

EVIDENCE IN CHIEF OF TIMOTHY ALLAN CRIGHTON - INDEX

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**BOARD OF INQUIRY
HAUAURU MA RAKI WIND FARM PROPOSAL**

In the matter of the Resource Management Act 1991

And

In the matter of resource consent applications by Contact Wind Limited in respect of the Hauāuru mā raki Wind Farm Proposal

And

In the matter of notices of requirement and a resource consent application by Contact Energy Limited for transmission infrastructure related to the Hauāuru mā raki Wind Farm Proposal

**BRIEF OF EVIDENCE IN CHIEF OF TIMOTHY ALLAN
CRIGHTON**

Counsel Instructed:
Trevor Robinson
Wellington

Tel 64-4-472 1755. Fax 64-4-472 1766. PO Box 8018 Wellington
trobinson@xtra.co.nz

Solicitor Acting:
H Rosemary Dixon
Contact Energy Limited

Telephone 64-4-462 1284. PO Box 10742, Wellington
rosemary.dixon@contact-energy.co.nz

Introduction

1. My name is **Timothy Allan Crighton** and I am a Director of Crighton Anderson Property & Infrastructure Limited. I am both a Registered Valuer and Chartered Accountant and specialise in the application of accounting, valuation, and finance skills to the rural sector, compensation assessment, and specialised asset valuation.
2. My academic and professional qualifications comprise:
 - (a) Bachelor of Agricultural Commerce, Valuation and Farm Management, B.Com (Ag) VFM, Lincoln College;
 - (b) Bachelor of Commerce, B.Com, Otago University;
 - (c) Registered Valuer;
 - (d) Fellow of the Property Institute of New Zealand, FPINZ;
 - (e) Fellow of the New Zealand Institute of Valuers, FNZIV;
 - (f) Chartered Accountant, CA; and
 - (g) Member of the New Zealand Institute of Chartered Accountants, NZICA.
3. I am a past member of the Valuers Registration Board.
4. I am a member of the International Right of Way Association ("IRWA"), which is an American based association of individuals in various professions engaged in right of way activities. This organisation has nearly 10,000 members including appraisers, lawyers, engineers and acquisition managers, and specialises in dealing with property rights for telecoms, pipeline, rail, electricity transmission, roads etc.
5. I began my career in Dunedin, following two years' work overseas and travel, as an appraiser with the Rural Banking & Finance Corporation (2 years), then as a Valuer, and later a Registered Valuer with Robertson Young Telfer (3 years) and as a manager for Ernst & Young (3 years). I transferred with Ernst & Young to Christchurch (for 3 years) where I established a valuation team and was appointed Principal. In early 1996 I left Ernst & Young and I established the business in Christchurch that is now Crighton Anderson Property & Infrastructure Limited.

6. In more recent years I have provided valuation opinions and other advice to many corporates and individuals for investment, divestment, development, compensation, rentals, and leasehold interests. My advisory work has extended to Treaty negotiations, valuation handbooks, due diligence, valuation seminars, economic analysis and financial modelling, and considerable compensation work for utility operators. My work has covered New Zealand, along with limited work in Victoria, Tasmania and Queensland in Australia. The majority of this work has been associated with rural land although I also have experience in business and equity valuation in a number of sectors.
7. In addition I have provided expert evidence on a range of valuation issues in the Land Valuation Tribunal, District Court, Family Court, High Court, and private arbitrations.
8. **Exhibit TAC 1** includes a tabulated summary of my experience relevant to my evidence in this hearing.
9. I confirm that I have read the 'Code of Conduct for Expert Witnesses' contained in the Environment Court Consolidated Practice Note 2006. My evidence has been prepared in compliance with that Code in the same way as I would if giving evidence in the Environment Court. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

Scope of Evidence

10. My evidence will cover the following matters:
 - (a) A discussion on the potential for property value loss as a result of the presence of transmission lines on properties the subject of designation, both generally and with respect to the (general) characteristics of the properties affected.
 - (b) A discussion on the extent to which compensation paid under the "easement fee" approach (a particular assessment methodology) addresses any loss in value.
11. I have not directly considered the potential for property value loss resulting from the proposed wind farm but I do suggest that the same general

principles discussed for transmission lines within my evidence, both in terms of effects and evaluation, can be readily applied.

12. My evidence does not extend to any opinion on actual compensation sums for any property.

Summary of Conclusions

13. There is potential for property value loss resulting from the presence of the proposed transmission line. Following my review of the expert evidence relevant to my evidence and information provided by Contact, I suggest that the design and location of the proposed line substantially mitigates much of the potential injurious affection.
14. The “easement fee” methodology (described later in my evidence) for estimating the appropriate “full compensation” sum for each property traversed by the easement and transmission line will fairly consider and reflect, market reality. This assumes the full consideration of Part V of the Public Works Act 1981, and adoption of the relevant principles established in compensation case law.
15. It is important, however, that it is recognised that an estimate is just that. It is an opinion, a probable price, or an approximate judgement of amount. Unfortunately, it is generally not possible to fully “test the market” at the same date as a compensation assessment is required.
16. In my opinion the important points on injurious affection issues, made in the majority of submissions I was referred to, are able to be properly dealt with using this “easement fee” approach. Federated Farmers, however, provided a submission that goes beyond “full compensation”.
17. Federated Farmers suggests a payment that requires landowners receive a “share of returns from the wind farm” in addition to full compensation. The easement fee model which I use in my evidence determines full compensation, nothing more. Any agreement between the parties for payment beyond this is the subject of negotiation. I do note that Contact already propose payment terms that, in my view, go well beyond the requirements of the Public Works Act.

Impact of the Designation

18. As I understand it, a designation under Part 8 of the Resource Management Act 1991 is a provision made in a district plan to give effect to a requirement made by a requiring authority under section 168 or section 168A or clause 4 of Schedule 1. In the present circumstances this is essentially a requiring authority giving a Notice of Requirement to a territorial authority of its requirement for a designation for a project or work.
19. Assuming the designation is successfully obtained, it would be noted in the district plan and no person may, without the prior written consent of that requiring authority, do anything in relation to the land that is subject to the designation that would prevent or hinder a public work or project work to which the designation relates (s.176).
20. The designation is likely to have a negative impact on the value of the land subject to the designation, the extent of which will be governed by factors such as the date of the designation, the expiry date, the impact on the land of the works contemplated, and the prospect of the proposed works actually proceeding.
21. In addition, the buyer pool may reduce in size because of uncertainty surrounding the eventual impact of the proposed works, and the compensation process, which may translate to a small reduction in land value. But if the market for the particular type of property is strong, the buyers may not be deterred and pay close to full value and rely on their right to compensation when the requiring authority seeks to utilise the designation.
22. Overall, it is my view that the market in general may determine an injurious affect recognising the designation as an encumbrance on the land.
23. My evidence assumes the presence of transmission lines on properties already subject to a designation. It therefore does not factor in the potential reduction in value loss associated with the chance the designated works may never proceed and the designation will lapse.

General Impact of Transmission Lines on Property Values

24. Throughout my evidence I refer to a report I was commissioned by Contact Energy Limited ("Contact") to provide, on the "Valuation & Transmission Line Easement Compensation Issues, Waikato Wind Farm Project

Proposed Transmission Line Property Right Requirements, August 2008” (“Report”). The full Report is attached to my evidence as **Exhibit TAC 2**. I understand a copy of my Report was provided to landowners whose properties are the subject of Contact’s Notice of Requirement.

25. Intuitively we all understand that a new transmission line across a property is likely to have a negative impact on the value of the property. If two properties are identical in every respect, with the exception that one has a transmission line located on or across it, and are on offer to a buyer, it is more than likely the buyer will choose the property without the transmission line, or alternatively require a discount on price to purchase the property with the transmission line. The extent of any diminution in value will depend on a variety of factors including, but not limited to, land use, impact on the use of the land, proximity of the transmission line to curtilage areas, the proportion of land occupied by the transmission line within a property, and the configuration of the structures and conductors.
26. For the construction of a new transmission line, the impact on property value, and therefore compensation, can be conveniently considered at the component level as scheduled in the following table:

Table 1. Detailed Components of a Compensation Claim

Components	
	Land Taken
(a)	The easement interest or fee simple interest in land acquired for the works.
	Injurious Affection
(b)	The loss in value of the land adjoining the transmission line i.e. outside the easement or fee simple interest in the land area acquired.
(c)	Any permanent disturbance to the use or management of the property resulting from the presence of the transmission line.
	Other
(d)	Depending on the use of the land acquired, there may be additional compensation for business loss and costs associated with relocation of land owners to other land.

27. The land taken component is either the full unencumbered value of any land acquired for the purposes of constructing a transmission line or, more typically, the value of a proportionate interest in the land acquired through the acquisition of an easement in gross, within which the proposed transmission line is to be located. The proportion of this interest is dependent on land use and the proposed rights and obligations of each party to the easement agreement.

28. This proportionate interest, all other contractual issues being equal, may vary from 30% - 40% for an extensively grazed pastoral property to 100% for a plantation forest block, reflecting the intensity of use of the land within the easement area by the land owner.
29. Injurious affection is the more subjective component of the impact of a transmission line on property value. Firstly, it is expressly required to be injurious affection to the land. It is linked to physical interference with the land, or loss in enjoyment or value of the land. It does not relate to effects on the land owner personally. Injurious affection is not defined in statute but, in general terms, it may be described as arising where there is a permanent adverse effect on the owner's land which is substantial enough to affect the owner's use and enjoyment of the land and, hence, value of the land.
30. Land is "injuriously affected" only when the damage is one which would have given a right of action if it had not been authorised by statute.
31. In *Fernwood Dairies v Transpower New Zealand*¹ ("*Fernwood*"), the Environment Court held "injurious affection" to mean:
- "Adversely affect" or "harm" [paragraph 45].... "any direct, non trivial effects on land or measurable effects on land value" [paragraph 80]
32. My understanding is that the *Fernwood* case was the first (and presently the only) case on the meaning of section 23 (3) Electricity Act 1992 within which "injurious affection" has been tested. Under section 23 (3) (b), an owner of existing works can carry out any replacement or upgrade as maintenance as long as the land will not be injuriously affected as a result of the replacement or upgrade.
33. Injurious affection may, in general, arise from the following factors. This list incorporates a number of issues raised in submissions presented to this Board of Inquiry that I reviewed.
- (a) Aesthetic or visual amenity effects of the transmission line to the dwelling and curtilage areas, as well as to land adjoining the transmission line.
- (b) Interference with farm or property use and management operations.
For example:

¹ C171/2006, Environment Court, Christchurch

- (i) Clearances under the line restricting use of plant and equipment. I anticipate this would be rare in this region.
- (i) Impact on the use of spray irrigators, where both the structures and conductors might interfere with the normal runs for existing 'rotorainer' and centre pivot systems. I am uncertain as to whether this is a possible issue for this proposal, but I consider it to be unlikely.
- (ii) Interference with electronic equipment if being used in close proximity e.g. pasture meters, irrigation control boxes, radio, television and computers. Given the location of the dwellings relative to the proposed line and land use, this is not likely to be an issue.
- (iii) Increased induced voltages in fences and buildings close to the line. I understand from the report² that addresses this issue that such indirect effects apply only to the easement corridor. None of the effects will occur past the lateral boundaries of the easement. Animals coming into contact with an unearthed fence immediately adjacent to, and running parallel to a transmission line can receive an electric shock that may startle them. Dr Black discusses this issue in his evidence and notes that the potential effect can be mitigated by appropriately grounding metallic objects within the easement corridor.
- (iv) Aerial topdressing & loss of airstrips. This "cost" may be incurred through increased spreading costs and/or the loss of an airstrip. This is clearly an issue in this region where aerial top dressing is common place.
- (v) Removal of trees and restrictions on future planting. This is as for clearance issues above.
- (vi) Cultivation and stock movement. This may occur where a pylon structure is located within a cultivable block of land and interferes with cultivation, or where such a structure is within an established stock route.

² (Waikato Wind Farm) "Assessment of Potential Effects of High Voltage Transmission Lines on Domestic and Other Animals", Dr. Moyra Black & Dr. David Black, June 2008- and further discussed in Dr Black's evidence.

- (vii) Any significant increase in noise and 'corona' effects. "Local ionisation of air under weather conditions which cause corona discharge is an inevitable characteristic of high tension electricity conductors in the atmosphere. The noise from this needs to be considered³ Any value impact from this, if at all, would normally relate to a dwelling and curtilage area closely located to a transmission line.
 - (c) "Stigma" effect. As discussed in Dr. Black's evidence, he has concluded that there are no aspects of the construction or presence of the proposed wind turbines or transmission assets (air and water quality, noise, chemical hazards, physical hazards including Electro Magnetic Fields ("EMF"), visual and corona effects) which give rise to cause for concern from a public health point of view. EMF estimates show electric field and magnetic field levels to be well within international guidelines. Stigma is a broad term of course, and I address it along with public perception in more detail shortly.
 - (d) Construction and operational noise is a consideration for the wind farm development in particular. Construction noise is for a limited period of time and is, therefore, in the category of temporary disturbance if this is an issue. Operational noise, if a measurable issue, would be considered under injurious affection as permanent disturbance. This is addressed in a report by Hegley Acoustic Consultants⁴ that addresses predicted noise levels for various construction processes such as internal road formation, blasting, crusher plants, construction traffic and concrete manufacturing. Operational noise from wind turbines and operational traffic is also addressed.
34. Temporary disturbance is generally assessed after completion of the construction, although there are often mitigation measures taken to reduce the effects of temporary disturbance where relevant. Temporary disturbance may arise from crop damage, a temporary increase in management costs, or some construction damage that has not been reinstated. This does not form part of the claim for injurious affection.

³ (Waikato Wind Farm) "Assessment of Potential Health Effects", Dr. David Black, June 2008.

⁴ (Waikato Wind Farm) "Assessment of Noise Effects", Report No. 8132 Hegley Acoustics Consultants.

35. Visual effects i.e. the aesthetic impact on the value of land, must be considered for assessment of injurious affection as effects on the land and its value, not simply adverse effects on the land owner or occupant's views (although I understand the latter may well be relevant to the Board of Inquiry's consideration of the matter from other perspectives). This distinction is important for valuation purposes as, for example, an existing land owner in occupation of the land will be party to the process of property rights negotiation and then witness the changing vista with the construction of the transmission line. The existing owner is therefore more likely to be aware of the visual change and the impact than the potential purchaser who does not go through this process. From a valuation perspective, the property is as presented on the date of valuation with the transmission line in situ. This is supported by my research findings (refer 164 (i) section 10 **Exhibit TAC 2**). Furthermore, in *Minister of Works and Development v Scott*⁵ ("Scott"), The Land Valuation Court stated (at page 669):

"It is true that the reasons which may influence purchasers in relation to what they will pay for land may be personal, but once it is decided that a particular property has been depreciated in value the loss to the owner is a loss in respect of his land, and not just a personal loss."

36. Each case must turn on its particular facts. For example, the visual impact on a small allotment will be greater than the impact of an equivalent line to the rear of a much larger property. It is not enough to assert that there will be a visual effect. The correct question for valuation purposes is whether any visual effect is sufficiently large and unreasonable to cause a change in land value.

37. There is significant variation and a general lack of consistency in the majority of value impact studies I researched for my Report (section 10 **Exhibit TAC 2**). In my opinion, it can be reasonably assumed that a transmission line located close to a dwelling, irrespective of land use, will have a value impact, with the structures i.e. poles or pylons, providing the greatest visual issue. Lifestyle properties are likely to be impacted to a relatively greater visual extent than larger pastoral properties.

38. The property management operations also fall to be considered on a case by case basis. For example, an extensively grazed hill country property will have greater concerns about aerial topdressing than an intensive dairy unit

⁵ [1967] NZLR 668

with spray irrigation concerns. These management aspects are generally regarded as being disturbance of a permanent nature to the property. This should not be confused with disturbance matters of a temporary nature that are resolved in a relatively short period of time either during or post construction e.g. pasture or roading damage during construction.

39. The “stigma” effect is a convenient label, used by valuers in particular, to reflect the public perception of the risks associated with transmission lines, particularly where they are in close proximity to a dwelling. Stigma, perception, public fear or distaste around transmission lines may cause a loss in value of land near the lines. This is an important consideration for all compensation assessments and the *Fernwood* decision references a number of cases that provide assistance with the explanation of this factor in an injurious affection context.

40. Thus, in *Scott*, at page 669, the Land Valuation Court commented:

“If possible purchasers are prejudiced against a property traversed by power lines the price likely to be secured on the sale of the property is likely to be less, and the value of the property is consequently reduced.”

41. In the decision of the New York Court of Appeals in *Criscuola v Power Authority of New York*⁶

“The issue in a just compensation proceeding is whether or not the market value has been adversely affected. This consequence may be present even if the public’s fear is unreasonable. Whether the danger is a scientifically genuine or verifiable fact, that should be irrelevant to the central issue of its market value impact. Genuineness and proportionate dollar effects are relevant factors, to be sure, but in the usual evidentiary framework. Such factors should be left to the contest between the parties’ market value experts, not magnified and escalated by a whole new battery of electromagnetic power engineers, scientists or medical experts.”

42. The above quote was cited with approval by the Environment Court in *Fernwood*. The rationale is that the reasonableness of the public’s fear is irrelevant: if the public’s fear depresses market value, then the loss should be compensated. However, the *Criscuola* decision (again consistent with *Fernwood*) establishes that there must be credible and tangible evidence to establish that there is a loss in value, not just a suggestion that there may be a loss in value.

⁶ 81 N.Y. 2d 649, 621 N.E. 2d 1195, 602 N.Y.S. 2d 588 (1993)

43. EMF is perhaps the best example of public perception and fear, or “cancerphobia”. The *Fernwood* case revealed different opinions from different experts, and this uncertainty was summarised in a fact sheet from the World Health Organisation. International Guidelines (“ICNIRP”)⁷ were accepted by the Environment Court as an appropriate benchmark for acceptable levels. Again this is a perception issue and, along with all other perceptions, from an injurious affection point of view, the reasonableness of the public’s fear is irrelevant, but there must be credible and tangible evidence to establish that there is a loss in value⁸.
44. I expand on this “market perception” concept further, as we are in the midst of an interesting period nationally, but particularly for the Waikato region, where there is negative sentiment toward the impact of transmission lines. The 400kV line proposed by Transpower from Whakamaru to Otahuhu is a project on a scale not seen in the electricity transmission sector within New Zealand for a very long time. The upgrade project in South Canterbury, highlighted by the *Fernwood* case mentioned earlier, is another Transpower project to gain negative publicity.
45. The perception of a negative market impact of a 220kV transmission line on a property, fuelled by the 400kV project in particular, may be greater than the reality, bearing in mind the differences in configuration and capacity. However, in my view, we must be mindful of the impact of perception on the market. The *Criscuola* and *Fernwood* decisions, discussed earlier, rationalise that the reasonableness of the public’s fear is irrelevant: if the public’s fear depresses market value, then the loss should be compensated.

The General Characteristics of the Properties Affected

46. I have not inspected the properties that will be traversed by the proposed transmission line required for the proposed Hauāuru mā raki (“HMR”) wind farm for the purpose of this evidence, but I have considered the Notice of Requirement for a designation for the main transmission line (June 2008), NOR plans 6 & 7, as well as the brief project summary provided to me for the preparation of my Report (**Exhibit TAC 2**).

⁷ International Commission for Non-Ionising Radiation Protection

⁸ I note that I am advised by Contact’s counsel that the assessment of effects under the RMA may be different in this regard to valuation approaches, and that there is Environment Court authority to the effect that in the RMA context the reasonableness of public fear is a relevant issue.

47. My understanding is that the “external” transmission line referenced in the NOR dated June 2008, is approximately 25km in length, and comprises a 220kV duplex double circuit strung on typical steel lattice towers. This line conveys the electricity from Limestone Downs to a new switchyard to be built near Orton⁹.
48. There are approximately 18 to 20 properties directly affected by the transmission route, ranging in size from 34ha to nearly 3,000ha. Land use is mostly mixed dry stock.
49. I understand the transmission route has been selected to:
- (a) be located as far as possible from dwellings (the closest being around 345m from the line);
 - (b) be, as far as possible, below ridgelines to mitigate visual impact; and
 - (c) minimise any impact on the management and operations of the properties.
50. The Landscape and Visual Assessment Report (T04) prepared by Isthmus and discussed in Mr Lister’s evidence (“Landscape Report”) notes that there are 5 houses within 500m and 32 between 500m and 1km from the line. There will be high visual amenity effects from 7 houses and moderate effects from 11 houses.
51. This does not necessarily translate to the value of a house and curtilage being measurably impacted in a negative sense from the proposed 220 kV transmission line but it does establish there are properties that will require careful consideration on this aspect of injurious affection. As I noted earlier, the aesthetic impact on the value of land must be considered for assessment of injurious affection as effects on the land and it’s value, not simply adverse effects on the land owner or occupant’s views.
52. On page 10 of the Landscape Report, footnote 4, ‘Landscape’ is regarded as being something more than just visual. It is a broad subset of the environment that includes factors relating to the physical landscape, people’s perceptions, and the values associated with the landscape.
53. The Landscape Report establishes that the route has a large-scale working landscape character, has relatively low visibility, and crosses only two

⁹ There is a separate 220 kV single circuit line on monopoles connecting the Te Akau, Matira and Limestone substations.

roads. Any adverse visual impact is considered to increase as the route nears the Orton end, where the line will have greater visibility without the benefit of contour. It is apparently possible (with owner's consent) to mitigate adverse visual amenity effects through planting on the affected properties should this be perceived as being necessary and/or beneficial. Again, we are to consider any injurious affect to the land and it's value, not simply adverse effects on the land owner or occupant's views.

54. On my review of the aerial photos and photo-simulation provided in the Landscape Report, the land occupied by the proposed route appears to be mostly rolling hill country with some areas of flat to easy undulating land associated with watercourses. Cover is mostly pasture, along with pockets of bush.
55. I have not reviewed a detailed schedule of owner/occupier and land area, however, it is evident from a coloured plan (scale 1:100,000) provided to me by Contact that the properties beginning at the Limestone Downs end are larger grazing properties, reducing to more intensive smaller blocks leading into the proposed switchyard area near Orton.

The “Easement Fee” Approach to Determining Compensation¹⁰

56. Appendix III in **Exhibit TAC 2** sets out in some detail the basic requirements for compensation methodology, with particular reference to the provisions of Part V of the Public Works Act. In my opinion, if these provisions are fully considered in the application of the easement fee approach, and in accordance with the principles established in relevant case law, all relevant categories of loss will be included and appropriately assessed. I do, however, stress that an estimate is just that, an opinion, a probable price, or an approximate judgement of amount.
57. Appendix III then sets out the compensation considerations, incorporating discussion on the Public Works Act, the Land Information New Zealand Standards, the components of a claim, followed by a review of the general principles that must be observed, and reference to relevant case law.
58. In section 4.0 of **Exhibit TAC 2** I discuss the easement fee methodology, which I have endeavoured to summarise as follows.

¹⁰ Refer Appendix III & section 4.0, **Exhibit TAC 2**.

59. As a starting point, and for easier reference, I repeat the table outlining the components of a claim.

Table 2. Components of a Compensation Claim

Components	
	Land Taken
(a)	The easement interest or fee simple interest in land acquired for the works.
	Injurious Affection
(b)	The loss in value of the land adjoining the transmission line i.e. outside the easement or fee simple interest in the land area acquired.
(c)	Any permanent disturbance to the use or management of the property resulting from the presence of the transmission line.
	Other
(d)	Depending on the use of the land acquired, there may be additional compensation for business loss and costs associated with relocation of land owners to other land.

Acquisition of an Interest (easement) in Land

60. An easement represents a fractional interest in land, being an undivided share in the full bundle of rights to the use and occupation of the land. An easement is a right attached to one particular piece of land that allows the owner of that land to use the land of another in a particular manner or to restrict its use by that other person to a particular extent. The rights, as well as the obligations, of the easement are set out in the agreement relating to the grant of an easement.
61. The acquisition of the required property rights by way of easements will address the vast majority of the acquirer's requirements to enable the proposed works to be undertaken, as opposed to the acquisition of the full fee simple rights to land.
62. The assessment of compensation for the acquisition of an interest in land (in this case an undivided fractional interest) and consequential injurious affection requires an approach that is not reliant on the analysis of comparable market transactions. There is a paucity of relevant market information and it is extremely difficult, if not impossible, to assess a claim for compensation on this basis. It should also be noted that where an easement is compulsorily acquired, the principles to be applied in assessing compensation are no different from those applying when full fee simple is acquired.

63. The “easement fee” methodology has been developed as a robust alternative method to the more traditional comparable sales approach to utilise the “before” and “after” methodology provided for in the PWA and is provided for in section 62 (1) (b) (ii). The more traditional sales comparison approach is extremely difficult to apply for rural land as there is a paucity of relevant sales transactions. I have been closely associated with the development of this approach and have had the opportunity to test and improve the model in many engagements over several years, and in varying circumstances. This approach has gained acceptance by those experienced in determining injurious affection due to the presence of transmission lines in New Zealand and Australia¹¹. The easement fee approach encompasses both the value of the interest in the land acquired and any injurious affection to the land, and is consistent with the components (a) to (d) inclusive set out in Table 2 earlier.
64. The following sections summarise the easement fee approach in accordance with the components of a claim for compensation for the construction of a new transmission line.

Land Taken

65. Compensation for land taken requires the assessment of the value of the land use rights acquired by way of an easement, and the land acquired for the location of pole or tower sites. Both components require the assessment of the market value of the land that is traversed by the transmission line.
66. The value of the land taken, as at the specified date, should be determined on the basis of market value assuming highest and best use¹². The value should be based on the evidence of comparable market transactions and any other supporting methodology (for example a hypothetical subdivision or discounted cash flow methodology to consider the highest and best use of land with subdivision potential) where appropriate.

¹¹ refer Supreme Court of South Australia in “Longeranong Pty Ltd v Electricity Trust of South Australia” (1990) 71 LGRA 316

¹² “The most probable use of an asset which is physically possible, appropriately justified, legally permissible, financially feasible, and which results in the highest value of the asset being valued.”

67. No account should be taken of any increase or decrease in the value of the land for any special suitability (or otherwise) to the acquirer, or for the prospect of the proposed work.

Compensation for the Land Use Rights Acquired in the Easement Strip

68. The easement fee methodology requires the assessment of the value of the land within the easement area which is adjusted to reflect the land use rights acquired. The easement provides the general rights to construct maintain and operate transmission lines within its boundaries, thereby giving the acquirer of the easement a proportion of the total rights to the use of the easement land. Although this may have a minimal impact on the existing use or management of the property there is still the intrusion upon the owner's enjoyment of the asset. It is necessary to determine a suitable relative proportion of the respective rights the parties have in the easement land.
69. A small adjustment is made to ensure the area effectively occupied by a pole or tower is considered at 100% of the value of that area. Although a pole or tower occupies a minimal area of land, the area effectively lost to the owner is greater than the footprint of the structure.

Injurious Affection

70. Injurious affection considers the loss in value of the land adjoining the transmission lines i.e. outside the defined easement area, and any permanent disturbance to the use or management of the property resulting from the presence of the transmission lines.
71. A sum for injurious affection, if incurred, is derived from the aesthetic and amenity impact to the land, the impact on the value of the dwelling and curtilage if the line is located close by, and the effect on the overall use and management of the property.
72. Compensation for injurious affection to the land retained by the owner of land that has been acquired (easement) is assessed by reference to the effect of the whole of the work on the land retained as well as the work on the land acquired. For there to be a valid claim for injurious affection there must be physical interference with the land, or loss or damage that affects

the land. Such injurious affection must be substantial, as opposed to trivial, capable of measurement, and be caused by the construction of the work.

73. The loss in value of the land adjoining the easement area or transmission lines is considered in two parts; first the impact on the value of the land adjacent to the easement area and; second the impact on the value of the dwelling and curtilage or potential building sites. For dairy units this aspect may also be relevant to cowsheds if they are adjacent to the transmission lines.

Loss of Value to Land Adjoining the Easement Strip

74. To account for the additional loss to land adjoining the easement, the concept of “corridors of effect” has been developed as the most robust approach to assessing injurious affection. The corridors of effect acknowledge there is a graduated drop in visual impact or effect according to distance from the line.
75. In general an allowance of up to a maximum of three corridors of effect each side of the easement (a total of 6 corridors) is made. A corridor is a strip of land, the width of which is approximately twice the height of the structures. In other words a structure 50 metres high will provide for a total distance for potential value loss from visual impact of 325 metres each side of the line assuming a full 6 corridors and a 50 metre easement width.
76. An average value loss for each corridor is assessed, providing a maximum allowance under this component of a percentage of the value of the corridor land based on the average value loss and number of corridors. The average value loss per corridor may vary on a case-by-case basis reflecting the variance in tower numbers in view and the extent of the overall line between properties.
77. Although the example above includes six corridors of effect (3 either side of the easement area) there are situations where the number of corridors of effect will be less. For example:
 - (a) the easement area is on or close to the property boundary; or
 - (b) the transmission line passes through a forestry plantation (discussed later).

78. The land value to be applied to the area of land within the “corridors of effect” should be determined on the same basis as for the easement area and pole or tower sites, and in most cases the same land value per hectare is likely to be adopted.

Loss of Value to Dwelling and Curtilage (or Potential Building Sites)

79. For pastoral properties this may be a significant issue should a transmission line be in close proximity. For lifestyle properties it is effectively the only issue.
80. Part of the value ascribed by the market to a dwelling and curtilage area is the ability to enjoy the outlook from one’s home. The intrusion of transmission line structures into this landscape can upset this basic enjoyment and result in a consequential loss of value to the property.
81. Other factors to be considered include both actual and market perception as to health and safety issues, corona, and interference with electrical appliances.
82. The loss in value to the dwelling and surrounds, in rural areas, is assessed according to the degree of interference from these factors. Guidance on the value impact can be obtained on a basis relative to the residential and lifestyle studies.
83. The same process applies to potential building sites. However, to account for the high proportional loss in value to vacant sites, higher rates of value loss are applied.

Compensation for Permanent Disturbance

84. This element relates to any of the adverse effects of the transmission line on the use or management of the property. A reasonably detailed schedule is set out earlier in my evidence within paragraph 33.
85. Easement agreements will typically provide for any reinstatement work to return land to its original condition in the event that any damage is caused during the construction of the transmission line (temporary disturbance).

Business Loss and Other Expenses

86. It is difficult to envisage any circumstances where the acquisition of an easement on pastoral or lifestyle land, as opposed to the land, for the construction of a new transmission line would cause a loss in value of business goodwill or a loss of business profits. If any such circumstances arise these are likely to be exceptional, requiring consideration on a case-by-case basis in accordance with business loss principles.
87. The costs potentially claimable by an owner are generally for the recovery of reasonable costs associated with moving from the land taken. The acquisition of an easement does not require the owner to relocate, so this component of a claim for compensation under this section is limited to costs such as legal and valuation fees. If it was necessary for the owner to relocate, it is often assumed that the impact of the works is of a degree that would require the acquirer to purchase the land.

Variations to Methodology for other Potentially Relevant Circumstances

88. The easement fee methodology is able to be varied to address other circumstances, particularly other land uses. In my Report attached as **Exhibit TAC 2**, I discuss how it would apply to forestry land or land where the highest and best use of the land is for forestry purposes. My understanding is that none of the land affected by Contact's Notices of Requirement is in that category and accordingly I do not propose to discuss it in any detail in my evidence.

Adequacy of the "Easement Fee" Approach¹³

89. It is difficult to robustly test and confirm that current compensation assessment practice provides sums that equate to injurious affection and total value loss from the presence of transmission lines, simply because of the paucity of the preferred market transactions that can be appropriately analysed and compared. This infers that other acceptable market data sources must be also be considered. I discuss these as follows.
90. The easement fee approach I discussed earlier (also refer section 4.0 **Exhibit TAC 2**) provides a Valuer with the opportunity to fully address all of

¹³ Refer 3.8, **Exhibit TAC 2**

the injurious affection issues in accordance with the studies, and principles established in case law. It must always be borne in mind that an estimate is just that, an opinion, a probable price, or an approximate judgement of amount. This is the case for all valuations.

91. Experienced Valuers will be able to call on experience, judgement, supporting opinion, and possibly settlements for other similar compensation claims. Other settlements are useful in establishing relevant benchmarks, which are more robust as evidence if they have been “contested” by land owners and other valuation experts.
92. The survey I conducted for Contact as part of the Report in **Exhibit TAC 2** (refer section 9.0) has indicated there is likely to be some injurious affect if there is a measurable impact of the transmission lines on the management and operation of the property, but more particularly if the transmission lines were located in close proximity to the dwelling and curtilage.
93. Where the lines and particularly the towers are aesthetically very dominant on the landscape, more particularly from the dwelling and curtilage, there is likely to be an injurious affect. By contrast, if there is no measurable impact on management and on the dwelling and curtilage, the injurious affect is not likely to be significant relative to property value.
94. I am not at liberty to disclose individual settlements for properties impacted by the proposed 400kV line in the Waikato region, a project in which my firm has been closely involved, but virtually all valuation assessments are “contested” and agreements have been concluded for a large number of properties at an average of less than 15% of property value for a mix of dairy, other pastoral, small holdings, and lifestyle use. This is an overall average for all of the settlements and is significantly influenced by the relatively high percentage impact on small lifestyle properties compared to the pastoral properties. This is consistent with all of the research and other information I have been able to interpret and in my view clearly demonstrates the suitability of the easement fee methodology (also refer section 4.0 **Exhibit TAC 2**).
95. I earlier noted the difficulty in testing the market to consider whether the valuation methodology is assessing a compensation sum commensurate with market reality. Members of my valuation staff [not me personally] have made me aware of a few transactions for property on which there is potential for the proposed 400kV transmission line to be located, where

there is no discernable difference in value compared to other comparable properties without this potential. In other words some well informed and knowledgeable purchasers have not discernibly reduced purchase price for injurious affection from the proposed 400kV transmission line. These few transactions were for dairy quality land and this confirms that the transmission line will have less significance when there is strong market demand for the land. This point is an observation, not an analysis, and I discuss this in the next section of my evidence where I refer to a survey completed by my firm.

96. These are all relevant, applicable benchmarks to be added to the basket of researched information and opinion contained in the Report (**Exhibit TAC 2**) for consideration of the proposed HMR wind farm route.

General Support for the “Easement Fee” Approach

97. I have been fortunate to have had a reasonably significant involvement in this area of compensation work for several years, providing me with the opportunity to discuss methodology with other land professionals and, in conjunction with senior staff, continue to refine the methodology.
98. In my experience most experienced Valuers engaged in compensation assessments for transmission lines in New Zealand have now adopted the easement fee approach as the basis of their methodology, albeit often reflecting a similar structure, but with differing inputs.
99. I have personally, and along with members of my firm, completed a considerable number of compensation assessment projects for transmission lines for a number of utility companies in New Zealand. Many agreements have been concluded with land owners by the utilities based on the outcomes from the adoption of the easement fee approach.
100. To confirm, or ratify, this methodology I have also considered a recent transmission line development in Queensland, Australia. My analysis was undertaken in October 2005, and I believe this was within 12 months of the compensation assessments prepared and negotiated for that particular line.
101. The principles of compensation assessments in Australia are, for all intents and purposes, very similar to those we adopt in New Zealand.
102. The ratification of my interpretation of the easement fee approach was completed by the following processes:

- (a) Detailed discussion with Powerlink, Queensland, on a substantial recent 330kV transmission line development between Millmerran and Middle Ridge, requiring a 60 metre wide easement through grazing land.
 - (b) Inspection of a considerable proportion of the constructed line and a varied sample of affected properties.
 - (c) Discussion with two independent valuation firms that worked with Powerlink and assessed compensation for this project. This included a review of the adopted methodology, a number of relevant Australian legal decisions¹⁴ on transmission line compensation, and the adopted methodology relative to legal precedent.
 - (d) Consideration of assessed, and paid, compensation for the resumption and the components of each of these sample assessments.
 - (e) Incorporation of the Queensland Valuer's inputs into the easement fee model, and adjustment to easement fee model to replicate the Valuer's assessments.
103. The easement fee model structure and inputs were very simply amended to reconcile with the Valuer's assessments and I was able to conclude that the easement fee approach is very similar to the "piecemeal" approach adopted by the Australian Valuers, which is consistent with legal precedent, with similar considerations and associated inputs.
104. For the benefit of my Report in **Exhibit TAC 2** a survey of owners/managers involved in transactions of property with 220kV transmission lines was undertaken.
105. The literature search findings (refer to section 10.1, **Exhibit TAC 2**) discussed shortly include several value impact study results, but also acknowledge there are difficulties in isolating the value effects of transmission lines on rural land. Setting aside the major issue of sample size obtainable in New Zealand, it is acknowledged that many other geographical, physical, productive and development differences between

¹⁴ "JP Arrow v The Electricity Commission of New South Wales" (1994] NSWLEC 91
 "A&R Salce v State Electricity Commission of Victoria" Land Valuation Board of Review October 1981
 "Longeranong Pty Ltd v Electricity Trust of South Australia" Supreme Court 55 SASR
 "Electricity Commission of New South Wales v Kater" Supreme Court of NSW 87 LGERA

properties will generally be the major determinants of the sale price of a property.

106. In my opinion, the identification and survey of appropriate land purchasers will provide more market analysis assistance than a study, given the above issues.
107. Using mapping software that covers all of New Zealand, which incorporates the entire Transpower NZ national grid, I overlaid land transaction details, and identified the following:
 - (a) Approximately 40 “transactions” that had occurred over the 18-month period from 1 January 2007 on land traversed by 220kV transmission lines. These included a majority of pastoral properties along with some lifestyle or small holdings. In undertaking the survey I ultimately deemed it necessary to reduce the sample size to 26 completed transactions. It transpired that some transactions were not market transactions, and a number of land owners were simply unable to be located or contacted over the survey period. I also note some discussion was held with farm managers.
 - (b) The survey was limited to the last 18-months, as I opined this would provide a fair reflection of current sentiment. The restriction to 220kV lines was to ensure the survey was concentrated on those properties where the relatively greatest number of issues and associated value impacts could be observed.
 - (c) The transactions, therefore, represent all available transactions where the transmission line is of significance in terms of location and length within the property boundaries, and those interviewed all had a genuine interest in the transmission line issue.
108. It was apparent that the transmission lines were relatively less of an issue to purchasers when demand for land in that particular sector or locality is strong. A very good example of this was the very strong market for dairy property at the time. Any negative features of the transmission lines are apparently reduced in importance or not considered at all. In a weak market with low demand it is a reasonable assumption that a transmission line of significance on a property would likely feature more in a prospective buyers mind.

109. Most, but not all, purchasers noticed the presence of the transmission lines prior to negotiating the purchase price. In many cases either the vendor or real estate agent highlighted them to the purchaser.
110. Where the lines were some distance from the dwelling and cowshed (where applicable) any issues raised were primarily related to management. Location of the line within a property is, therefore, an important consideration: The following impact issues were raised:
- (a) irrigation efficiency, but it was also noted that farm layout, contour and property shape has an impact on this;
 - (b) cultivation in areas where towers or poles are located is less efficient and areas of land are lost to production;
 - (c) the location of new buildings may face greater restriction in terms of preferred location;
 - (d) there may be an effect on future subdivision potential;
 - (e) interference with electronic devices such as pasture meters and computers near the lines, and noise when wet (corona effect);
 - (f) there were no evident problems with the employment of staff;
 - (g) most indicated the preference would be to have no lines, in fact several described them as ugly; but the aesthetic impact of the transmission line was not regarded as a measurable value discount factor, unless there were a large number of highly visible tower structures;
 - (h) where land was purchased primarily as support land for a dairy unit or large run property, the buyers were largely unconcerned about the presence of transmission lines, unless irrigation development potential was disrupted; and
 - (i) if farm tracks are maintained by a transmission line owner, this is often regarded as a fair trade-off for the presence of the transmission lines.
111. Where transmission lines are in close proximity to the dwelling(s) and curtilage it is highly likely there will be an injurious affect. The comment that a purchaser would discount the value of a property for this circumstance

was a common theme throughout those surveyed but none could advise to what degree or percent. I understand that in the context of the HMR wind farm, the closest that a transmission tower goes to an existing dwelling is around 345 metres. This is not likely to cause a measurable injurious affect to the dwelling and curtilage. This is generally either implied or substantiated by the various surveys and studies referenced in my evidence.

112. Several described the presence of a transmission line as a good negotiating tool at purchase, although most acknowledged it did not make a significant difference, subject to the dwelling and curtilage qualification. Surprisingly, only one person commented directly on health issues as being a factor but it would be fair to assume that this is but one of the factors in the injurious affection view of the majority who would discount the property value because a line is in close proximity to the dwelling and curtilage.
113. Summarising the survey for pastoral properties, there may be some impact on land value if there are large numbers of clearly visible tower structures on the property or where management of the property is significantly affected. Where a line is in close proximity to a dwelling it is highly likely injurious affection will be caused. No pastoral property buyers surveyed were able to suggest a discount in purchase price achieved although many stated the lines were a good bargaining tool.
114. My Report in **Exhibit TAC 2** included a review of a number of research papers on the impact on land value from high voltage overhead transmission lines (“HVOTLs”). The majority of the research papers reflect results and opinions through the 1970’s to early 1990’s. There appears to be relatively limited reported research for the last ten years.
115. Understandably there is a lot of data and associated analysis available, but with an emphasis on residential environments.
116. A paper prepared for The Edison Electric Institute Siting & Environmental Planning Task Force¹⁵ by Dr. Cynthia Kroll and Thomas Priestly PhD in July 1992 provides a very useful review and analysis to identify and describe the research that had been conducted between 1975 and 1990, and evaluates the strengths and weaknesses of the research and suggests the type of future research that could be undertaken to build on that existing.

¹⁵ “The Effects of Overhead Transmission Lines on Property Values: A Review and Analysis of the Literature”, July 1992

117. The general summary of the findings in the Kroll paper that are relevant to this evidence are set out below.
- (a) Overhead transmission lines have the potential to reduce the sales price of residential and agricultural property through the direct effects of an easement on the property or through the impacts on neighbouring or nearby property.
 - (b) The effect, especially for single family homes, is generally small (from 0% to 10%) but has been estimated to be greater than 15% in some specialised cases in rural areas.
 - (c) Other factors e.g. neighbourhood (location) factors, square footage, size of lot, irrigation potential, are much more likely than overhead transmission lines to be major determinants of the sale price of a property.
 - (d) Effects are most likely to occur to property crossed by or immediately next to the line, but some impacts have been measured at longer distances. This varies from case to case.
 - (e) Impacts may be greatest immediately following construction of a new line (or a major increase in size of an older right-of-way), diminishing over time. But impacts will last several years, at least, affecting property owners who sell within the first few years following transmission line construction.
 - (f) Studies up until 1990 provide little evidence that tower height and line voltage are directly related to level of impact. However, because of methodological data limitations, the issue has not been systematically explored.
 - (g) Timing of ownership may be significant. Impacts may be viewed differently by a developer with vacant land, by an owner who held the property prior to line construction, and by an owner who purchased the property when the power line was already in place.
118. Appraiser studies examined in the Kroll paper note that about half the studies, for both residential and agricultural land, concluded the transmission line had no impact on value. For residential properties the range in effect was about 5% to 10% for homes near transmission lines.

Agricultural land sometimes showed no negative effect. Ball (1989)¹⁶ found a 2% disadvantage overall, and a 44% decrease in land value within the right-of-way (easement) area. An Oregon study of grazing land (1983) found loss was limited to the actual amount of land lost to towers and roads, but owners were concerned about losses if their land had residential development potential or if the lines disrupted irrigation potential.

119. A number of research papers prepared subsequent to 1990 have been considered. The majority of these are based on US research; however there is New Zealand research completed in 1994.
120. Callanan (1995)¹⁷ reports on a 1994 case study to examine the effect of HVOTLs on property values in the suburb of Newlands, Wellington. The study used econometric analysis techniques to determine a suitable multiple regression equation to quantify the effects of the HVOTLs on property values.
121. Different regression models¹⁸ were tested for the distance to the nearest transmission line and pylon, as well as house area and lot size. The different models tested showed an inconsistent result on transmission lines but a consistent result was obtained on the distance to nearest pylons. The statistic was significant.
122. The following table schedules the value reduction percentage v distance from a pylon:

Table 3. Callanan (1995) – Value Reduction % / Distance to Pylon

Distance to Pylon	\$ Value Reduction	% Value Reduction
Distance at 100 metres	\$3,551	2.7%
50 metres	\$7,102	5.4%
30 metres	\$11,836	9.1%
20 metres	\$17,755	13.6%
15 metres	\$23,673	18.2%
10 metres	\$35,510	27.3%

¹⁶ "A Study of Economic Effects of High Voltage Electrical Transmission Lines on the Market Value of Real Properties" Ball, Thomas A. 1989

¹⁷ "The Effect of Transmission Lines on Property Values" Judith Callanan and Prof R V Hargreaves, reported in the New Zealand Valuer's Journal June 1995

¹⁸ Regression analysis is a technique for modeling and analysis of numerical data of values of a dependent variable (the measurement) and of one or more independent variables (the explanatory variables or predictors). The dependent variable in the regression equation is modeled as a function of the independent variables.

123. The table indicates a reduction in house prices of around 20% to 25% of the average sale price for houses very close (10m to 15m) to the pylon and dropping off to 2% to 3% at 100 metres.
124. While this study is based on residential value reduction impacts it is noted that in the case of the proposed HMR wind farm transmission line, the closest distance to a tower is estimated at around 345 metres on the external line. It is unlikely that the line would cause any measurable injurious affect to the dwelling and curtilage from that distance.
125. A helpful paper summarising the effects of power lines and perceptions of health risks and the influence on residential property value was prepared by Pitts and Thomas¹⁹ and published in The Appraisal Journal in autumn 2007. The paper briefly summarises historical research and recent interviews with appraisers and real estate agents in central California.
126. The following points are extracted from the paper to provide an overview of the impact of high voltage overhead transmission lines on residential property:
- (a) Many studies indicate no significant effect on value, however an increasing number of studies do show a small diminution of between 1% and 10% of property value, which is attributed to visual unattractiveness, potential health and safety hazards and disturbing sound. The impacts diminish as distance from the lines increase, and disappear at a distance of 200 feet (approximately 60 metres). Where views of the lines and towers are completely unobstructed, the negative impact can extend to a quarter of a mile (approximately 400 metres) but if they are at least partially screened any negative effects are reduced considerably.
 - (b) Value diminution attributable to tower line proximity usually decreases over time, disappearing entirely in 4 to 10 years.
 - (c) The impact on value will also be influenced by buyer preference. There may not be a market consensus because some buyers may consider the power lines a nuisance and an eyesore, while other buyers do not.

¹⁹ "Power Lines and Property Values Revisited", Jennifer M. Pitts and Thomas O. Jackson, PhD, MAI, 2007

- (d) The paper concludes that the impacts on residential property are varied and difficult to measure. The impacts from the power lines, as well as other negative externalities, depend on many factors, including market condition, location, and personal preference.
127. In the context of the HMR wind farm it is therefore difficult to draw any reliable conclusions from the research considered. The passage of the transmission line is across rural farmland, and the smallest properties on the proposed route are far larger than the residential property analysis on which the majority of the forgoing studies are based. There are some study results for agricultural land but this is not considered to be reliable.
128. The analysis does however assist with the establishment of general principles for consideration of the dwelling & curtilage component of both rural and lifestyle properties where much of this information is relevant. Indeed, it is my opinion that the information or benchmarks established for value impact on residential properties in the studies discussed likely provides a lower benchmark for rural and lifestyle properties in New Zealand. In the majority of cases the value rural and lifestyle owners place on the residential component of their rural or lifestyle property may be greater than the residential urban counterpart given the choice of environment in which they choose to live. Such an environment incorporates a requirement for an unfettered place in which to reside. This is also of interest to the off-farm investor but there may be a greater focus for those who intend to reside on the property.
129. My firm has completed several small analyses into the impact of transmission lines on lifestyle properties. I would not present these as “certifiable” studies or surveys, but they provide benchmark information in our compensation assessment work, where relevant.

Conclusion

130. My review of the project information provided to me by Contact suggests that the design and location of the proposed line will assist in reducing the impact on aesthetic and amenity values considered from a property valuation perspective. Aside from the interest in land acquired by way of an easement, I would expect there will be potential for increased aerial topdressing costs and interference with any cultivation or over sowing land where relevant. My understanding is that the line is well away from any dwelling and curtilage areas so it is unlikely there will be a measurable

impact on this important value component of these properties. This said, there is an increased risk of this value impact as the route nears the Orton point of termination.

131. In my opinion, and irrespective of the general conclusion above, based on all of the information I have discussed in my evidence:
- (a) the recommended easement fee approach represents an appropriate and complete compensation assessment methodology that will connect with, and reflect, market reality;
 - (b) the provisions of Part V of the Public Works Act 1981, if fully considered and applied in accordance with the requirements of an appropriate methodology, and in accordance with the principles established in relevant case law, will provide the best possible estimate of full compensation that can be made; and
 - (c) it must always be borne in mind that an estimate is just that, an opinion, a probable price, or an approximate judgement of amount, it is not possible to fully “test the market” at the same date as a compensation assessment is required.

Comments on Submissions

132. I have been particularly referred to, and provided a copy of, the submission from Federated Farmers of New Zealand (Auckland Province) Incorporated, being “a primary sector organisation that represents the majority of the country’s farming businesses.”
133. Federated Farmers agree that the Board of Inquiry “confirm the requirement and approval of the associated resource consent applications” but only on the following basis:
- “Provided there are arrangements in place for the land owners upon whose land the transmission towers associated with the Proposal are located to be fully indemnified, to receive full compensation and to receive financial benefits on an ongoing basis on the same basis as land owners upon whose land the turbines are located.”
134. Setting aside the indemnification issue for now, Federated Farmers require full compensation assessed in accordance with the provisions of the Public Works Act 1981, as well as “providing them with a share of returns from the wind farm”.

135. In my opinion the impact on the value of a property from the presence of many wind turbines, relative to the impact of the proposed 220kV transmission line, is exponential. These are two quite different propositions, requiring completely different treatment for “compensation”.
136. My role in determining compensation, and the recommended model, is completed after providing an opinion on the appropriate level of full compensation. Any sums that might be agreed over and above this sum are for negotiation between the parties as this is something beyond compensation for the loss in property value. I do note that Contact has Requiring Authority status allowing compensation to be ultimately determined under Part V of the Public Works Act 1981. Contact, according to the evidence of Mr. Mills, has already proposed to land owners a compensation payment proposition that, in my opinion, goes well beyond the “full compensation” payment requirements of the Public Works Act.
137. The issue of indemnification must be considered on the basis that Contact needs to protect its assets; therefore as long as the farmer acts in a reasonable and responsible manner I would consider there should be no issue with Contact’s requirements. Unreasonable behaviour should not be indemnified, therefore farmers may need their own insurance to cover irresponsible acts resulting in damage.
138. In addition to the Federated Farmers submission I was referred by Contact to several submissions they have reviewed, and asked to consider the points raised in these submissions that are of relevance to my Brief of Evidence. The key aspects of these submissions, relevant to my evidence, are those that generally describe factors that have potential to cause permanent disturbance to the use and management of a property and, hence, injurious affection. In my opinion these have all been addressed in my evidence and can be properly considered using the easement fee methodology for quantification.

T A Crighton

Exhibit TAC1

RELEVANT COMPENSATION ASSESSMENT EXPERIENCE

Relevant Compensation Assessment Experience

The following table summarises my relevant experience in assessing compensation for the taking of land. This is not exhaustive and is in no particular order.

The compensation assessments have mostly been undertaken in terms of the Public Works Act, Electricity Act, and Reserves Act

Table 1. Compensation Assessment Experience

Client	Project
Transpower New Zealand Limited	<ul style="list-style-type: none"> - Cook Strait cable easements across DOC reserve land - easements for new 110kv transmission line between Islington and Hororata - easements for proposed 220kv transmission line between Wairoa and Gisborne - easements for upgrade to transmission lines from Stoke through Richmond, Nelson - Compensation for damage to dwelling adjacent to Islington substation - easements for new 66kv line at Ashley, North Canterbury - easements for upgrade to transmission line into Kiwi Dairy factory, Hawera - easements for upgrade to transmission lines through Makara - easements for new 220kv transmission line in South Canterbury - easements for new line through Albany, North Shore - easements for upgrade to transmission line from substation into Marsden Point refinery - consideration of injurious affection issues for transmission lines between Penrose and Albany - Presentation on injurious affection issues and assessment to Transpower property group and engineer employees - easements for under grounding transmission lines through proposed industrial park development land - consideration of injurious affection issues for thermal uprating project near Wairakei - easements for upgrade to the Blenheim Stoke transmission line - easements for upgrade to Islington Kikiwa transmission line - estimated compensation [model] for possible upgrade to the HVDC line - consideration of injurious affection issues for the Arapuni Bombay 110kv maximisation project - consideration of injurious affection issues for the Livingstone to Rangitata duplexing project within the Roxburgh Islington transmission line - estimated compensation [model] for the Otahuhu Whakamaru lines(s) - estimated compensation [model] for the Bunnythorpe Haywards line - Preparation of an injurious affection handbook for internal Transpower use, which considers identified works - easements for upgrade to Pakuranga Penrose transmission line - Preparation of handbook on compensation assessment methodology under the Public Works Act - Consideration of injurious affection issues from vegetation - Compensation assessments for proposed 400kv transmission line from Whakamaru to Otahuhu - compensation for land acquisition and access to substation land - consideration of easement issues across DOC land, including "limited term" easements and concessions - compensation for proposed termination sites for 400kv project - consideration of injurious affection issues for uprating the Otahuhu Whakamaru A & B transmission lines - provision of expert evidence in the Environment Court on injurious affection issues - comments on statutory interests in land compared to registered easements
Burdon	<ul style="list-style-type: none"> - Compensation for additional land taken for hydro generation purposes at Lake Hawea
Environment Canterbury	<ul style="list-style-type: none"> - Road acquisition - Utility easements
Christchurch City Council	<ul style="list-style-type: none"> - Telecommunications easements - Access easements
Kapiti Coast District Council	<ul style="list-style-type: none"> - Road acquisition

Land Information New Zealand [LINZ]	- Tokaanu Power Station – land taken for generation and easements for transmission
Meridian Energy	- Project Aqua - compensation for land taken, business loss, injurious affection - transmission line easements for new lines proposed [Northland, North Otago/South Canterbury] - Easements for access and transmission lines for proposed and existing wind farm sites - easements and business loss compensation for proposed hydro development on the West Coast
Powerco	- Easements for access and transmission lines to Tararua wind farm
PowerNet	- Injurious affection model development, for transmission line easements and regulator sites
Counties Power	- Easements for transmission line upgrade
Hutt City Council	- Easements for pipelines and telecommunications
Telecom New Zealand	- Fibre optic cable easements in South Canterbury
Delta Utility Services	- Easements for transmission lines in Central Otago
ECNZ [formerly]	- Waikaramoana easements for tunnels, penstocks and diversions
East Harbour Management Services	- Easements for transmission lines around Makara
Electro Net	- Injurious affection model development, for transmission line easements
Linelink	- Easements for upgrade to transmission line - Coleridge
The Power Company	- Easements for new transmission line in Te Anau
Transit New Zealand	- Review for Board the compensation requirements for acquisition of Waikato land including large quarry operation
West Coast Lessee's Association	- Compensation model development for loss resulting from a legislative change to lease terms and conditions

Exhibit TAC2

**Waikato Wind Farm Project Proposed Transmission
Line Property Right Requirements Report**

CONTACT ENERGY LIMITED



Valuation & Transmission Line Easement Compensation Issues

Waikato Wind Farm Project Proposed Transmission Line Property Right Requirements

August 2008



Prepared By: T A Crighton
B.Com (Ag) VFM; FNZIV, FPINZ; B.Com, CA
Director



CRIGHTON ANDERSON
PROPERTY & INFRASTRUCTURE

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18 August 2008

Attention: Wayne Mills

Contact Energy
P O Box 10-742
Wellington

Dear Wayne

RE: Valuation & Transmission Line Easement Compensation Issues for the Proposed Waikato Wind Farm Project

PART 1 – OUR OPINION

1.0 INTRODUCTION

1.1 INSTRUCTIONS

1. We refer to your instructions to provide a report on identified valuation and easement compensation issues, along with discussion and data (where available) supporting a general study on:
 - (a) Value drivers for farm properties generally, and specifically in the Waikato region,
 - (b) The general effect on property values of building double circuit 220kV transmission towers on such properties – perceptions versus reality; and
 - (c) The relevance of power lines in the context of other matters that affect farm values.
2. The particular issues that should be addressed are:
 - (a) Changing patterns of demand for farm properties and any change in the typical demographic of buyers, and style of farm operations over the past few years. Also, expected future trends.
 - (b) Whether the presence of transmission towers on such properties is likely to have a more serious impact in terms of saleability arising from any changes that might be observed in buyer demographic.
 - (c) Whether the presence of an option to take an easement at some undetermined point in the future has, of itself, a value depressing effect on property from a perspective of a potential buyer, notwithstanding the fact that eventually if the option is exercised the new owner will receive compensation for the granting of an easement.
 - (d) Assess a sample of properties that have sold with transmission lines on them to see whether there was any value effect compared to properties without lines and, if there was, the extent of that effect.
3. We note that the identified issues, research, and resulting opinion is to be presented to specifically address the features and issues of the proposed Waikato Wind Farm transmission line easement and compensation requirements.

1.2 SUMMARY OF AGREED TASKS

4. Table 1 provides a summary of the tasks generally undertaken to consider the identified issues. It is from this information, with the addition of some anecdotal evidence where relevant, that we have drawn our conclusions and provided our opinion.

Table 1. Analytical and Review Work Completed

Analytical & Review Work	
1.	Analysis of QV ¹ data on average sale prices, sales volumes, farm size trends, and buyer types for pastoral, arable and lifestyle properties for Waikato and Canterbury regions ² where available, and for New Zealand generally.
2.	Analysis of interest rate data and trends from the Reserve Bank ³
3.	A literature search on reviews and commentaries on relevant current market forecasts for the New Zealand agricultural market, and for historical published studies on injurious affection issues.
4.	Consideration of in-house (CAPI ⁴) relevant studies and opinions, as well as compensation assessment methodology(s), and valuation "best practice" for transmission line easement compensation.
5.	<p>Completion of a survey to consider the impact of transmission lines on land value. The impact of options to construct transmission lines is not able to be surveyed as we are not aware of any suitable property transactions where such an option was in place. This issue is addressed separately. This survey is in response to the notion that easement compensation assessment methodologies do not adequately offset loss in actual land value. In our view this is an integral component of the requirements. The survey was completed as follows:</p> <ul style="list-style-type: none"> • Identification of property transactions (within the last 18 months) with Transpower transmission lines on the property. • This required consideration of 7 existing 220kV transmission lines in variable geographic locations (land owners may have different issues and concerns, if any) • From these lines we were able to select an initial 40 property transactions (pastoral & lifestyle property sales) to visit and survey • The final number surveyed was reduced to 26, with numbers reduced by what we considered to be non-market circumstances and the unavailability of purchasers for discussion. We also met with some farm managers. • We developed a questionnaire based on our experience, with input and agreement from Contact Energy. • Site visits were undertaken to present and complete the survey questionnaire with the new land owner and some managers. • Completed data analysis

¹ Quotable Value

² Waikato and Canterbury regions perceived as being good indicators of national trends, with sufficient sample data.

³ Reserve Bank of New Zealand

⁴ Crighton Anderson Property & Infrastructure

2.0 BRIEF PROJECT SUMMARY

5. We understand Contact Energy (“Contact”) intends to build transmission assets to connect its planned Hauāuru mā Raki wind farm (hereafter referred to as the Waikato Wind Farm) to the main grid near Orton. The company has Requiring Authority status for this project and, as part of its application for Resource Consents filed in late June 2008, has sought a Notice of Requirement (“NOR”) to designate the transmission corridor and ancillary areas under relevant District Plans. Pending the outcome of the Hearing these areas now have an interim designation.
6. We are advised that the main transmission lines comprise three parts. Firstly there will be a series of 33kV lines which transport electricity from the individual turbines to three substations across the wind farm footprint. Secondly, the electricity will be conveyed from two of the three substations via a single circuit 220kV monopole transmission line to the third, and main, substation, (Limestone Downs), at the northern end of the wind farm footprint. (In this report this component is occasionally referred to as the “internal line”). Thirdly, an external line approximately 25km in length, and comprising 220kV duplex double circuit strung on typical steel lattice towers will convey electricity to a switchyard to be built near Orton, from where the output will then be connected to the main North Island grid. We understand the designation sought for the second and third parts of the transmission line is for a width mostly between 100m and 200m while the final easement width (for 90% of the spans) will be approximately 42m with a maximum width of 60m.
7. The Grid Connection will have similar characteristics to the external line referred to above, but is within an interim designated width of 400m.
8. Some 18 to 20 properties on the external line are affected by the transmission route. These properties range in size between 34 ha and nearly 3,000 ha. Approximately one-third of all the properties (i.e. external and internal transmission line properties) have absentee owners.
9. Land use is mainly mixed dry stock. However we understand that there are a few owners on the proposed external line who contend that the demand for land in the currently booming dairy industry will spread to this region. We are advised that the line has been designed to:
 - be located as far as possible from dwellings (the closest being around 345m from the line) and,
 - be as far as possible, below ridgelines to mitigate visual impact, and
 - To minimise any impact on the management and operations of the properties.
10. We have not inspected the proposed route for the purposes of this report. We have relied on aerial photographs overlaid with the proposed corridor, as well as our own use of a mapping system with topographical, legal and 3-dimensional information. This limits our opinion to one of a general nature in sections where we comment directly on this project.
11. We have also relied on information provided directly by Contact Energy and information provided in Part B of the NOR document (June 2008).
12. Finally, we understand that Contact Energy anticipates that the Waikato Wind Farm (and therefore associated transmission assets) will be constructed at some, as yet, undetermined point in the future depending upon prevailing market conditions and regulatory settings (e.g. the advent of an Emissions Trading Scheme). Therefore the company has made an option proposal to the land owners whose land the transmission line will cross. This involves the payment of an option fee in return for the landowner agreeing to enter into an easement in the future at Contact’s discretion. The subsequent easement compensation paid by Contact will be based largely upon the accepted valuation methodology that is described in section 4.0 of this report.

3.0 OPINION

3.1 GENERAL

13. This section details our opinion on the various issues raised by Contact Energy. Our views are based on all of the supporting analysis set out later in sections 4.0 to 8.0 inclusive, and the Appendices to this report.
14. Irrespective of the chosen methodology adopted to assess compensation it must consider all of the matters that may give rise to injurious affection and consequently reflect the likely diminution in value of the property due to the proposed transmission lines. The methodology must be cognizant of the information provided by the survey undertaken by CAPI and summarised herein, the literature search and discussion on the relevant observations from the study papers reviewed in detail, and the CAPI observations and analysis of the impact of transmission lines on lifestyle properties (to the extent they are applicable to the specific circumstances of the Waikato Wind Farm project), which do align with all of the above information sources.
15. Compensation assessments, irrespective of the methodology adopted, should be carried out in accordance with the principles established in case law from appropriate jurisdictions e.g. New Zealand, Australia and the United Kingdom in particular.
16. The provisions of Part V of the Public Works Act 1981, if fully considered and applied in accordance with the requirements of an appropriate methodology as discussed in section 4.0, and in accordance with the principles established in relevant case law (refer Appendix III), will address all relevant categories of loss.
17. It must always be borne in mind that an estimate is just that, an opinion, a probable price, or an approximate judgement of amount. It is not possible to fully "test the market" at the same date a compensation assessment is required.
18. Specific issues were posed by Contact Energy to be addressed in this report. The following paragraphs address these issues collectively, as they are not mutually exclusive.

3.2 MARKET VALUE TREND & OWNERSHIP

19. We completed an analysis of pastoral transaction data for Canterbury and Waikato (for 1997 to 2007 inclusive), being two large regions that we believe would provide the most meaningful data as well as a reasonable geographic spread, which demonstrates:
 - (a) The substantial value increase for grazing land over the period, but a decline in 2006 and 2007. The sheep and beef pastoral land has provided off-farm investors with opportunities over the period; however this has waned in recent years. Corporate investment is not likely to represent a significant part of the wider market in the near future but the forecast improved outlook for commodity prices may stimulate more interest in time.
 - (b) The dairy sector is riding a prosperous period, on the back of the continually improving global demand being reflected in farm-gate payout. The Waikato region is a considerably larger market than Canterbury, for dairy land at least, and the statistics suggest there are a correspondingly greater number of business or off-farm investors. To put this in perspective however, the statistics suggest business or investor purchasers represent only 5% of the market over the last 11 years. As noted earlier, anecdotal evidence would now suggest this is increasing.
20. The overall picture for the dairy sector at June 2008 is a substantial increase in farm values from June 2007, a decrease in affordability for new farmers, and an increase in corporate ownership.
21. Corporate ownership is likely to increase over time, with investors seeking size, economies of scale, new equity investment packages and direct marketing opportunities, provided the particular pastoral

sector demonstrates economically rational opportunities. We are aware of a number of corporate entities established in recent years to take advantage of these opportunities, particularly in the dairy sector, which also provide equity investment opportunities for new off-farm equity as well as on-farm management.

22. Our comments regarding corporate ownership, or business or off-farm investors are focussed on those that are in the market for purely investment reasons. We acknowledge that there are many pastoral property owners whom have purchased with a greater focus on lifestyle than investment returns, and treat the property as providing both an investment and a retreat. This is particularly the case in regions relatively closely located to or readily accessible from major metropolitan areas and, we understand, this locality is one such region. We understand around one-third of the landowners on the proposed internal and external transmission routes are “absentee owners” i.e. those who spend most, or all, of their time living away from their properties.
23. While it is interesting to review the property transaction and buyer demographic statistics, the impact of a transmission line on the value of pastoral or lifestyle block land will be exactly the same irrespective of buyer type, unless of course a property is limited to a particular buyer type, all of whom are deterred from purchase by the line. This would be most unusual. In considering injurious affection we are required to assess any impact on the value of the land, not to the landowner(s) personally.
24. The various analyses, studies and the land purchaser survey in this report are clearly focussed on the wider market without any distinction for buyer type. It would seem that whilst there is an increasing trend in corporate ownership, particularly evident in the dairy sector at present, the majority of pastoral farm purchasers i.e. in the foreseeable future will remain individuals, family partnerships, family Trusts or closely held family owned companies.
25. Even should the corporate off-farm investor have a firmer or harder view on the purchase of properties with transmission lines than the views of other buyers apparent in this report, the effect on the size of the “buyer pool” or market would not be significant, all other things being equal.

3.3 VALUE DRIVERS

26. The geographic and physical characteristics, standard of development, and future potential of the land, along with market demand driven by economic factors, are the most important value drivers for the land. In periods of strong market demand the presence of a transmission line on the land will have a relatively lesser impact on the number of potential buyers and the price paid, unless the line has a significant impact on the dwelling, property management and general amenity value. In periods of weak demand for the land, the transmission line may take on relatively greater importance as a factor in the purchase decision but, as the literature and study demonstrates, this may only be for properties significantly impacted, or alternatively where it is used as a negotiating tool.
27. The relative strength of the market at the time of assessing compensation must be considered and, if necessary, some adjustment or averaging may need to be considered so no-one is disadvantaged.

3.4 IMPACT OF BUYER TYPE ON PROPERTY WITH TRANSMISSION LINES

28. Overall we are not able to find any evidence to demonstrate that the observable change in the typical buyer type within the pastoral market, particularly demonstrated by new investment from off-farm investors in the dairy sector, will have any measurable influence on the marketability of a property where transmission lines are present. Indeed the factors that may give rise to injurious affection may be more keenly considered by an individual whom intends to reside on the property, than an off-farm investor whom does not have this intent. The considerations of a purchaser for both a lifestyle retreat and investment may perhaps have a greater emphasis on the amenity value provided by a rural property, particularly within or close to the dwelling environs, than a farmer who is more focussed on the farming proposition, but this is unlikely to cause any increase in injurious affection to the land

unless the land has some special value that can only be extracted by the purchaser with a focus on lifestyle.

29. Once a buyer graduates beyond a lifestyle block the market participants change. The highest and best use of the land will remain a pastoral use and the buyer pool and land value will reflect that.
30. Lifestyle property, as subdivided, is not affected by any particular buyer type issue as they are well defined, but the market for the purchase of larger blocks of land suitable for subdivision development may be dominated by developers. There will of course also be considerable development of long held pastoral land by existing owners. The developer will be very mindful of the presence and impact of transmission lines on development design and impact on subdivided lots. We do not have any statistics on buyer type but the increased annual vacant lifestyle block sales from 2001 onwards and total national sales in excess of 15,000 over the 10.5 year period to mid 2007, as well as anecdotal evidence, suggests developers are an integral part of this market.
31. It can be observed in the lifestyle block regions within New Zealand that the blocks with transmission lines have continued to be subdivided and a market for the land exists. The purchase price will obviously reflect the impact of the transmission line on development i.e. a value discount where appropriate, and it would be a reasonable assumption that some potential purchasers of the development land would be deterred by the transmission line. This is all a matter of opinion, but the evidential negative impact on the value of the subdivided lifestyle properties from transmission lines does support an injurious affect either through the direct impact of the line on a property and/or through a reduction in the number of potential purchasers.
32. We note that the lifestyle statistics examined are for the small properties, with small holdings bridging the gap between lifestyle and pastoral farms. A small holding is generally regarded as a small uneconomic unit. All of the subject properties for transmission lines concerned with the Waikato Wind Farm, (where we understand the smallest block is 34 ha) would fall outside the definition of lifestyle properties.

3.5 MARKET PERCEPTION

33. We are in the midst of a very interesting period nationally, but particularly in the Waikato region, where there is very negative sentiment toward the impact of transmission lines. The 400kV line proposed by Transpower from Whakamaru to Otahuhu is a project on a scale not seen in the electricity transmission sector within New Zealand for a very long time. The upgrade project in South Canterbury, highlighted by the Fernwood case discussed later, is another Transpower project to gain publicity in a negative sense.
34. The perception of a negative market impact, fuelled by the 400kV project in particular, of a 220kV transmission line on a property may be greater than the reality, bearing in mind the differences in configuration and capacity. However we must be mindful of the impact of perception on the market. The Criscuola decision, discussed later, rationalises that the reasonableness of the public's fear is irrelevant: if the public's fear depresses market value, then the loss should be compensated. However the decision also establishes that there must be credible and tangible evidence to establish that there is a loss in value, not just a suggestion that there may be a loss in value.

3.6 LITERATURE SEARCH

35. Our review of the literature and the general survey responses generally suggest that, for 220kV lines at least, in reality the injurious affection is likely to be less than the evident perception of some landowners on the proposed Waikato Wind Farm transmission route whom we understand are of the view that the size of the market for pastoral properties is reduced by 50% and all pastoral properties in general are reduced in value by 30%.
36. The studies on transmission line effects on pastoral land in the U.S found that:

- (a) There is a direct effect on land value from the easement itself,
 - (b) Other value drivers are more likely to impact on value than transmission lines,
 - (c) The impact will likely disappear over time,
 - (d) Development potential, if any, may be impacted,
 - (e) Half of the studies said there was no impact at all on pastoral land, while some studies suggested an impact of 44% of the value within the easement land area and anywhere between 0% and 20% on land outside the easement area depending on disruption to management and irrigation,
 - (f) A further U.S study on the impact of a 500kV line on agricultural land, but with an acknowledged unreliable testing method, demonstrated fewer sales in the immediate area and a property value impact between 16% and 29%.
37. These variances confirm that injurious affection can only be assessed on a case-by-case basis. There is no overall percentage loss factor that can be applied across all pastoral properties traversed by a transmission line.

3.7 OPTION FOR AN EASEMENT

38. We were asked to consider whether the presence of an option to take an easement at some undetermined point in the future has, of itself, a value depressing effect on property from the perspective of a potential buyer, notwithstanding the fact that eventually if the option is exercised the new owner will receive compensation for the granting of an easement.
39. In some respects the issue may be academic, since the designation of the proposed transmission route under relevant District Plans will, of itself, create an awareness in the mind of a potential buyer, regardless of whether an option to build a transmission line exists or not.
40. Notwithstanding this point, we noted that the presence of an option to take an easement could not be considered in terms of any of the information sources referred to in this report. We are not aware of any studies or surveys that have addressed this issue. However we are aware of recent property transactions for land where there is potential for the proposed 400kV transmission line to be located where there is no discernable difference in value compared to other comparable properties sold that do not have this potential.
41. The impact of an option will be on a case-by-case basis where the term of the option, the date granted, the final exercise date, the impact of the works contemplated by the option, and the prospect of the option being exercised are all relevant.
42. Intuitively we would suggest that it will have a negative impact on land value assuming the line itself, if and when constructed, would have an injurious affect on the land. An exception might be where the purchaser determines that the likelihood of the line being constructed is very low or not at all. The option creates some uncertainty, even though compensation would be paid for granting an easement, which may be considered as being similar to a designation scheduled in the District Plan and registered on the title e.g. for road. In fact, as we have already noted, the subject corridor now has an interim designation.
43. The buyer pool may reduce in size because of uncertainty surrounding the eventual impact and the compensation process, which may translate to a small reduction in land value. If the market is strong, the buyers may not be deterred and pay close to full value and rely on compensation when the option is exercised. In our view the market in general may determine an injurious affect recognising the option or interim designation as an encumbrance on the land. Similar types of encumbrances i.e. on land use sometimes demonstrate a discernable, but not significant, impact on land value.

3.8 ADEQUACY OF CURRENT VALUATION PRACTICE

44. It is difficult to robustly test and confirm current compensation assessment practice provides sums that equate to injurious affection and total value loss from the presence of transmission lines, simply because of the paucity of the preferred actual market transactions that can be appropriately compared. This infers that other acceptable market data sources must be considered. These are discussed below.
45. The easement fee approach (refer section 4.0) provides a Valuer with the opportunity to fully address all of the injurious affection issues in accordance with the studies, survey, and principles established in case law. It must always be borne in mind that an estimate is just that, an opinion, a probable price, or an approximate judgement of amount. This is the case for all valuations.
46. Experienced Valuer's will be able to call on experience, judgement, supporting opinion, and possibly settlements for other similar compensation claims. Other settlements are useful in establishing relevant benchmarks, which are more robust as evidence if they have been "contested" by land owners and other valuation experts.
47. The survey has indicated there is likely to be some injurious affect if there is a measurable impact on the management and operation of the property that would impact negatively on land value, but more particularly if the transmission lines were located in close proximity to the dwelling and curtilage.
48. Where the lines and particularly the towers are aesthetically very dominant on the landscape from the dwelling and other parts of the property there is likely to be an injurious affect. If there is no measurable impact on management and on the dwelling and curtilage, the injurious affect is not likely to be significant relative to property value.
49. We are not at liberty to disclose individual settlements for properties impacted by the proposed 400kV line in the Waikato region, a project in which we have been closely involved, but all valuation assessments are "contested" and agreements have been concluded for a large number of properties at an average of less than 15% of property value for a mix of dairy, other pastoral, small holdings, and lifestyle use. This is an overall average for all of the settlements and is significantly influenced by the relatively high percentage impact on small lifestyle properties compared to the pastoral properties. This is consistent with all of the research and other information we have been able to interpret and clearly demonstrates the suitability of the easement fee methodology discussed in section 4.0. It also discredits and dismisses any notion that there is a general 30% diminution in all properties traversed by transmission lines.
50. We noted the difficulty in testing the market to consider whether the valuation methodology is assessing a compensation sum commensurate with market reality. We briefly referred earlier that we are aware of transactions for property on which there is potential for the proposed 400kV transmission line to be located, where there is no discernable difference in value compared to other comparable properties without this potential. In other words some well informed and knowledgeable purchasers have not discernibly reduced purchase price for injurious affection from the proposed 400kV transmission line. These transactions were for dairy quality land and this confirms the observation that the transmission line will have less significance when there is strong market demand.
51. These are all relevant, applicable benchmarks to be added to the basket of researched information and opinion contained in the following report for consideration of the proposed Waikato Wind Farm route. The next subsection confirms current valuation practice will adequately deal with compensation claims, with some provisos.

3.9 LAND OWNER (OR THEIR REPRESENTATIVE) OPINION

52. We understand it has been suggested to Contact Energy that there is a general value loss of 30% to the properties affected by the proposed transmission line, and that the potential bidders for a property are reduced by as much as 50% because of the presence of a transmission line. We also understand Contact Energy has been advised there is a major change in land use to dairy conversion and that

buyers for these conversion projects are not going to touch any areas affected by transmission lines. We address these points as follows:

- (a) In terms of a general 30% value loss we reiterate that each property will be affected to varying degrees and must be assessed on a case-by-case basis. Our research, analysis, and experience suggest that 30% is extremely excessive. There is simply no robust support for such an effect. To put this in perspective this suggests a \$9m property is reduced in value to \$6m, and this same reduction is applied along the entire length of the line traversing pastoral land.
 - (b) Our review of the project information provided suggests that the design and location of the proposed line will substantially mitigate the impact on aesthetic and amenity values. Aside from the interest in land acquired by way of an easement, we would expect potential for increased aerial topdressing costs and interference with any cultivation or over sowing land where relevant. Our understanding is that the line is mostly well away from any dwelling and curtilage areas so will not impact on this important value component of these properties.
 - (c) For the number of potential bidders to be reduced by 50% for a property affected by transmission lines we would expect the property, including dwelling, to be substantially blighted by the line. There is then the consideration of what impact this reduction in buyer numbers would have on value. It would seem there are no such circumstances for the properties on the proposed route.
 - (d) To suggest potential buyers for dairy conversion land would not touch a property because of transmission lines is not plausible. Canterbury, for example, is a region where dairy conversion activity has been significant in recent years and irrigation is a major consideration for almost all. There are many properties with transmission lines of varying configurations purchased for dairy conversion. We have described in this report the corporate investment interest in the dairy sector and, provided the property can be efficiently set up for dairying there is little interest in, or concern about, the presence of a transmission line.
53. This opinion on injurious affect, in accordance with the limitations of this report, can only be confirmed or otherwise by property inspections.
54. It is a key land owner concern that there is a “disconnect” between the “before and after” valuation methodology for transmission lines and what is the real impact on land value. In our opinion, based on all of the information discussed in this report, and the limitations acknowledged earlier:
- (a) The recommended methodology, presented in section 4.0 and Appendix III, represents an appropriate and complete compensation assessment methodology that will connect with, and reflect, market reality.
 - (b) The provisions of Part V of the Public Works Act 1981, if fully considered and applied in accordance with the requirements of an appropriate methodology as discussed in section 4.0, and in accordance with the principles established in relevant case law, will provide the best possible estimate of compensation that can be made.
 - (c) It must always be borne in mind that an estimate is just that, an opinion, a probable price, or an approximate judgement of amount. It is not possible to fully “test the market” at the same date a compensation assessment is required

4.0 APPROPRIATE VALUATION APPROACH - EASEMENT FEE METHODOLOGY

4.1 GENERAL COMMENT

55. The following discussion on the easement fee methodology is supported by a more detailed discussion on methodology requirements, compensation considerations, key principles and relevant case law in Appendix III.

4.2 COMPONENTS OF A CLAIM

56. For the construction of new transmission line, compensation can be conveniently considered at the component level scheduled in the following table.

Table 2. Components of a Compensation Claim

	Components
	Land Taken
(a)	The easement interest or fee simple interest in land acquired for the works.
	Injurious Affection
(b)	The loss in value of the land adjoining the transmission line i.e. outside the easement or fee simple interest in the land area acquired.
(c)	Any permanent disturbance to the use or management of the property resulting from the presence of the transmission line.
	Other
(d)	Depending on the use of the land acquired, there may be additional compensation for business loss and costs associated with relocation of land owners to other land.

4.3 ACQUISITION OF AN INTEREST (EASEMENT) IN LAND

57. Studies demonstrate this does impact on the value of the land within the easement area. Each must be evaluated on a case-by-case basis as land use, land value and easement width all vary.
58. An easement represents a fractional interest in land, being an undivided share in the full bundle of rights to the use and occupation of the land. An easement is a right attached to one particular piece of land that allows the owner of that land to use the land of another in a particular manner or to restrict its use by that other person to a particular extent. The rights, as well as the obligations, of the easement are set out in the agreement relating to the grant of an easement.
59. We may also consider upgrade projects in this section, for proposed works where the transmission line developer or owner ("acquirer") will upgrade existing transmission lines. The acquired easement, for these upgrade works, will replace the existing rights of occupation conferred on the acquirer by the Electricity Act 1992 ("existing works"), so it is the incremental impact (change) that is considered for compensation claims from these projects. The existing rights of occupation can be referred to as a statutory right of occupation and the Act provides for the owner of these works to enter upon the land for the purpose (in summary) of inspecting, maintaining, or operating the works. This statutory right of occupation is enduring, and will continue until such time as the acquirer wants to undertake any works that go beyond, or are in excess of, the right to repair and maintain.
60. The acquisition of an easement will clearly supplant the statutory right of occupation. This does not, however, alter the fact that a transmission line was in existence in the "before" state on the "specified date" with enduring associated statutory rights. This can be considered in two ways for compensation assessment purposes; first as a change in the rights owned by acquirer (i.e. a change from a statutory right to a formal easement registered against the land) or; second as the notional removal of the existing transmission lines and statutory right of occupation as part of the works. When viewed as the

notional removal of lines and statutory rights, this would be regarded as betterment to the property and the claim for compensation would be reduced from that which would otherwise be awarded, by the increase in the value of the land of the claimant that is injuriously affected (refer Public Works Act section 62(1)(e)); (“PWA”).

61. The acquisition of the required property rights by way of easements will address the vast majority of the acquirer’s requirements to enable the proposed works to be undertaken, as opposed to the acquisition of the full fee simple rights to land.
62. The assessment of compensation for the acquisition of an interest in land (in this case an undivided fractional interest) and consequential injurious affection requires an approach that is not reliant on the analysis of comparable market transactions. There is a paucity of relevant market information and it is extremely difficult, if not impossible, to assess a claim for compensation on this basis. It should be noted, however, that where an easement is compulsorily acquired the principles to be applied in assessing compensation are no different from those applying when full fee simple is acquired.
63. **The “easement fee” methodology** has been developed as a robust alternative method to the more traditional comparable sales approach for the “before” and “after” methodology provided for in the PWA and is provided for in section 62 (1) (b) (ii). This approach has gained acceptance by those experienced in determining injurious affection due to the presence of transmission lines in New Zealand and Australia⁵. The easement fee approach encompasses both the value of the interest in the land acquired and any injurious affection to the land, and is consistent with the components (a) to (d) inclusive set out in Table 2 earlier.
64. The following sections discuss the easement fee approach in accordance with the components of a claim for compensation for proposed works and, where appropriate, address the claim for both an upgrade to an existing transmission line and the construction of a new transmission line.

4.4 LAND TAKEN

65. Compensation for land taken requires the assessment of the value of the land use rights acquired by way of an easement, and the land acquired for the location of pole or tower sites. Both components require the assessment of the market value of the land that is traversed by the transmission line.
66. The value of the land taken, as at the specified date, should be determined on the basis of market value assuming highest and best use⁶. The value should be based on the evidence of comparable market transactions and any other supporting methodology (for example a hypothetical subdivision or discounted cash flow methodology to consider the highest and best use of land with subdivision potential) where appropriate.
67. If the land taken is used for a special purpose, for which there is no general demand or market for the land in that specialised use, compensation may be assessed on the basis of equivalent reinstatement in some other location. This may arise, for example, where the land includes highly specialised structures and/or development improvements the value of which cannot be appropriately determined by reference to market transactions. Such land is described in the New Zealand Property Institute Valuation Standards as specialised or special purpose property. This is property which, due to its specialised nature, has a utility restricted to particular uses or users, and is rarely, if ever, sold on the open market, except as part of a sale of the business in occupation. *Equivalent reinstatement*, within the context of a claim for compensation, will be based on the Depreciated Replacement Cost (“DRC”) methodology. This is a method of valuation which is based on an estimate of the current market value

⁵ refer Supreme Court of South Australia in “Longeranong Pty Ltd v Electricity Trust of South Australia” (1990) 71 LGRA 316

⁶ “The most probable use of an asset which is physically possible, appropriately justified, legally permissible, financially feasible, and which results in the highest value of the asset being valued.”

of land for its existing use plus the current gross replacement costs of improvements less allowances for physical deterioration and all relevant forms of obsolescence and optimisation.

68. No account should be taken of any increase or decrease in the value of the land for any special suitability (or otherwise) to the acquirer, or for the prospect of the proposed work.

4.4.1 Compensation for the Land Use Rights Acquired in the Easement Strip

69. The easement fee methodology requires the assessment of the value of the land within the easement area which is adjusted to reflect the land use rights acquired. The easement provides the general rights to construct maintain and operate transmission lines within its boundaries, thereby giving the acquirer of the easement a proportion of the total rights to the use of the easement land. Although this may have a minimal impact on the existing use or management of the property there is still the intrusion upon the owner's enjoyment of the asset. It is necessary to determine a suitable relative proportion of the respective rights the parties have in the easement land.
70. It is expected that this proportion would be relatively greater for a new registered easement than for an existing statutory right of occupation (statutory interest).
71. A small adjustment is made to ensure the area effectively occupied by a pole or tower is considered at 100% of the value of that area. Although a pole or tower occupies a minimal area of land the area effectively lost to the owner is greater than the footprint of the structure. For example, if the structure is located on arable land, cultivation practices will tend to compact the soil around the structure and reduce its productivity. It is also anticipated that weed control requirements in the vicinity of the structures may also reduce the value of this land to the owner. The pole or tower site area will vary depending on the structure type and size.

4.5 INJURIOUS AFFECTION

72. This considers the loss in value of the land adjoining the transmission lines i.e. outside the defined easement area, and any permanent disturbance to the use or management of the property resulting from the presence of the transmission lines.
73. Studies, the survey, and case law all support the requirement to determine a sum for injurious affection, if incurred, from the aesthetic and amenity impact to the land, the impact on the value of the dwelling and curtilage if the line is located close by, and the effect on the overall use and management of the property.
74. Compensation for injurious affection to the land retained by the owner of land that has been acquired (easement) is assessed by reference to the effect of the whole of the work on the land retained as well as the work on the land acquired. For there to be a valid claim for injurious affection there must be physical interference with the land, or loss or damage that affects the land. Such injurious affection must be substantial, as opposed to trivial, and be caused by the construction of the work.
75. The loss in value of the land adjoining the easement area or transmission lines is considered in two parts; first the impact on the value of the land adjacent to the easement area and; second the impact on the value of the dwelling and curtilage or potential building sites. For dairy units this aspect may also be relevant to cowsheds if they are adjacent to the transmission lines.

4.5.1 Loss of Value to Land Adjoining the Easement Strip

76. The presence of transmission lines across a property impact upon a greater area than just the easement strip (the area actually occupied by the transmission line and its structures). To account for this additional loss to land adjoining the easement, the concept of "corridors of effect" has been developed as the most robust approach to assessing injurious affection, and it provides a relative impact measure between existing transmission lines and upgraded transmission lines. The corridors of

effect acknowledge there is a graduated drop in visual impact or effect according to distance from the line.

77. In general an allowance of up to a maximum of three corridors of effect each side of the easement (a total of 6 corridors) is made. A corridor is a strip of land, the width of which is approximately twice the height of the structures. This assumption also allows a more robust comparison between existing and upgraded lines, particularly if the upgrade incorporates higher structures than exist in the “before” state. In other words a structure 50 metres high will provide for a total distance for visual impact of 325 metres each side of the line assuming a full 6 corridors and a 50 metre easement width.
78. An average value loss for each corridor is assessed, providing a maximum allowance under this component of a percentage of the value of the corridor land based on the average value loss and number of corridors. The impact on the land within the corridor adjacent to the easement (and transmission line structures) is generally greater than the impact on the land further from the easement.
79. The average value loss per corridor may vary on a case-by-case basis reflecting the variance in tower numbers in view and the extent of the overall line between properties, which is supported by comments in the survey and the studies referenced earlier.
80. If an upgraded transmission line (considering the above example) has structures at say 60 metres above ground, the corridors would be extended from 100 metres to 120 metres in width. The incremental impact (the difference between the “before” and the “after” state) is an increase of 20 metres per corridor. It is only this increase that should be brought to account in the assessment of injurious affection for upgrade works.
81. Although the example above includes six corridors of effect (3 either side of the easement area) there are situations where the number of corridors of effect will be less. For example:
- (a) The easement area is on or close to the property boundary; or
 - (b) The transmission line passes through a forestry plantation (discussed later).
82. The land value to be applied to the area of land within the “corridors of effect” should be determined on the same basis as for the easement area and pole or tower sites, and in most cases the same land value per hectare is likely to be adopted.
83. The visual impact of the transmission line varies depending on the distance to the line. Corridor (1) has a greater visual impact than Corridor 3; therefore reducing value impact factors should be applied.

4.5.2 Loss of Value to Dwelling and Curtilage (or Potential Building Sites)

84. For pastoral properties the research demonstrates this may be a significant issue should a transmission line be in close proximity. For lifestyle properties it is effectively the only issue.
85. Part of the value ascribed by the market to a dwelling and curtilage area is the ability to enjoy the outlook from one’s home. The intrusion of transmission line structures into this landscape can upset this basic enjoyment and result in a consequential loss of value to the property.
86. Other factors to be considered include both actual and market perception as to health and safety issues, corona, and interference with electrical appliances.
87. The loss in value to the dwelling and surrounds, in rural areas, is assessed according to the degree of interference, from these factors. Guidance on the value impact can be obtained on a basis relative to the residential and lifestyle studies discussed later, or small localised surveys of residential or lifestyle block sales activity.

88. The value impact ranges, generally determined on the basis of distance from the line, for dwellings in rural areas are likely to be relatively greater than those observed within urban areas i.e. rural and lifestyle properties are likely to be at a higher value impact for the “lifestyle” factor reasons. However the proximity of structures relative to the dwelling will be the most important factor, which is consistently shown in the residential and lifestyle block markets.
89. The same process applies to potential building sites. However, to account for the high proportional loss in value to vacant sites, higher rates of value loss are applied.
90. For upgrade works the incremental impact may, depending on the configuration of the upgraded transmission line and its structures, be that the degree of interference is increased to a higher level. This will be determined on a case-by-case basis.

4.5.3 Compensation for Permanent Disturbance

91. This element relates to any adverse effect on the running or management of the property. Typically it can involve an allowance to cover additional costs to aerial spraying or topdressing, the removal of trees and shelterbelts from below the lines or any other disturbance that adds to the cost of running the property.
92. In locations where irrigation is used, the Canterbury plains for example, existing or proposed spray irrigation systems may be significantly impacted. Permanent disturbance can be considered on the basis of reduced land value where land cannot be as efficiently watered or not able to be watered, and any additional expenses arising e.g. labour costs associated with less efficient irrigation systems.
93. For upgrade works, assuming the upgraded transmission line generally follows the route of the existing (“before” state) transmission line, and particularly if the changes to the configuration of the transmission line are not substantial, there is unlikely to be a substantial increase in the permanent disturbance to the running or use of the property from the upgrade.
94. Easement agreements will typically provide for any reinstatement work to return land to its original condition in the event that any damage is caused during the construction of the new or upgraded transmission line (temporary disturbance).

4.6 BUSINESS LOSS AND OTHER EXPENSES

95. It is difficult to envisage any circumstances where the acquisition of an easement on pastoral or lifestyle land, as opposed to the land, for the construction of a new transmission line, or an upgrade to an existing transmission line, would cause a loss in value of business goodwill or a loss of business profits. If any such circumstances arise these are likely to be exceptional, requiring consideration on a case-by-case basis in accordance with the business loss principles discussed earlier.
96. The costs potentially claimable by an owner are generally for the recovery of reasonable costs associated with moving from the land taken. The acquisition of an easement does not require the owner to relocate, so this component of a claim for compensation under this section is limited to costs such as legal and valuation fees. If it was necessary for the owner to relocate, it is often assumed that the impact of the works is of a degree that would require the acquirer to purchase the land.

4.7 VARIATIONS TO METHODOLOGY FOR OTHER POTENTIALLY RELEVANT CIRCUMSTANCES

97. The easement fee methodology is able to be varied to address other circumstances, particularly other land uses. The following are the more obvious situations where a varied approach may be required:
- (a) Forestry land; and
 - (b) Leasehold property.

4.7.1 Forestry Land

98. Where the land taken is in forestry use, or the highest and best use of the land is determined to be for forestry purposes, the following variations to the easement fee methodology should be considered.

Land Taken

99. For plantation forest land, the acquirer will require control of the land within an easement area of sufficient width to protect the transmission line from mature trees that are wind fallen or being harvested. The required easement width, therefore, will be significantly greater than an easement traversing pastoral land for the same transmission line.
100. It follows that the acquirer will effectively acquire up to 100 per cent of the interest in the easement land and there is no requirement to assess an additional sum for the pole or tower sites, which will already be incorporated in the easement land value.

Injurious Affection

101. Where the highest and best use of the land has been determined as forestry, there is no claim for injurious affection from an aesthetic or amenity point of view, however there is a potential loss to land on either side of the newly created corridor, where trees are removed, through the “edge effect”. This reflects an impact on the quality and harvestable yield for a certain distance in from the new forest edge because of wind damage.
102. It is likely that a claim for permanent disturbance to the operations and management of the land will be assessable. This may be due to disruptions to the efficient harvesting of the trees, and possibly the maintenance of non-plantable areas where this obligation on the acquirer is not included in an easement agreement. These are further highlighted in the following paragraphs.
103. The location of transmission lines may impact on the economics of forest harvesting and management through restrictions on the location of hauler sites, and a requirement for additional hauler sites and roading. The method of quantifying any future additional costs is to assess the present value of any projected future incremental costs resulting from the proposed works. This analysis will require specialist advice.
104. Some responsibility for the maintenance of the easement area may remain with the owner, particularly for weed control. This problem (cost) may be able to be offset in some cases by grazing; however there may still be a net cost to the owner. The method of quantifying any future additional costs is to assess the present value of any projected future incremental costs resulting from the proposed works

Business Loss

105. The proposed works may impact on an existing plantation, requiring the removal of trees. The value of any trees lost (offset by any income that may be derived from their early harvest) will need to be determined using expert forest valuation advice.

Other

106. The costs potentially claimable by the owner are likely to be limited to the reasonable valuation and legal fees in respect of the easement acquired.

4.7.2 Leasehold Properties

107. “Owner” is defined in section 59 of the PWA and includes any person who is in occupation of the land under lease, sublease, licence etc. (other than a weekly or monthly tenancy agreement). It follows that a claim for compensation may need to be apportioned between the “owners” of the land. This apportionment may be reached by agreement between the owners, or alternatively, expert valuation advice may be required to determine an equitable apportionment.

4.8 SUMMARY

108. This section of our report is intended to provide an outline of the recommended easement fee methodology to be followed in assessing compensation for the proposed transmission line works, in accordance with the requirements of the Public Works Act 1981, precedents, principles, and the findings from the literature search of studies and our survey. Although this guidance cannot be specific or contemplate all circumstances that will arise from any proposed works, the principles reflected and contained in the easement fee methodology will provide a robust framework within which to consider particular circumstances not specifically addressed.
109. The value impact measures that are to be adopted within the easement fee approach must be determined by the Valuer on a case-by-case basis, but one would assume this is not without basis and can be supported by market research and analysis.

5.0 SUPPORT FOR THE EASEMENT FEE APPROACH

5.1 NEW ZEALAND

110. In our view it is reasonable to suggest that most experienced Valuer's engaged in compensation assessments for transmission lines in New Zealand have now adopted the easement fee approach as the basis of their methodology, albeit often reflecting a similar structure but with different inputs.
111. CAPI has completed a considerable number of compensation assessment projects for transmission lines for a number of utility companies in New Zealand. Many agreements have been concluded with land owners by the utilities based on the outcomes from our adoption of the easement fee approach.
112. To confirm, or ratify, our methodology we have also considered a recent transmission line development in Queensland, Australia.

5.2 AUSTRALIA

113. The principles of compensation assessments in Australia are, for all intents and purposes, very similar to those we adopt in New Zealand.
114. The ratification of our interpretation of the easement fee approach was completed by:
- (a) Detailed discussion with Powerlink, Queensland, on a substantial recent 330kV transmission line development between Millmerran and Middle Ridge, requiring a 60 metre wide easement through grazing land.
 - (b) Inspection of a considerable proportion of the constructed line and a varied sample of affected properties.
 - (c) Discussion with two independent valuation firms that worked with Powerlink and assessed compensation for this project. This included a review of the adopted methodology, a number of relevant Australian legal decisions⁷ on transmission line compensation, and the adopted methodology relative to legal precedent.
 - (d) Consideration of assessed, and paid, compensation for the resumption and the components of each of these sample assessments.
 - (e) Incorporation of the Valuer's inputs into the easement fee model, and adjustment to easement fee model to replicate the Valuer's assessments.
115. The easement fee model structure and inputs were very simply amended to reconcile with the Valuer's assessments and we were able to conclude that the easement fee approach is very similar to the "piecemeal" approach adopted by the Valuer's, which is consistent with legal precedent, with similar considerations and associated inputs.

⁷ "JP Arrow v The Electricity Commission of New South Wales" (1994] NSWLEC 91

"A&R Salce v State Electricity Commission of Victoria" Land Valuation Board of Review October 1981

"Longeranong Pty Ltd v Electricity Trust of South Australia" Supreme Court 55 SASR

"Electricity Commission of New South Wales v Kater" Supreme Court of NSW 87 LGERA

PART 2 – ANALYSIS IN SUPPORT OF OUR OPINION

6.0 TRENDS IN RURAL & LIFESTYLE PROPERTY

6.1 QV DATA ANALYSIS & COMMENTS

116. The following tables consider the trend in ownership type for dairy units in both Canterbury and Waikato and pastoral units in Waikato for the period 1997 to 2007. These tables include the change in value for the land for New Zealand over the same period in order to consider whether this has influenced buyer type. Further data analysis (refer to tables in Appendix I) and anecdotal evidence indicates that off-farm investors are more prevalent in the dairy sector, as a percentage of total transaction activity.

Table 3. Canterbury Dairy Analysis & New Zealand Dairy Price Change 1997 to 2007

year	Canterbury Sales Details			New Zealand Dairy		Canterbury	
	total sales	new farmer purchaser	business or investor purchaser	June Price Index	percentage change	new farmer as % total sales	investor as % total sales
1997	41	2	2	730	-5.3%	4.9%	4.9%
1998	45	8	1	642	-12.1%	17.8%	2.2%
1999	69	14	4	672	4.7%	20.3%	5.8%
2000	103	12	6	692	3.0%	11.7%	5.8%
2001	104	11	18	741	7.1%	10.6%	17.3%
2002	62	20	0	800	8.0%	32.3%	0.0%
2003	52	10	1	894	11.8%	19.2%	1.9%
2004	53	13	3	1100	23.0%	24.5%	5.7%
2005	61	15	6	1296	17.8%	24.6%	9.8%
2006	47	18	1	1484	14.5%	38.3%	2.1%
2007	31	18	0	1594	7.4%	58.1%	0.0%
Total	668	141	42	79.9%			
Average	61	13	4				

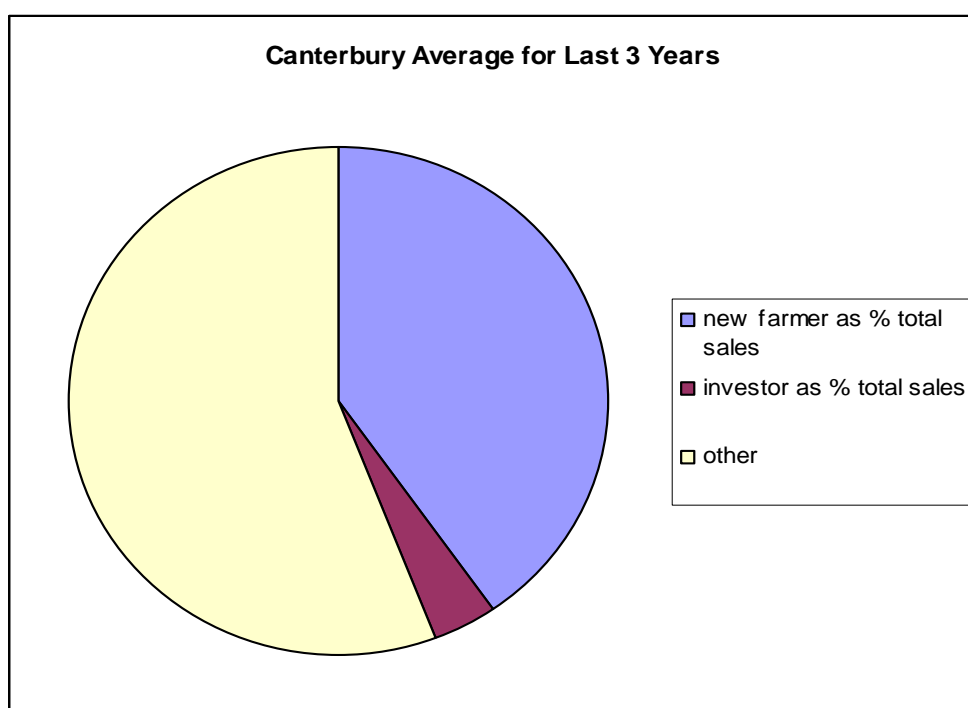


Table 4. Waikato Dairy Analysis & New Zealand Dairy Price Change 1997 to 2007

year	Waikato Sales Details			New Zealand Dairy		Waikato	
	total sales	new farmer purchaser	business or investor purchaser	June Price Index	percentage change	new farmer as % total sales	investor as % total sales
1997	221	23	10	730	-5.3%	10.4%	4.5%
1998	288	73	17	642	-12.1%	25.3%	5.9%
1999	288	77	13	672	4.7%	26.7%	4.5%
2000	361	64	24	692	3.0%	17.7%	6.6%
2001	544	75	50	741	7.1%	13.8%	9.2%
2002	404	102	23	800	8.0%	25.2%	5.7%
2003	343	87	9	894	11.8%	25.4%	2.6%
2004	322	83	12	1100	23.0%	25.8%	3.7%
2005	300	67	18	1296	17.8%	22.3%	6.0%
2006	259	26	6	1484	14.5%	10.0%	2.3%
2007	204	23	4	1594	7.4%	11.3%	2.0%
Total	3534	700	186	79.9%			
Average	321	64	17				

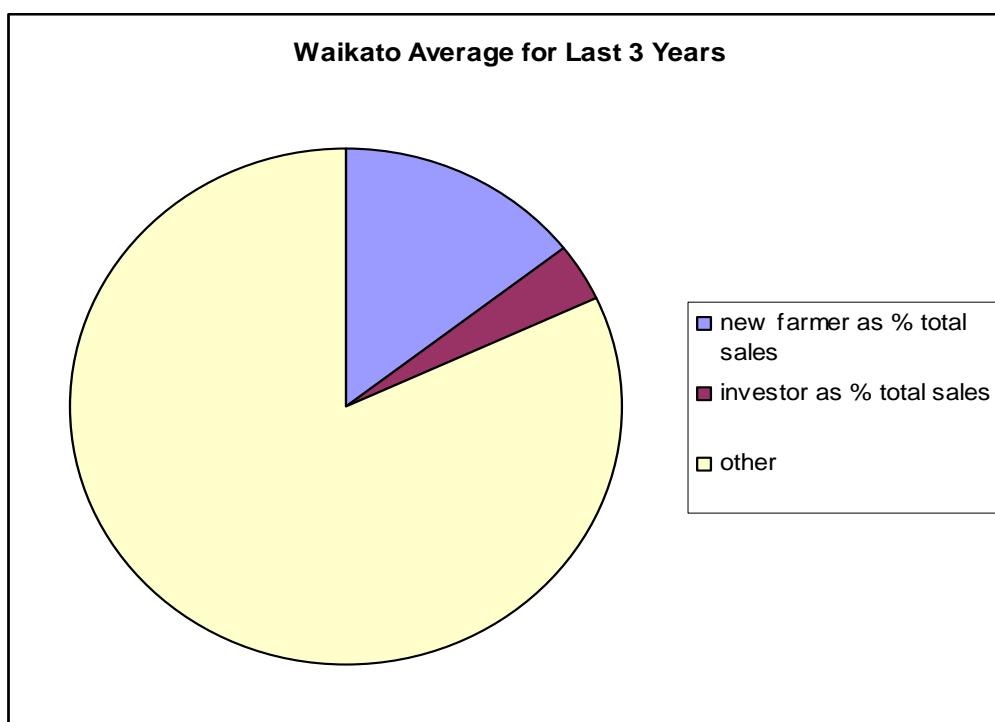


Table 5. Waikato Pastoral Land Analysis & New Zealand Grazing Price Change 1997 to 2007

Year	Waikato Sales Details			New Zealand Grazing*		Waikato	
	total sales	new farmer purchaser	business or investor purchaser	June Price Index	percentage change	new farmer as % total sales	investor as % total sales
1997	67	13	9	624	-0.7%	19.4%	13.4%
1998	92	20	9	652	4.5%	21.7%	9.8%
1999	149	45	9	616	-5.5%	30.2%	6.0%
2000	165	29	14	685	11.2%	17.6%	8.5%
2001	219	33	11	690	0.7%	15.1%	5.0%
2002	171	47	5	764	10.7%	27.5%	2.9%
2003	181	67	4	890	16.5%	37.0%	2.2%
2004	175	47	2	1159	30.2%	26.9%	1.1%
2005	147	37	3	1505	29.9%	25.2%	2.0%
2006	137	17	2	1769	17.5%	12.4%	1.5%
2007	120	8	3	1710	-3.3%	6.7%	2.5%
Total	1623	363	71	111.7%			
Average	148	33	6				

The New Zealand Grazing index is one of two indexes for pastoral land (the other being "fattening")

117. We note for tables 3, 4 and 5 there is a significant difference between total sales and the sum of the identified numbers for new farmers and business/investor purchasers (denoted in the graphs as "other"). As noted below anecdotal evidence would suggest the number of business/investor purchasers is greater than the tables indicate and we would expect an increase to be shown in the 2008 statistics. Notwithstanding this we expect the majority of the difference as noted will be existing farm owners trading or changing properties, as well as expanding existing holdings.
118. It is expected that the Dairy index and percentage will show a significant increase for the June 2008 year.
119. Anecdotal evidence would suggest that the business or off-farm investor purchasers for dairy units is much greater than these statistics would indicate for the last one or two years. It may be due to a time lag in gathering the statistics or the QV category of buyer examined by us does not include all of the property purchased by this investor type. We would expect, however, to see an increase in numbers for the June 2008 year.
120. The statistics suggest that, up to 2007 at least, new farmers had a much greater share of the market in Canterbury (building up to 58% in 2007) than in Waikato where new farmers declined from around 25 percent to 10 percent of annual market activity over the last three years. This is a little surprising given the relative capital investment requirements, however, it may be due to increasing numbers of new farmers relocating to the South Island (Canterbury & Southland in particular) onto new conversion land, and existing Waikato dairy farmers expanding operations at the expense of new farmers entering that market.
121. The statistics also suggest there is a significantly greater number of business or off-farm investors investing in the Waikato compared to Canterbury up to June 2007. The 2008 statistics may reveal an increasing trend in this investor type for both regions.
122. The overall picture expected for the dairy sector to June 2008 is a substantial increase in farm values, a decrease in affordability for new farmers (who are generally coming through from share milking), and an increase in corporate ownership.

123. It is difficult to discern any other particular trends in the statistics reviewed thus far but the following points can be made:
- There was substantially more sales activity in 2000 and 2001 and an associated increase in off-farm investors.
 - Dairy land values have increased, on average for New Zealand, by 79.9% for the 11-year period. We would expect this increase to be furthered substantially by the 2008 price index. This is on the basis of a significant increase in milk solids payout and very strong market activity from existing owners increasing holdings and company purchases that are enabled by substantial off-farm investor equity contributions.
 - We also note the grazing land index reflects a very high increase in land values over this period, but the values have retreated somewhat over the last few years, again in response to decreased revenue and very significant increases in operating expenses.
124. The table below demonstrates the trend in the increasing average property size for New Zealand, for pastoral farming and dairy farming properties. This trend reflects efficiency gains required for dairying enterprises and the increasing size of operations required to maintain an economic unit status.

Table 6. Table Including Trend in Average Property Area 1997 to 2007

Year	Pastoral Fattening Units			Dairy		
	total sales	Average Area (ha)	Average Price per ha	total sales	Average Area (ha)	Average Price per ha
1997	187	373	\$2,246	307	68	\$13,021
1998	189	312	\$2,258	330	79	\$11,053
1999	252	262	\$2,783	425	88	\$10,612
2000	352	317	\$2,772	393	95	\$11,134
2001	442	322	\$3,138	682	87	\$13,846
2002	281	347	\$3,660	494	87	\$14,512
2003	247	322	\$5,192	258	99	\$15,413
2004	225	313	\$6,247	217	114	\$16,100
2005	210	333	\$8,072	239	116	\$20,082
2006	153	380	\$7,631	173	135	\$22,667
½2007	85	416	\$7,627	178	139	\$23,872
Total	2,623			3,696		

125. There is no discernable trend in property area for the pastoral fattening units, however the increasing trend in average property size for dairy units reflected in the above table represents a very significant increase of 104% for the 10-year period. The average area of South Island dairy units in particular is likely to be much greater than the New Zealand average.

126. The following table considers the trend in sales activity and average values for both vacant and improved lifestyle properties in New Zealand.

Table 7. Trend in Sales Activity & Property Values 1997 to 2007

year	Lifestyle Vacant (June ½ Year)			Lifestyle Improved (June ½ Year)		
	total sales	Average Area (ha)	Average Price per ha	total sales	Average Area (ha)	Average Price per ha
1997	579	2.7	\$46,588	1,562	2.8	\$99,241
1998	554	3.1	\$39,812	1,416	2.7	\$99,749
1999	634	3	\$48,579	1,729	2.9	\$95,998
2000	980	3.1	\$45,337	1,476	2.8	\$100,056
2001	1,057	2.9	\$49,577	1,725	3	\$100,898
2002	1,594	2.6	\$60,637	2,687	2.7	\$120,301
2003	2,060	2.6	\$73,992	3,319	2.6	\$141,528
2004	1,988	2.5	\$74,400	3,137	2.5	\$172,843
2005	2,038	3.6	\$69,854	3,369	3.6	\$146,374
2006	1,544	3.9	\$73,326	2,866	3.5	\$170,207
½2007	2,007	3.5	\$89,262	3,336	3.4	\$206,440
Total	15,035			26,622		

127. The table demonstrates the generally well known increase in lifestyle properties that have been created and developed over this period in locations generally within commuting distance to Towns and Cities, although there are many examples of small lifestyle areas further from urban boundaries. The statistics will presumably include the re-sale of many improved properties that are included in the vacant sale numbers in earlier years.
128. From the point of view of new transmission line infrastructure development, given the need to link into existing substations or other points on existing routes, there will be an increasing focus on such proposed development by both the line developer and land owners as transmission lines can be expected to have a relatively greater impact on a lifestyle property.
129. Lifestyle property is distinct from small holdings, which are generally small uneconomic holdings with a pastoral farming use. We note that in the context of the Waikato Wind Farm project there is no lifestyle, or even small holdings, as we define them in this analysis. However it is possible that some landowners may be contemplating creating lifestyle subdivisions if planning consents could be obtained. Even so, the distance of the project from major towns or cities might suggest that there are other more viable areas for subdivision that are closer to urban boundaries.

7.0 ECONOMIC INDICATORS FOR THE PASTORAL FARMING SECTOR

7.1 GENERAL OVERVIEW

130. This section rounds out the discussion on trends and forecasts for the pastoral farming sector analysed from the QV data in the preceding section.

131. The following table sets out the trend in interest rates and the Primary Producers Index from 1997 to 2008.

Table 8. Interest Rates & PPI – 1997 to 2008

as at 30 June	90 day Bill Rate	OCR	PPI Inputs	PPI Outputs
1997	6.96%		0.10%	0.61%
1998	9.15%		1.31%	1.21%
1999	4.74%	4.50%	-0.19%	0.20%
2000	6.88%	6.50%	5.77%	4.12%
2001	5.82%	5.75%	7.96%	6.00%
2002	5.96%	5.50%	1.49%	2.33%
2003	5.23%	5.25%	-1.90%	-0.61%
2004	6.07%	5.75%	1.49%	1.94%
2005	7.03%	6.75%	4.47%	3.01%
2006	7.47%	7.25%	7.80%	5.50%
2007	8.32%	8.00%	2.70%	3.10%
2008	8.71%	8.25%	7.40%	6.10%

132. Since 2003 interest rates have been on the increase, driven largely by the Reserve Bank, to dampen inflationary pressures from a strong local economy, low unemployment and sharply higher dairy returns. There are now signs the New Zealand economy has entered a slowing phase or, in fact, a recession. It is anticipated fixed interest rates may decline before the end of 2008. Where potential property purchasers were intending to be, or are, relatively highly geared the increased borrowing rates will have impacted significantly.

133. The PPI indices demonstrate an increasing trend in both inputs and outputs. Not surprisingly the Outputs index in recent quarters is significantly influenced in relative terms by increasing dairy output prices, particularly milk powder, cheese and butter. The livestock and cropping outputs have all fallen over the last year. The inputs index has been driven up by costs including fuel and fertiliser which are used in all pastoral farming.

134. It is important to note that primary products is one of six index classes and fuels, electricity, and fertiliser (primary products direct inputs) is one of seven. These price indexes measure the changes in the levels of prices for outputs (prices received by producers) and inputs (cost of production excluding labour and capital costs).

135. The Rabobank⁸ review for New Zealand agriculture, prepared in the summer 2008, provides a very good commentary on the 2007 year and expected fortunes for 2008. The following is a précis of a number of relevant observations within the Rabobank report:

- (a) Dairy, deer and wine sectors enjoyed higher prices in 2007 on the back of improving global demand.

⁸ "Rabobank Global Focus, New Zealand's Agriculture in Focus, Summer 2008"

- (b) Sheep, beef and horticulture languished under various negative pressures, including soft global demand, excess processing capacity and a continually high New Zealand dollar.
 - (c) All sectors felt the full brunt of increasing input costs and interest rates, while contending with unseasonably dry conditions in some regions.
 - (d) The next year is expected to deliver improved prices with global demand exceeding global supply for agricultural commodities. Demand is expected to increase further, on the back of recent increases, through population and income growth, and a new demand from the bio fuels sector.
 - (e) Prices should remain higher but are likely to be volatile through the link with the energy sector.
 - (f) On the negative side, input prices will remain high or even increase further for items such as chemicals and fertiliser. The oil price has increased significantly this year to near record prices.
 - (g) New Zealand agriculture should look forward with optimism based on an emerging lift in pricing for agricultural commodities globally, based on higher food demand, the emergence of a new demand for agricultural products from the energy sector, and a limited ability for production to increase sharply in the short-term.
136. It appears the sheep and beef sector may now be in the early stages of significant restructuring through the processing industry, with the aim of increasing efficiency, meeting market demands, and improving farm-gate returns. The dairy sector has previously led the way with the establishment of Fonterra.
137. All of these factors combined may lead to an increase in land values. There is some evidence that this is occurring, already particularly noticeable in the dairy sector, and changing price trends will be evidenced in the spring.

8.0 IMPACT OF PROPERTY OWNERSHIP, VALUE, USE & ECONOMIC TRENDS ON COMPENSATION FOR TRANSMISSION LINE DEVELOPMENT

8.1 SUMMARY DISCUSSION

138. The following points summarise our view.

- (a) The majority of pastoral farmers in the foreseeable future will remain individuals, family partnerships, family Trusts or very closely held family owned companies. In the majority of these cases the “owner” resides on the property and either manages the property directly or employs a manager or sharemilker who may also reside on the property. These owners are typical of those represented by the survey and we see no apparent reason to consider their attitude to transmission lines being located on their property will be markedly different from the conclusions we have drawn from the survey. Refer to the next section.
- (b) The trend in increasing corporate ownership of pastoral land, more particularly in localities providing the opportunities that these investors seek, will mean that a proposed new transmission line development that is of any significance will likely traverse land in the ownership of a larger corporate body or some other off-farm investor(s). These investors look to derive a cash return and enjoy capital growth. The impact on capital growth and prospective development into more intensive land uses will be of concern and we would expect considerable effort, on their behalf, in ensuring compensation was adequate. The project is in an area that is well located in relation to major urban areas and is highly regarded for pastoral investment.
- (c) There is an evident increase in the intensity of land use in the more populated regions of New Zealand. Subdivision opportunities are now less restricted by prescriptive rules but approved on a more effects based regime, resulting in a proliferation of lifestyle blocks and a significant increase in demand. New transmission line development is generally undertaken to increase supply or improve reliability of supply to populated areas, and to link new generation to the network. The majority of this development will be between nodes that require lifestyle properties to be traversed to varying degrees. Lifestyle property owners and lifestyle land developers, as demonstrated by the survey and other evidence presented in this report, are more acutely aware of the perceptions surrounding transmission lines and, furthermore, the transmission line will very likely occupy a greater area of land relative to total land area. The increasing numbers of lifestyle blocks, or simply the increasing population in an area, will flow onto increasing difficulties in obtaining the necessary property rights for transmission line development. This will be reflected in project time and increased costs. However we reiterate that, within the context of the proposed Waikato Wind Farm transmission lines, there are no current “lifestyle blocks” as we define them in Table 7, being areas generally less than 4ha. At least for the time being, we consider that the project area is probably outside of the more populated regions and less likely to be the subject of lifestyle block developments.
- (d) Pastoral land values will likely continue to trend upwards, particularly in dairy, but also on the basis of an improving outlook for sheep and beef. This upward trend is already evident and we expect these to be confirmed with property transactions in the spring. Increasing land values will translate directly to increasing property right acquisition costs for new transmission lines.

9.0 SURVEY

9.1 PURPOSE

139. Our brief required an assessment of a sample of properties that have sold with transmission lines on them to see whether there was any value effect compared to properties without lines and, if there was, the extent of that effect and how it compares with compensation assessed via current practice i.e. the easement fee methodology.
140. The literature search findings set out in the following section include several value impact study results, but also acknowledge there are difficulties in isolating the value effects of transmission lines on rural land. Setting aside the major issue of sample size obtainable in New Zealand, it is acknowledged that many other geographical, physical, productive and development differences between properties will generally be the major determinants of the sale price of a property.
141. The identification and survey of appropriate land purchasers in our view will provide the most assistance for the purposes of this report i.e. as opposed to a study.

9.2 BASIS OF SURVEY

142. Using mapping software that covers all of New Zealand, which incorporates all of the Transpower NZ national grid, we overlaid with land transaction details, and identified:
- (a) Approximately 40 “transactions” that have occurred over the 18-month period from 1 January 2007 on land traversed by 220kV transmission lines. These include a majority of pastoral properties along with lifestyle or small holdings. In undertaking the survey we ultimately deemed it necessary to reduce the sample size to 26 completed transactions. It transpired that some transactions were not market transactions, and a number of land owners were simply unable to be located or contacted over the survey period. We also note some discussion with farm managers.
 - (b) We limited the survey to the last 18-months, as we opined this would provide a fair reflection of current sentiment. The restriction to 220kV lines was to ensure the survey was concentrated on those properties where the relatively greatest number of issues and associated value impacts could be observed.
 - (c) The transactions, therefore, represent all available transactions where the transmission line is of significance in terms of location and length within the property boundaries, and those interviewed all had a genuine interest in the transmission line issue.
 - (d) There is a very good geographic spread, which was required to obtain this available sample size, and includes land traversed by the following transmission lines:

Table 9. Transmission Line Survey Details

Identifier	Configuration	Location
CHC - TWZ	220kV_DCST_1960A	Christchurch - Twizel
ISL – KIK B	220kV_DCST_980A	Islington - Kikiwa
OTA – WKM A, B, C	220kV_SCST_640A (A&B) 220kV_DCST_1280A (C)	Otahuhu - Whakamaru
ROX – ISL A	220kV_SCST_640A	Roxburgh - Islington
BRK – SFD A	220kV_DCST_750A	Brunswick - Stratford
BRK – BPE A	220kV_DCST_1960A	Brunswick - Bunnythorpe
BPE – WIL A	220kV_DCST_1960A	Bunnythorpe - Wilton

Note: DCST = Double Circuit Steel Tower
 SCST = Single Circuit Steel Tower
 A = Amps
 kV = Kilovolts

143. A questionnaire formed the basis of the survey, which was mostly conducted by a visit to the property, or otherwise a roadside view and telephone discussion. The general questions for the land owner are summarised in the following table.

Table 10. Summary of General Questions for Land Owner

General Questions for Survey Questionnaire	
	Land Owner (our notes)
A	Land use
B	Owner occupier or absentee owner
C	Purpose or reason for acquisition e.g. new farm, additional land, retirement etc.
D	Highest & best use (if different from current use)
E	At what stage of the purchase process did you first notice the transmission lines, if in fact you did?
F	When you first saw the transmission line, what did you think?
G	Did you consider whether the line would impact on the general farm management of the property and if so what did you think those affects would be (e.g. irrigation, farm layout, cultivation etc?)
H	Were lines discussed at all during negotiation?
I	Did you have any concerns relative to employee reaction to the lines?
J	Did the transmission line influence the price you paid? If so, how was the price discounted? (If discounted, was the discount because of the towers, location of the towers, size of the easement, EMF, visual, or combination?)
k	Did you know of, and were you concerned about any associated issues attributable to transmission lines?

144. The survey was conducted by experienced Valuer's employed or retained by Crighton Anderson Property & Infrastructure Limited.

9.3 SURVEY FINDINGS

145. The comments from those surveyed are based on the purchase of properties where transmission lines are already established. This is the appropriate survey base from which to begin in assessing the impact of a proposed or new transmission line on land value.
146. In considering injurious affection, easement valuation methodology requires Valuer's to assess any impact on the value of the land, at a specified date, not to the land owner personally.

9.3.1 Pastoral Properties

147. It is apparent, and this is logical, that the transmission lines become relatively less of an issue to purchasers when demand for land in that particular sector or locality is strong. A very good example of this is the very strong market for dairy property at present. Any negative features of the transmission lines are apparently reduced in importance or not considered at all. In a weak market with low demand it is a reasonable assumption that a transmission line of significance on a property would likely feature more in a prospective buyers mind. We would need to undertake detailed site visits to determine the strength of the market in the subject location but based on our considerable recent experience in the wider region we would generally suggest this area has at least enjoyed a relatively strong market in recent times.
148. Most, but not all, purchasers noticed the presence of the transmission lines prior to negotiating the purchase price. In many cases either the vendor or real estate agent highlighted them to the purchaser.
149. Where the lines were some distance from the dwelling and cowshed (where applicable) any issues raised were primarily related to management. Location of the line within a property is, therefore, an important consideration: The following impact issues were raised:
- (a) Irrigation efficiency, but it was also noted that farm layout, contour and property shape has an impact on this.
 - (b) Cultivation in areas where towers or poles are located is less efficient and areas of land are lost to production.
 - (c) The location of new buildings may face greater restriction in terms of preferred location.
 - (d) There may be an effect on future subdivision potential.
 - (e) Interference with electronic devices such as pasture meters and computers near the lines, and noise when wet (corona effect).
 - (f) There were no evident problems with the employment of staff.
 - (g) Most indicated the preference would be to have no lines, in fact several described them as ugly; but the aesthetic impact of the transmission line was not regarded as a measurable value discount factor, unless there were a large number of highly visible tower structures.
 - (h) Where land was purchased primarily as support land for a dairy unit or large run property, the buyers were largely unconcerned about the presence of transmission lines, unless irrigation development potential was disrupted.
 - (i) If farm tracks are maintained by a transmission line owner, this is often regarded as a fair trade-off for the presence of the transmission lines.
150. Where transmission lines are in close proximity to the dwelling(s) and curtilage it is highly likely there will be an injurious affect. The comment that a purchaser would discount the value of a property for this circumstance was a common theme throughout those surveyed but none could advise to what degree or percent. We understand that in the context of the Waikato Wind Farm, the closest that a transmission tower goes to an existing dwelling is around 345 metres. This is not likely to cause a measurable injurious affect to the dwelling and curtilage.

151. Several described the presence of a transmission line as a good negotiating tool, although most acknowledged it did not make a significant difference, subject to the dwelling and curtilage qualification. Surprisingly, only one person commented directly on health issues as being a factor but it would be fair to assume that this is but one of the factors in the injurious affection view of the majority who would discount the property value because a line is in close proximity to the dwelling and curtilage.
152. Summarising for pastoral properties, there may be some impact on land value if there are large numbers of clearly visible tower structures on the property or where management of the property is significantly affected. Where a line is in close proximity to a dwelling it is highly likely injurious affection will be caused. No pastoral property buyers surveyed were able to suggest a discount in purchase price achieved although many stated the lines were a good bargaining tool.

9.3.2 Additional Comments from Lifestyle Property (i.e. less than 4ha) Purchasers

153. The general views of the smaller property purchasers are as expected, and are summarised as follows.
154. Transmission line conductors and structures do affect value; more so if they are close and can be observed from the dwelling and curtilage area. One estimated price discount was between 10% and 15% of total value where the property was impacted by lines only i.e. no tower structure(s). One would assume then, that the intrusion from a tower structure in particular would require a greater discount than this.
155. The presence of transmission lines will limit any future value premium that might otherwise be obtainable for property in the lifestyle block market, and will likely influence the marketability of a property. Our interpretation from these comments would suggest a requirement for relative price discounting to increase the buyer pool, and reduce the otherwise extended marketing periods.
156. The impact of a transmission line can be partly mitigated by strategic screening planting for the dwelling.
157. We note that the discount suggested for lifestyle properties is relatively consistent with our own research briefly referred to in the next section of this report.
158. We include this analysis bearing in mind that the lifestyle property owners we interviewed comprise a sample of properties that are each significantly smaller than the smallest property on the proposed Waikato Wind Farm transmission line. Nevertheless we would expect that the same view would be present to a greater or lesser extent on larger but uneconomic units which might also fulfil the function of say, a weekend or hobby retreat, where visual aesthetics were important to the prospective purchaser. We return to this point later.

9.3.3 Requirements of Compensation Assessment Methodology

159. In brief, compensation for pastoral properties must consider medium term market demand expectations for the class of land being assessed, the location of the line within the property, implications for farm management and development potential, and the impact on the dwelling and curtilage. The impact on lifestyle blocks may provide useful guidance for assessing dwelling and curtilage impact.
160. For lifestyle properties, where it is more likely a line will be in close proximity to the dwelling and curtilage area, there is more likely to be market evidence that can be analysed to support whichever compensation assessment methodology is adopted.

10.0 REVIEW OF OTHER INFORMATION SOURCES

10.1 LITERATURE SEARCH

161. We have reviewed a number of research papers on the impact on land value from high voltage overhead transmission lines (“HVOTLs”). The majority of the research papers reflect results and opinions through the 1970’s to early 1990’s. There appears to be relatively limited reported research for the last ten years.
162. Understandably there is a lot of data and associated analysis available, but with an emphasis on residential environments. We have endeavoured to filter the information into a summarised format relevant to the purpose of this report.
163. A paper prepared for The Edison Electric Institute Siting & Environmental Planning Task Force⁹ by Dr. Cynthia Kroll and Thomas Priestly PhD in July 1992 provides a very useful review and analysis to identify and describe the research that had been conducted between 1975 and 1990, and evaluates the strengths and weaknesses of the research and suggests the type of future research that could be undertaken to build on that existing.
164. We have summarised the general summary of the findings in the Kroll paper that are relevant to this report, as follows:
- (a) Overhead transmission lines have the potential to reduce the sales price of residential and agricultural property through the direct effects of an easement on the property or through the impacts on neighbouring or nearby property.
 - (b) The effect, especially for single family homes, is generally small (from 0% to 10%) but has been estimated to be greater than 15% in some specialised cases in rural areas.
 - (c) Other factors e.g. neighbourhood (location) factors, square footage, size of lot, irrigation potential, are much more likely than overhead transmission lines to be major determinants of the sale price of a property.
 - (d) Effects are most likely to occur to property crossed by or immediately next to the line, but some impacts have been measured at longer distances. This varies from case to case.
 - (e) Positive impacts may also occur, where right-of-way is attractively landscaped and/or developed for recreational use. Again, this is a case-by-case issue.
 - (f) Impacts may be greater for smaller properties than for larger properties. This may be because it is more difficult to design the property use to minimise impacts on the smaller lots.
 - (g) Impacts may be greatest immediately following construction of a new line (or a major increase in size of an older right-of-way), diminishing over time. But impacts will last several years, at least, affecting property owners who sell within the first few years following transmission line construction.
 - (h) Studies up until 1990 provide little evidence that tower height and line voltage are directly related to level of impact. However, because of methodological data limitations, the issue has not been systematically explored.
 - (i) Timing of ownership may be significant. Impacts may be viewed differently by a developer with vacant land, by an owner who held the property prior to line construction, and by an owner who purchased the property when the power line was already in place.

⁹ “The Effects of Overhead Transmission Lines on Property Values: A Review and Analysis of the Literature”, July 1992

165. Appraiser studies examined in the Kroll paper note that about half the studies, for both residential and agricultural land, concluded the transmission line had no impact on value. For residential properties the range in effect was about 5% to 10% for homes near transmission lines. Agricultural land sometimes showed no negative effect. Ball (1989)¹⁰ found a 2% disadvantage overall, and a 44% decrease in land value within the right-of-way (easement) area. Effects vary widely in Minnesota (0% to 20%) depending on the amount of disruption to farm operations and irrigation. An Oregon study of grazing land (1983) found loss was limited to the actual amount of land lost to towers and roads, but owners were concerned about losses if their land had residential development potential or if the lines disrupted irrigation potential.
166. Statistical studies examined in the Kroll paper found difficulties with methodology, sample size, sale date and other adjustments required for variables in an econometric analysis. Boyer (1978)¹¹ sampled agricultural land in two study areas for 1,000 observations. This was a simple chi-squared test which revealed fewer sales occurred near the 500kV line, sales prices were 16% to 29% lower in zones with transmission lines. Woods Gordon (1981)¹² utilised the Boyer data in multiple regression, which demonstrated widely varying impacts.
167. A number of research papers prepared subsequent to 1990 have been considered. The majority of these are based on US research; however there is New Zealand research completed in 1994.
168. Callanan (1995)¹³ reports on a 1994 case study to examine the effect of HVOTLs on property values in the suburb of Newlands, Wellington. The study used econometric analysis techniques to determine a suitable multiple regression equation to quantify the effects of the HVOTLs on property values.
169. Different regression models were tested for the distance to the nearest transmission line and pylon, as well as house area and lot size. The different models tested showed an inconsistent result on transmission lines but a consistent result was obtained on the distance to nearest pylons. The statistic was significant.
170. The following table schedules the value reduction percentage v distance from a pylon.

Table 11. Callanan (1995) – Value Reduction % / Distance to Pylon

Distance to Pylon	\$ Value Reduction	% Value Reduction
Distance at 100 metres	\$3,551	2.7%
50 metres	\$7,102	5.4%
30 metres	\$11,836	9.1%
20 metres	\$17,755	13.6%
15 metres	\$23,673	18.2%
10 metres	\$35,510	27.3%

171. The table indicates a reduction in house prices of around 20% to 25% of the average sale price for houses very close (10m to 15m) to the pylon and dropping off to 2% to 3% at 100 metres.

¹⁰ "A Study of Economic Effects of High Voltage Electrical Transmission Lines on the Market Value of Real Properties" Ball, Thomas A. 1989

¹¹ "The Socio-Economic Impacts of Electric Transmission Corridors: A Comparative Analysis" Boyer, Jeanette C, Bruce Mitchell, and Shirley Fenton et al. 1978

¹² "Study on the Economic Impact of Electric Transmission Corridors on Rural Property Values: Final Report" Woods Gordon (Management Consultants] 1981

¹³ "The Effect of Transmission Lines on Property Values" Judith Callanan and Prof R V Hargreaves, reported in the New Zealand Valuer's Journal June 1995

172. While this study is based on residential value reduction impacts it is noted that in the case of the proposed Waikato Wind Farm transmission line, the closest distance to a tower is estimated at around 345 metres on the external line. It is unlikely that the line would cause any measurable injurious affect to the dwelling and curtilage from that distance.
173. That said, the concluding comments to the study noted that these results are also unique to the Newlands area. It is highly likely that a different result would be obtained in a flat area with no views, or where the housing is in the higher price range.
174. Of particular importance we note the article states that the health effects of Electro Magnetic Fields from HVOTLs have been described in the three papers referenced and are generally inconclusive. From our relatively recent involvement in a case heard by the Environment Court¹⁴, where it was demonstrated there is still no conclusive evidence on this health issue, it is the “perception” of the land owner or potential purchaser of this health issue that will influence the value of the land and, hence, the assessment of injurious affection from HVOTLs. This notion is also referred to in the discussion on the Criscuola case below.
175. A paper by Michael Rikon, “Electromagnetic Radiation Field Property Devaluation” published in The Appraisal Journal in January 1996, considered the “Criscuola”¹⁵ case. The Criscuola property was to have a 345KV transmission line requiring a 160ft corridor across it. The claimant required compensation for the easement plus consequential damages to the balance of the property arising from the public’s perception of health risks associated with high voltage power lines i.e. “cancerphobia”.
176. The Court of Appeals, New York States highest Court, held that there should be no requirement that the claimant must establish the reasonableness of a fear or perception of danger or of health risks. Whether the danger is scientifically proven or not, it is irrelevant to the central issue of its market value impact.
177. The “before” and “after” approach will capture any impact of EMF (“cancerphobia”) on value. This may have a negative impact on value in the minds of prospective purchasers, causing a loss of demand, and possibly a consequential loss of market value, and even if a prospective purchaser were certain that there was no risk to health he or she may not acquire the property if they have the view that there will be limited resale prospects. Claimants should have to connect the market value diminution of the property to the particular factor in the same manner as other factors impact on value. The “before” and “after” approach will capture the total damages caused by all factors associated with the transmission line. It seems logical that this factor is clearly evidenced in the residential market particularly, and the residential studies. The health effects, if any, remain unresolved but it is apparent in the market that there is a perception of risk to health and some people will not purchase a property for this reason.
178. The paper also refers to an article by Ron Marx in November 1993; where he references a public poll by Cambridge Reports/Research showing that 63% of all adult Americans were aware of the EMF issue, up from 31% in 1989.
179. A very helpful paper summarising the effects of power lines and perceptions of health risks and the influence on residential property value was prepared by Pitts and Thomas¹⁶ and published in The Appraisal Journal in autumn 2007. The paper briefly summarises historical research and recent interviews with appraisers and real estate agents in central California.
180. The following points are extracted from the paper to provide an overview of the impact of high voltage overhead transmission lines on residential property:

¹⁴ “Fernwood Dairies Limited v Transpower New Zealand Limited”, Environment Court, Christchurch, C171/2006

¹⁵ “Criscuola v Power Authority of the State of New York”, 1993, New York State Court of Appeals

¹⁶ “Power Lines and Property Values Revisited”, Jennifer M. Pitts and Thomas O. Jackson, PhD, MAI, 2007

- (a) Many studies indicate no significant effect on value, however an increasing number of studies do show a small diminution of between 1% and 10% of property value, which is attributed to visual unattractiveness, potential health and safety hazards and disturbing sound. The impacts diminish as distance from the lines increase, and disappear at a distance of 200 feet (approximately 60 metres). Where views of the lines and towers are completely unobstructed, the negative impact can extend to a quarter of a mile (approximately 400 metres) but if they are at least partially screened any negative effects are reduced considerably.
 - (b) Value diminution attributable to tower line proximity usually decreases over time, disappearing entirely in 4 to 10 years.
 - (c) Negative impacts on lots adjacent to or with a direct view of a tower or pylon may be slightly greater than impacts on lots further from the tower. This is most likely because the visual obstruction from a tower is more substantial than that from the lines themselves. The value diminution may not decrease with time where there is a direct view of a tower.
 - (d) Higher end (higher value) homes are generally more sensitive to impacts than lower end (lower value) homes.
 - (e) Approximately half the realtors and appraisers interviewed said they had not observed negative impacts on either residential sale prices or days on the market due to the presence of the power lines.
 - (f) According to these realtors and appraisers the major factors affecting sale price and marketability of residential properties include: location, the general economy, interest rates, inventory, and neighbourhood amenities.
 - (g) The realtors and appraisers that had observed negative impacts on homes directly adjacent to a power line right-of-way indicated price discounts between 2% and 7% for adjacent homes. For homes not directly adjacent but with a view of the power lines, the price impact was estimated between 0% and 5% depending on the view and proximity. On average, homes adjacent to, or with views of, power lines could anticipate an increase of 0 to 60 days on the market.
 - (h) The price and marketability effects depend on market conditions at the time of sale. The presence of power lines can be viewed as a negative externality, which is evident in a slow market. When demand is strong these effects diminish. The price effects depend on property characteristics and market conditions. In a slow market these homes are harder to sell but provide great investment opportunities because any price effects diminish and may disappear when the market picks up.
 - (i) The impact on value will also be influenced by buyer preference. There may not be a market consensus because some buyers may consider the power lines a nuisance and an eyesore, while other buyers do not.
 - (j) The paper concludes that the impacts on residential property are varied and difficult to measure. The impacts from the power lines, as well as other negative externalities, depend on many factors, including market condition, location, and personal preference.
181. Virtually all of the discussion and references from the literature search in this section is related to residential property studies, analysis and survey. The difficulties in value impact measurement alluded to in these papers are exacerbated for rural properties because of the many additional property factors and externalities involved in the valuation of rural property. The paucity of rural studies confirms this.
182. In the context of the Waikato Wind Farm project it is therefore difficult to draw any reliable conclusions from the literature study. The passage of the transmission line is across rural farmland, and the smallest properties on the proposed route are far larger than the residential property analysis on which

the majority of the forgoing literature analysis is based. There are some study results for agricultural land but this is not considered to be reliable.

183. The analysis does however assist with the establishment of general principles for consideration of the dwelling & curtilage component of both rural and lifestyle properties where much of this information is relevant. Indeed, it is our opinion that the information or benchmarks established for value impact on residential properties in the literature discussed in this section likely provides a lower benchmark for rural and lifestyle properties in New Zealand. In the majority of cases the value rural and lifestyle owners place on the residential component of their rural or lifestyle property may be greater than the residential urban counterpart given the choice of environment in which they choose to live. Such an environment incorporates a requirement for an unfettered place in which to reside. This is also of interest to the off-farm investor but there may be a greater focus for those who intend to reside on the property.

10.2 CAPI ANALYSIS

184. CAPI has completed several small analyses into the impact of transmission lines on lifestyle properties. We would not present these as “certifiable” studies or surveys, but they have been utilised as benchmark information in our compensation assessment work.
185. The following brief table schedules an approximate land value impact range from a small number of observations in 2006 within a relatively high value lifestyle subdivision in the Manukau, region with three 220kV transmission lines in the area.

Table 12. CAPI – Land Value Reduction % / Distance to Pylon & Line

Distance to Pylon & Line	Line Only	Pylon & Line
0m to 35m	15% to 20%	25% to 35%
35m to 100m	10% to 15%	25% to 35%

186. These are quite broad ranges that clearly demonstrate an effect on value out to 100 metres from the transmission lines only, and an increased effect if a pylon is within these distances. It should also be noted that these observations are for small 0.5ha to 0.6ha blocks so it is not surprising these land value reductions have occurred as the effective corridor may be a relatively large component of total property area.
187. The reduction percentages will incorporate ALL effects of the transmission line including the impact of EMF, perceived or otherwise (refer discussion relating to the “Criscuola” case earlier). The relatively high percentages are also consistent with the notion that higher end properties are more sensitive than lower end properties, as set out earlier.
188. Other analysis we have completed for other subdivisions in differing locations is broadly consistent with these observations but, notably, the percentage does appear to reduce for lower quality subdivisions.
189. Again, we note that these percentages are probably of limited value in determining potential value loss for the range of properties that are present on the proposed Waikato Wind Farm transmission line, but may provide relevant benchmarks for the dwelling and curtilage component of a pastoral property value.

11.0 CONCLUSION

190. To conclude we advise the reader to refer to section 4.0 for our opinion on the valuation and transmission line compensation issues raised by Contact Energy. Section 5.0 details an appropriate valuation methodology, and the remaining sections and appendices provide our key analysis of all of the information considered in support of our opinion.

Yours faithfully
Crighton Anderson Property & Infrastructure Ltd



T A Crighton
Director
B.Com (Ag) VFM, FNZIV, FPINZ, B.Com, CA

Appendix I

Additional QV Data Analysis



Canterbury Sale Transactions 1997 to 2007

year	Arable			Dairy			Pastoral			Horticulture			Forestry			Lifestyle		
	total sales	business or		total sales	business or		total sales	business or		total sales	business or		total sales	business or		total sales	business or	
		farmer purchaser	investor purchaser		farmer purchaser	investor purchaser		farmer purchaser	investor purchaser		farmer purchaser	investor purchaser		farmer purchaser	investor purchaser		farmer purchaser	investor purchaser
1997	56	2	0	41	2	2	146	12	6	17	1	3	1	1	0	886	5	9
1998	60	13	3	45	8	1	125	34	11	19	3	2	3	1	2	848	16	4
1999	39	6	3	69	14	4	174	63	4	21	6	1				1048	21	5
2000	62	3	0	103	12	6	192	47	5	19	2	1	1	0	0	882	24	0
2001	87	4	2	104	11	18	267	93	16	19	7	1	4	1	1	1127	18	5
2002	69	12	0	62	20	0	239	135	8	35	17	2				1343	33	2
2003	63	10	1	52	10	1	196	97	2	31	14	0				1712	31	3
2004	72	11	0	53	13	3	239	69	7	29	6	1	1	0	0	1651	14	0
2005	78	25	3	61	15	6	223	83	13	23	10	6				1664	20	7
2006	50	27	2	47	18	1	208	115	8	29	14	2				1585	19	0
2007	86	35	1	31	18	0	264	171	6	30	20	2				1496	15	1
Total	722	148	15	668	141	42	2273	919	86	272	100	21	10	3	3	14242	216	36
Average	66	13	1	61	13	4	207	84	8	25	9	2	2	1	1	1295	20	3
% of total		20%	2%		21%	6%		40%	4%		37%	8%		30%	30%		2%	0.3%

Waikato Sale Transactions 1997 to 2007

year	Arable			Dairy			Pastoral			Horticulture			Forestry			Lifestyle		
	total sales	business or		total sales	business or		total sales	business or		total sales	business or		total sales	business or		total sales	business or	
		farmer purchaser	investor purchaser		farmer purchaser	investor purchaser		farmer purchaser	investor purchaser		farmer purchaser	investor purchaser		farmer purchaser	investor purchaser		farmer purchaser	investor purchaser
1997	There are no arable properties			221	23	10	67	13	9	28	11	4	2		1	1331	17	14
1998				288	73	17	92	20	9	17	4	0	4			1170	21	8
1999				288	77	13	149	45	9	49	9	2	7	2	3	1477	36	11
2000				361	64	24	165	29	14	49	14	0	3	1	2	1139	20	10
2001				544	75	50	219	33	11	47	8	1				1291	13	2
2002				404	102	23	171	47	5	71	6	9	2			1974	17	5
2003				343	87	9	181	67	4	105	9	13				2880	25	2
2004				322	83	12	175	47	2	78	7	11				2680	16	4
2005				300	67	18	147	37	3	58	2	1				2288	13	5
2006				259	26	6	137	17	2	54	1	1				1891	2	1
2007				204	23	4	120	8	3	40	1	2				1672	1	1
Total	0	0	0	3534	700	186	1623	363	71	596	72	44	18	3	6	19793	181	63
Average				321	64	17	148	33	6	54	7	4	4	2	2	1799	16	6
% of total					20%	5%		22%	4%		12%	7%		17%	33%		1%	0.3%

Appendix II
Survey Properties



Surveyed Sales within last 18 months with line on property

Sale	Address	Location	Category	Farming	Lifestyle	Sale Date
CHC - TWZ						
2	Mainwarings Rd	Rakaia	Arable Irrigated	X		Sep-07
3	Rules Road	Pendarves	Arable Irrigated	X		Jan-08
5	Boundary Rd	Willoughby	Arable Irrigated	X		Nov-07
6	Chatmos Road	Willoughby	Arable Irrigated	X		Aug-07
ISL - KIK B						
9	Mandalea Rd	Rangiora	Lifestyle		X	Dec-07
11	Copples Road	Sefton	Lifestyle		X	Sep-07
OTA - WKM A,B,C						
17	Butcher Road	Sth Auckland	Lifestyle		X	Aug-07
18	Lee Martin Road	Waikato	Lifestyle vacant		X	Oct-07
19	Orini Road	Waikato	Dairy	X		Oct-07
21	Aotearoa Road	Otorohanga	Pastoral	X		Dec-07
22	Mangawhio Road	Otorohanga	Pastoral	X		Dec-07
45	Kopuku Road	Waikato	Dairy	X		May-07
46	Whitikahu Road	Waikato	Dairy	X		Jun-07
47	Taniwhai Road	Waikato	Dairy	X		Jun-07
ROX-ISL A						
25	Earl Road	Timaru	Pastoral	X		Feb-08
26	Discoll Road	Timaru	Pastoral	X		Dec-07
29	Woolshed Valley Road	Waimate	Pastoral	X		Aug-07
30	Whitneys Road	Waimate	Pastoral	X		Jun-07
33	Letts Gully Road	Central Otago	Lifestyle		X	Dec-07
34	SHW8	Central Otago	Pastoral	X		Aug-07
39	Thompsons Track	Ashburton	Pastoral	X		May-07
41	Tokarahi - Duntroon Road	Waitaki	Pastoral	X		Jan-08
42	Rolling Ridges Road	Timaru	Pastoral	X		Aug-07
BRK - SFD A						
38	SHW3	Wanganui	Pastoral	X		Nov-07
BRK - BPE A						
37	Makino Road	Manawatu	Pastoral	X		Mar-08
BPE - WIL A						
36	Millricks Road	Palmerston N	Pastoral	X		Dec-07

Appendix III

Basic Requirements for Methodology

Compensation Considerations for Transmission Lines

Key Principles and Relevant Case Law



1.0 REQUIREMENTS FOR COMPENSATION METHODOLOGY

1.1 REQUIREMENTS OF METHODOLOGY

1. The methodology adopted to assess compensation must consider all of the matters that may give rise to injurious affection and consequently reflect the likely diminution in value of the property due to the proposed transmission lines. The methodology must be cognizant of the information provided by the survey undertaken by CAPI, the literature search and discussion on relevant observations from the papers reviewed in detail, and our own observations and analysis of the impact of transmission lines on residential and lifestyle properties.

1.2 PRINCIPLES

2. Compensation assessments, irrespective of the methodology adopted, should be carried out in accordance with the principles established in case law from appropriate jurisdictions e.g. New Zealand, Australia and the United Kingdom in particular.
3. The provisions of Part V of the Public Works Act 1981, if fully considered and applied in accordance with the requirements of an appropriate methodology as described above, and in accordance with the principles established in relevant case law, will address all relevant categories of loss. It must always be borne in mind that an estimate is just that, an opinion, a probable price, or an approximate judgement of amount. It is not possible to fully “test the market” at the same date a compensation assessment is required.
4. These matters are detailed and discussed in the following section.

2.0 COMPENSATION CONSIDERATIONS FOR TRANSMISSION LINES

2.1 PUBLIC WORKS ACT 1981

5. The quantum of compensation for transmission lines and associated easement requirements is generally assessed in accordance with the provisions of Part V of the Public Works Act 1981 (“PWA”) and consideration of the principles established in relevant case law.
6. In particular the following sections of the PWA are key:

Table 13. Key Sections of the PWA

Section	Relevance
Sec 62	Provides for the assessment of compensation for land taken and/or injuriously affected. The assessment to be on a “before” and “after” basis.
Sec 64	Requires that compensation be assessed with reference to the effect of the whole of the work on the land retained and not only to the part situated on the land taken or acquired from the subject property.
Sec 66	Provides for compensation for disturbance.
Sec 68	Where a business is located on the land taken the owner is entitled to compensation for business loss.

7. The 'before' and 'after' basis is consistent with Section 62 (1) (b) (ii)

62. Assessment of compensation-(1) The amount of compensation payable under this Act, whether for land taken, land injuriously affected, or otherwise, shall be assessed in accordance with the following provisions...

(b) The value of land shall, except as otherwise provided be taken to be that amount which the land if sold in the open market by a willing seller to a willing buyer on the specified date might be expected to realise, unless...

(ii) Only part of the land of an owner is taken or acquired under this Act and that part is of a size, shape, or nature for which there is no general demand or market, in which case the compensation for such land and the injurious affection caused by such taking or acquisition may be assessed by determining the market value of the whole of the owner's land and deducting from it the market value of the balance of the owner's land after the taking or acquisition:

2.2 LINZ STANDARDS

8. We also refer to the general principles described in the Land Information New Zealand Standard ¹⁷ to ensure consistency with the LINZ requirements of its accredited suppliers. The key principles to emerge from a review of this Standard are summarised in the following table.

Table 14. LINZ – Accredited Supplier Standard 2: Key Principles

Issue	Note
Underlying Principles	<p>Principle of Equivalence – Compensation paid to the owner should be equivalent to the loss suffered. This is the objective monetary value of the asset, at the time of acquisition. Owners should be placed in a financial position as near as possible to that which they were in before the construction of the public work.</p> <p>Principle of Liberality – The final compensation to be paid should give the owner the benefit of any reasonable, justifiable or genuine doubt. Note that this does not alter the principle of equivalence or the test of value.</p>
Amount of Compensation	The owner of land taken for a public work must be compensated to the full extent of the provisions of the PWA, however owners must take all reasonable steps to minimise loss.

2.3 COMPONENTS OF A CLAIM

2.3.1 Summary

9. Section 62(1) provides for the assessment of compensation payable under the PWA for:

- (a) Land taken;
- (b) Land Injurious affected; and
- (c) Other (being other aspects of a claim for compensation covered in section 66 through to section 76 of the PWA).

2.3.2 Detailed Components of a Claim

10. For the construction of new transmission line, compensation can be conveniently considered at the

¹⁷ Land Information New Zealand: "Accredited Supplier Standard 2; Assessment of Compensation"; 1 July 2002

component level scheduled in the following table.

Table 15. Detailed Components of a Compensation Claim

Components	
	Land Taken
(a)	The easement interest or fee simple interest in land acquired for the works.
	Injurious Affection
(b)	The loss in value of the land adjoining the transmission line i.e. outside the easement or fee simple interest in the land area acquired.
(c)	Any permanent disturbance to the use or management of the property resulting from the presence of the transmission line.
	Other
(d)	Depending on the use of the land acquired, there may be additional compensation for business loss and costs associated with relocation of land owners to other land.

2.3.3 Injurious Affection

11. Injurious affection under the PWA is expressly required to be injurious affection to the land. It is linked to physical interference with the land, or loss in enjoyment or value of the land. It does not relate to effects on the land owner personally. Injurious affection is not defined in statute but, in general terms, it may be described as arising where there is a permanent adverse effect on the owner's land which is substantial enough to affect the owner's use and enjoyment of the land and, hence, value of the land.
12. Land is "injuriously affected" only when the damage is one which would have given a right of action if it had not been authorised by statute.

2.4 INJURIOUS AFFECTION & THE FERNWOOD DECISION

13. In the "Fernwood Dairies v Transpower New Zealand", C171/2006, Environment Court, Christchurch ("Fernwood"), decision the Court held "injurious affection" to mean:

"Adversely affected" or "harmed" "any direct, non trivial effects on land",
"measurable effects on land value"
14. For the benefit of this report it is worth expanding more on the Fernwood case as, at the time of the decision, it was the first case on the meaning of section 23 (3) Electricity Act 1992 within which "injurious affection" is tested. Under section 23 (3) (b) an owner of existing works can carry out any replacement or upgrade as maintenance as long as the land will not be injuriously affected as a result of the replacement or upgrade.
15. The 661 hectare dairy property is spray irrigated with 3 centre pivots and K-Line, is held in 12 titles including two 4 hectare titles, and the 220kV line has 8 pylons and runs for 2.7km across the land. There were 3 conductors hung from large insulators attached to cross-arms near the top of each pylon. Houses on the 2 small titles are within 100m of the conductors on the line and these blocks could be sold separately from the dairy unit.
16. Transpower proposed to strengthen tower foundations on 4 towers, replace all existing conductors, insulators and associated fittings; new components including goat conductors and composite insulators will be added. There is also the addition of three conductors to convert the line from simplex to duplex.
17. Ground clearances for all spans will increase, the duplex conductors will extend 23cm outside the vertical alignment of the existing outside single (simplex) conductors, and new conductors will be more tensioned than the existing conductors providing a decrease in sideways conductor swing from that of the existing conductors. The voltage will not change, but the current will rise from 814 to 1759 Amps.

18. Fernwood alleged that these improvements, being an upgrade, by Transpower in this case will cause the following injurious affects:
- (a) Visual effects
 - (b) EMF effect on health of occupiers and workers
 - (c) Interference with farm operations (summarised) –
 - damage could arise from contact between this line and an 11KV line owned by Alpine Energy
 - clearances and restricting use of plant and vehicles
 - interference with electronic equipment
 - increased induced voltages in fences and buildings close to the line
 - (d) Potential for higher fault level voltages increasing probabilities of electric shock
 - (e) Decrease in land value arising from (summarised) -
 - public perception of the risks associated with transmission lines (“stigma effect”)
 - concerns about increased power and adverse consequences for the management and development of the land
19. The range of alleged areas causing injurious affection is very comprehensive and can be readily adapted or considered in the light of a potential claim for injurious affection from a new transmission line.
20. The key points, in our opinion, within this decision in terms of the consideration of injurious affection for a new transmission line are set out in the following paragraphs. It must be remembered that the Fernwood case is based on the upgrade of an existing transmission line and it was the incremental change that the Court was interested in.
21. In terms of an existing line, the decision clarifies that, in Fernwood, Transpower has a statutory interest in the land under section 22 of the Electricity Act for two reasons, because Transpower has exclusive possession of the land on which its pylons stand and of the airspace occupied by its conductors.
22. As a consequence Transpower holds at least the following implied rights:
- (a) An implied statutory right to occupy exclusively the space of any pylons and other structures on (or in) the ground, and the space occupied by conductor wires both at rest and when oscillating (but not the space above or below them)
 - (b) The right to operate passively by conveying or transmitting electrical energy along the conductors, the right to create electric and magnetic fields around the conductors.
23. Also the following express rights:
- (a) A right to maintain
 - (b) A right to upgrade – provided there is no harmful effect
 - (c) A right to inspect
 - (d) The right to operate actively
 - (e) The right not to have their “other” rights derogated from.
24. Para 164 in the decision reiterates that the proceeding was about two sets of property rights, not one. Transpower has a statutory right to exclusively occupy some of the land and carry out its activities, provided, among other things; it does not reduce the value of any land held by Fernwood.

25. Although not part of the injurious affection considerations the claim for the value of land taken by way of an easement was not required to be directly addressed in Fernwood but is referenced in two areas. First, the claim for encroachment (if successful) on the land from an extension of line width would have impacted on the area of land required for the line, and therefore, for an easement. Second, the decision refers to a “statutory interest” in the land and the express rights that this interest confers on Transpower. These points demonstrate the requirement to fully understand the respective rights and obligations of each party to an easement in gross for a new transmission line. This agreement will also specify the width required to contain the transmission line.
26. Stigma, perception, public fear or distaste around transmission lines may cause a loss in value of land near the lines. This is an important consideration for all compensation assessments and the decision references a number of cases.
27. In “Minister of Works and Development v Scott” (1967) NZLR 668:
- If possible purchasers are prejudiced against a property traversed by power lines the price likely to be secured on the sale of the property is likely to be less, and the value of the property is consequently reduced.
28. In the decision of the New York Court of Appeals in “Criscuola v Power Authority of New York”¹⁸
- The issue in a just compensation proceeding is whether or not the market value has been adversely affected. This consequence may be present even if the public’s fear is unreasonable. Whether the danger is a scientifically genuine or verifiable fact, that should be irrelevant to the central issue of its market value impact. Genuineness and proportionate dollar effects are relevant factors, to be sure, but in the usual evidentiary framework. Such factors should be left to the contest between the parties’ market value experts, not magnified and escalated by a whole new battery of electromagnetic power engineers, scientists or medical experts.
29. The rationale behind that is that the reasonableness of the public’s fear is irrelevant: if the public’s fear depresses market value, then the loss should be compensated for. However, the Criscuola decision does establish that there must be credible and tangible evidence to establish that there is a loss in value, not just a suggestion that there may be a loss in value.
30. Electro Magnetic Fields (“EMF”) is perhaps the best example of public perception and fear, or “cancerphobia”. Fernwood revealed different opinions from different experts, and this uncertainty was summarised in a fact sheet from the World Health Organisation. International Guidelines (“ICNIRP”)¹⁹ were accepted by the Court as an appropriate benchmark for acceptable levels. Again this is a perception issue and, along with all other perceptions, from an injurious affection point of view the reasonableness of the public’s fear is irrelevant, but there must be credible and tangible evidence to establish that there is a loss in value.
31. Visual effects i.e. the aesthetic impact on the value of land, must be considered for assessment of injurious affection as effects on the land and its value, not simply adverse effects on the land owner or occupants views. In “Minister of Works and Development v Scott” (1967) NZLR 668:
- It is true that the reasons which may influence purchasers in relation to what they will pay for land may be personal, but once it is decided that a particular property has been depreciated in value the loss to the owner is a loss in respect of his land, and not just a personal loss.

¹⁸ 81 N.Y. 2d 649, 621 N.E. 2d 1195, 602 N.Y.S. 2d 588 (1993]

¹⁹ International Commission for Non-Ionising Radiation Protection

32. Each case must turn on its particular facts. For example the visual impact on a small allotment will be greater than the impact of an equivalent line to the rear of a much larger property. It is not enough to assert that there will be a visual effect. The correct question is whether any visual effect is sufficiently large and unreasonable to cause a change in land value.
33. Irrigation, where relevant, is likely to be an important issue on pastoral and arable properties.
- (a) Ground clearances need to provide for spray irrigators. If not, then areas may not be able to be irrigated or will be less efficiently irrigated. (Clearance is also relevant for other plant and machinery).
 - (b) Magnetic field effects on power cables and computer systems should be considered, but it is unlikely there would be any adverse effect.
 - (c) Electric field effects are unlikely to affect pivot irrigators (earthed at pivot) but other spray systems should be reviewed.
34. The probability of electrocution or other damage from shocks is extremely remote.
35. Compensation methodology should be based on a “before” and “after” approach regardless of whether a comparative sales basis, an easement fee basis, or a piecemeal basis is adopted to achieve this.

3.0 KEY PRINCIPLES & RELEVANT CASE LAW

3.1.1 General Principles that must be observed in compensation assessment

36. The term “full compensation” (refer Principle of Equivalence below) is used in section 60 of the PWA and is generally taken to mean putting the owner in a financial position as close as possible to what he or she would have been in if the acquisition had not taken place.
37. Further principles set out in Part V of the Act include:
- (a) No allowance simply for the compulsory nature of any land taking;
 - (b) The land value is generally taken to be the market value on a specified date;
 - (c) Any subsequent increase or reduction of land value for any land taken for a public work is not taken into account; and
 - (d) Special suitability of the land is not taken into account if it can only be achieved through the use of statutory powers, or there is no market other than for the needs of the acquiring authority. Note that authority for compensation under the head of “special suitability” is found in the PWA where it is referred to in section 18 (1) (c) and inferred in section 62 (1) (d).
38. Compensation must be assessed in accordance with the statutory provisions of the PWA, the principles that underlie it, and precedents established by the Courts. These are summarised as a set of fundamental compensation assessment principles as follows.

3.1.2 Principle of Equivalence

39. Full compensation paid under the provisions of the PWA is equivalent to the financial loss suffered by the owner from the works. Note that betterment must be offset against compensation payable, if applicable.

3.1.3 Principle of Liberality

40. The assessment should give the owner the benefit of any reasonable, justifiable or genuine doubt.

3.1.4 Raja Principle

41. The general principle is that where the acquiring authority is the only potential purchaser the land must be valued with reference to the uses that it is reasonably capable of being put in the future. The owner is entitled to the value of such potential even when the only possible purchaser of this potential was the authority purchasing under powers of compulsory acquisition.
42. A number of compensation principles are reinforced in Raja, including:
- (a) Value to a particular purchaser should not be disregarded
 - (b) Emphasis on the value of the land to the vendor (also refer Pastoral Finance principle)
 - (c) Disregard sentimental value
 - (d) All potential value is to be taken into account in valuing the land
 - (e) The compulsory nature of any assessment shall be disregarded.

3.1.5 Turner Principle

43. Land is to be valued in its highest and best use. Refer "Turner v Minister for Public Instruction" (1956) 95 CLR 245.

3.1.6 Pointe Gourde Principle

44. Compensation for the acquisition of land cannot include an increase in value which is entirely due to the scheme underlying the acquisition.

3.1.7 Horne v Sunderland Principle

45. The rule against double recovery where a higher potential use is taken into account.

3.1.8 Harvey v Crawley Principle

46. Losses flowing from the resumption, provided they are not too remote and are a natural and reasonable consequence of the dispossession, are ordinarily compensable.

3.1.9 Pastoral Finance Principle

47. What a prudent person in the owner's position would have been willing to give for the land sooner than fail to obtain it. The Pastoral Finance test places the emphasis on the hypothetical vendor, while the intending purchaser plays a lesser role.

3.1.10 Value of land taken

48. The provision in Section 62 of the PWA relating to the value of land states that:
- "The value of land shall, except as otherwise provided, be taken to be that amount which the land if sold in the open market by a willing seller to a willing buyer on the specified date might be expected to realise".
49. The Compensation Court in "Marshall v Minister of Works" (1950) NZLR 339, (1950) GLR 20 recognised that additional consideration may be required in establishing the value of the land under the open market and willing seller conditions. The Court stated:
- "In determining the market price the Court is not limited to the use being made of the land at the time of its taking, but may have regard to any use to which it is reasonably capable of being put in the future."

3.1.11 Principles for Valuing Land on the Basis of Existing Use

50. Case law relating to the methodology for valuing land under existing use is supportive of the comparable sales approach.
51. Comparable sales have generally been presented to the Court on a per acre or per hectare basis, as appropriate. The Courts have often found it necessary to make some commentary on the conviction of the evidence presented by any Valuer's, particularly noting the quality of the comparable sales presented as evidence, and the judgements adopted by the Valuer's in analysing those comparable sales.

3.1.12 Principles for Valuing Land on the Basis of Subdivisional Potentialities

52. The key principles for assessing the value of land with subdivisional potentialities were established in "In re: Whareroa 2E Block, Maori Trustee v Ministry of Works" (1959) NZLR 7. In this case the Judicial Committee amended the findings of the Court of Appeal to hold that:

"The Court must contemplate the sale of the land as a whole unless it appears that the necessary legal consents to a subdivision plan had been given and a survey on the ground at the specified date would have disclosed that the land or some part of it was in fact so far subdivided that the subdivided parts could at that date have been immediately sold and title given to individual purchasers, in which case the parts so subdivided may be separately valued, for the purpose of arriving at the total amount of compensation."

53. In arriving at this decision, the Court clearly noted that:

"It is fundamental that the land must be valued in its state at the date of taking"

54. The Court also showed support for the concept expressed by the Privy Council in the case "Raja Vyricherla Narayana Gajapatiraju Bahadur Garu ("Raja") v Revenue Divisional Officer, Vizagapatam" (1939) 2 All EF 317 that the landowner is not to be compensated for unrealised possibilities as if they were realised possibilities. "Marshall v Minister of Works" (1950) NZLR 339, (1950) GLR 20 also cited from the same case:

"The truth of the matter is that the value of the potentiality must be ascertained on such materials as are available and without indulging in feats of the imagination"

55. On these points it is clear that the facts at the date of taking will become important considerations in assessing whether land with subdivision potential is valued as a whole or as the sum of individual titles. The Court in "In re: Whareroa 2E Block, Maori Trustee v Ministry of Works" (1959) NZLR 7 considered facts such as:

- (a) Whether the necessary legal consents to a subdivision plan had been obtained;
- (b) The status of the subdivision plans, and the likelihood of those plans being modified by some authority;
- (c) Whether the land was actually available for sale as subdivided lots;
- (d) The presence of actual development such as roads, fences, access, drainage and other facilities.

56. Having established whether it is appropriate to value the land as a hypothetical subdivision at the date of taking, subsequent cases have dealt with resolving specific assumptions that are part of the hypothetical subdivision assessment.

57. "Carlton Heights v Minister of Works" (1963) NZLR 973 dealt with the extent of profit and risk allowances for hypothetical subdivision assessments, and there Archer J cited the Raja case which

gave support to the concept that the value of the land is not to be estimated at its value to the purchaser. As a result, the Court in this decision held that a 25% allowance for profit and risk was properly deducted in the calculation of the value of the land.

58. Archer J, this time in “Minister of Works v Green and McCahill (Contractors) Ltd” (1965) NZLR 580, added to the decision in Carlton Heights by pointing out that:

“It would be wrong to regard 25% as the “usual” or “normal” allowance for profit and risk, though it would appear that this figure has been frequently adopted by Valuer’s when assessing subdivisional values. The appropriate allowance in any case must be assessed in relation to its own particular facts.”

59. It was also noted:

“In determining the proper allowance to be made we are not concerned with what may in theory appear reasonable or adequate, but with what is in practice deemed necessary by subdividers of land to cover risks and provide adequate profits when they subdivide land.”

Appendix IV

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- ❑ “Raja Vyricherla Narayana Gajapatiraju Bahadur Garu (“Raja”) v Revenue Divisional Officer, Vizagapatam” (1939) 2 All EF 317
- ❑ “Longeranong Pty Ltd v Electricity Trust of South Australia” (1990) 71 LGRA 316
- ❑ “JP Arrow v The Electricity Commission of New South Wales” (1994) NSWLEC 91
- ❑ “A&R Salce v State Electricity Commission of Victoria” Land Valuation Board of Review October 1981
- ❑ “Electricity Commission of New South Wales v Kater” Supreme Court of NSW 87 LGERA