon farm.
 - We have implied an EBIT multiple from the DCF valuation for the marine farms. The EBIT multiple for the oyster farm appears very high.

		Mussel		Oyster		Salmon	
	Units	Low	High	Low	High	Low	High
Value of the marine farm							
Enterprise Value	\$000	380.3	425.6	694.0	834.0	83,598.5	93,598.1
Implied multiples							
EV / EBIT	x EBIT	6.3x	7.0x	19.1x	22.9x	6.5x	7.3x
EV per ha	\$000 / ha	66.7	74.7	87.5	105.2	1,874.8	2,099.1
Transactions multiples	\$000 / ha	118.0	200.0	31.6	40.0	n/a	n/a
Trans. (incl this farm)	\$000 / ha	114.0	200.0	31.6	91.4	n/a	n/a
QV ratings	\$000 / ha	88.8	160.0	n/a	n/a	n/a	n/a
Implied value of the Coastal Permit							
Coastal Permit	\$000 / ha	41.1	49.1	59.4	77.0	417.8	642.0
Source: LECG pilot studies							

Source: LECG pilot studies

- The implied multiples for the DCF valuation of the mussel and oyster farms are materially different from the multiples observed for recent transactions of marine farms for these species. LECG do not offer a reason for the difference in the multiples between the methodologies.
- The analysis suggests that the assumptions used in the respective DCF valuations may not be consistent with the assumptions underlying prices paid in the market for mussel farms.
- This finding highlights the difficulty of applying the Methodology in the absence of robust information. The unexplained differences reduces the level of confidence in the output of the DCF methodology.

Pilot studies (cont'd)

Valuation of a single site (not a business)

- The pilot valuation for the salmon farm incorporated six sites which occupy 44.59ha of space. LECG acknowledge the potential for a higher valuation due to economies of scale for a salmon farm of this size. To value each site individually would require an allocation of costs and data for each site. This issue demonstrates the complexity of valuing sites farmed by a vertically integrated operator.

Analysis of historical financial information

- The pilot valuations do not present an analysis of historical financial information for the marine farm. Presentation of historical financial information allows the reader to assess the reasonableness of assumptions and the output. We recommend that additional financial analysis be included in the Methodology.

Options

- LECG estimates the value of real options to be negligible for the marine farms valued for the pilot studies. However, LECG propose to include the value of real options where there may be value for a specific site. We consider that including the valuation of the real options will involve additional cost for little additional benefit.

Information

- LECG note that production volume and the farm gate price are key sensitivities for each valuation. However, limited disclosure of productivity information is presented in each of the pilots valuations (it is not clear whether this information was not provided or has not been disclosed). It is not possible for the reader to form an opinion on the reasonableness of the productivity information.
- We note that information regarding price was supplied by processors for the mussel and oyster valuations. More limited information was provided for the salmon valuation.
- A number of other assumptions were required in the valuation that could not be validated. These include overhead allocation (salmon), production mix (mussels) and adjustments to the price (salmon). LECG note that certain information is “accepted at face value”.
- Given the difficulty in obtaining necessary information LECG comment that “assumptions to value farms at the individual level are highly unlikely to be disclosed”. LECG propose that the valuation for the financial equivalent be considered at a regional level rather than on a farm-by-farm basis.

Section 8

Alternative approaches

Alternative approaches

Alternative approaches

- We were asked by the Ministry to consider potential alternative options to the Methodology prepared by LECG. In this section we consider alternative approaches for:
 - the valuation of Coastal Permits as standalone assets; and
 - The valuation of marine farms within the Methodology.

Valuation of Coastal Permits as a standalone assets

- Under this alternative the value of a Coastal Permit is determined as a standalone asset. There are three possible approaches:

Value in use

- The future cash flows attributable to the Coastal Permit are unbundled from the marine farm operations. The cash flows from the Coastal Permit are valued separately. This approach is similar to the Methodology and should yield the same result. However, it will require allocation of cash flows to individual assets. This will be inherently difficult.
- Another approach to determine the value in use is to capitalise the annual market lease for rental of a Coastal Permit.

Value in exchange

- The value of a Coastal Permit is benchmarked to prices paid in the market for similar assets (i.e. the comparable sales approach).

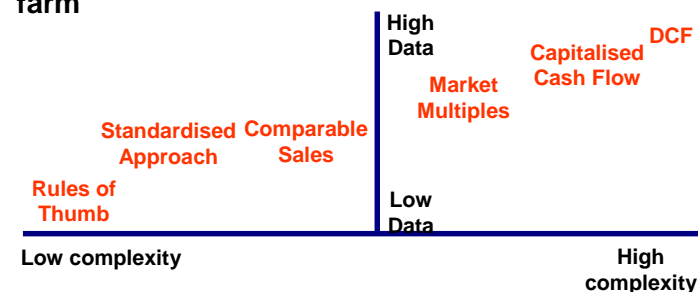
Cost

- Value is based on the costs to the marine farmer that would need to be incurred to secure a Coastal Permit (i.e. legal and administrative costs).
- These alternative approaches are all constrained by a lack of information for Coastal Permits. In the absence of further detailed information on the transaction value of Coastal Permits there are no alternatives to the Methodology.

Valuation of marine farms within the Methodology

- There are a number of alternative approaches to value the marine farm (using the Methodology to determine the value of the Coastal Permit). The chart below presents a summary of the alternative approaches by complexity and data required.

Chart 1: Alternative approaches to value a marine farm



Alternative approaches (cont'd)

- We consider the merits of using market multiples, comparable sales and a standardised approach to value a marine farm on the following page. These approaches are less complex and do not require the same level of data as the DCF.

Market multiples

- The market multiples approach involves capitalising the normalised EBIT of a marine farm using a multiple observed from comparable companies traded on public stock exchanges. This approach has the merit of simplicity.
- At the very least multiples should be implied from the DCF valuation of the marine farm as a cross check.

Comparable sales approach

- We understand that there have been a number of transactions involving aquaculture space in the market. However, detail of these transactions is difficult to obtain. Nevertheless, LECG has been able to establish some transaction data in the course of performing the pilot valuations.
- Under this approach further investigation could be performed to establish detail from transactions that have occurred for aquaculture space. Benchmark data from this exercise would be used to value individual marine farms. Mass valuations would be performed using the same approach presented by LECG.
- The advantage of this approach is that a complete set of information would be established for the industry. Once established it would be relatively simple to apply.

- LECG considered and discounted this approach due to the time and cost to carry out the research required. We agree that this would be a costly exercise and would require time. However, whether the costs would outweigh the benefits is uncertain. It is also possible that the data simply does not exist.

Standardised approach

- Under this approach the marine farm is valued with reference to standardised metrics.
- The advantage of this approach is that a robust set of metrics could be established for each species by region. It would be relatively simple to apply the metrics to available information for each marine farm to be valued.
- The key disadvantage of this approach is the need for consistency of information. If the metrics are not able to standardised for all marine farms it may be difficult to apply this approach.

Conclusion

- There is no reasonable alternative to the Methodology to value Coastal Permits.
- There are alternative approaches to value marine farms within the Methodology. These approaches are less complex and do not require the same level of data as the DCF. We recommend that the availability of data for these approaches be investigated further by the Ministry. If sufficient data can be obtained, we recommend investigating a standardised approach to at least provide a cross check to the DCF valuation of marine farms.

Appendix 1

Key terms of business and restrictions

Restrictions

- This Report has been prepared solely for the purposes stated herein and should not be relied upon for any other purpose.
- This Report is strictly confidential and (save to the extent required by applicable law and/or regulation) must not be released to any third party without our express written consent which is at our sole discretion.
- To the fullest extent permitted by law, PwC accepts no duty of care to any third party in connection with the provision of this Report and/or any related information or explanation (together, the “Information”). Accordingly, regardless of the form of action, whether in contract, tort (including without limitation, negligence) or otherwise, and to the extent permitted by applicable law, PwC accepts no liability of any kind to any third party and disclaims all responsibility for the consequences of any third party acting or refraining to act in reliance on the Information.
- We have not independently verified the accuracy of information provided to us, and have not conducted any form of audit in respect of the Company. Accordingly, we express no opinion on the reliability, accuracy, or completeness of the information provided to us and upon which we have relied.
- The statements and opinions expressed herein have been made in good faith, and on the basis that all information relied upon is true and accurate in all material respects, and not misleading by reason of omission or otherwise.
- The statements and opinions expressed in this report are based on information available as at the date of the report.
- We reserve the right, but will be under no obligation, to review or amend our Report, if any additional information, which was in existence on the date of this report was not brought to our attention, or subsequently comes to light.
- We have relied on forecasts and assumptions prepared by the Company about future events which, by their nature, are not able to be independently verified. Inevitably, some assumptions may not materialise and unanticipated events and circumstances are likely to occur. Therefore, actual results in the future will vary from the forecasts upon which we have relied. These variations may be material.
- This report is issued pursuant to the terms and conditions set out in our engagement letter and the Terms of Business attached thereto.
- In addition the following should be noted:
 - Certain numbers included in tables throughout this report have been rounded and therefore do not add exactly.
 - Unless otherwise stated all amounts are stated in New Zealand dollars.

Appendix 2

Glossary

Glossary of Terms and Abbreviations

Term	Definition
<i>AMA</i>	Aquaculture Management Area
<i>Binomial Model</i>	An approach to the pricing of options
<i>CAPM</i>	Capital Asset Pricing Model. A model used to determine the cost of equity for an asset.
<i>CMA</i>	Coastal Marine Area
<i>Coastal Permit</i>	The resource rights required to occupy and use aquaculture space in New Zealand
<i>DCF</i>	Discounted Cash Flow. A valuation methodology which calculates the value of an asset using the present value of forecast cash flows.
<i>DRC</i>	Depreciated Replacement Cost
<i>EBIT</i>	Earnings Before Interest and Tax. A measure of operating earnings.
<i>EBITDA</i>	Earnings Before Interest, Tax, Depreciation and Amortisation. A measure of operating earnings.
<i>NZICA</i>	New Zealand Institute of Chartered Accountants
<i>NZ IAS</i>	New Zealand equivalent of International Accounting Standard
<i>TAMRP</i>	Tax Adjusted Market Risk Premium. The excess return over the risk free rate required by an equity investor.
<i>The Act</i>	The Maori Commercial Aquaculture Claims Settlement Act 2004

Glossary of Terms and Abbreviations

Term	Definition
<i>The Ministry</i>	The Ministry of Fisheries.
<i>The Methodology</i>	An approach for the valuation of commercial aquaculture space and associated infrastructure.
<i>SCR_P</i>	Small Company Risk Premium.
WACC	Weighted Average Cost of Capital

Appendix 3

Sources of information

Sources of information

- Settlement of Issues, Maori Aquaculture Settlement Valuation, LECG, 13 July 2007
- Statement of Valuation Objectives, Maori Aquaculture Settlement Valuation, LECG, August 2007
- Methodology, For use in Maori Aquaculture Settlement Valuation, LECG, 2 October 2007
- Draft valuation methodology pilot studies, LECG, January 2008
- New Zealand Equity Market Risk Premium, PricewaterhouseCoopers, September 2002
- Triumph of the Optimists, Elroy Dimson, October 2003
- NZ IAS 41: Agriculture
- Maori Commercial Aquaculture Claims Settlement Act 2004