



**Submission to Commerce Commission on  
electricity lines regulatory work, viz:**

- (1) ODV: Parsons Brinckerhoff Draft Report and  
Draft New ODV Handbook; and**
- (2) Information Disclosure: Commission Report  
and Draft Requirements**

9 February 2004



## Foreword

Vector appreciates the opportunity to further input into the Commission's processes related to asset valuation and information disclosure.

While some positive changes have been made to the ODV Handbook, further changes are required for valuations to be fair, accurate, and facilitate much needed electricity infrastructure investment critical to New Zealand's economic growth.

Some asset replacement costs – a key aspect of the Handbook – remain deficient, in part due to the inherent problem of using a prescriptive process to approximate a complex reality, given different economic and physical operating environments. A better approach, previously suggested by Vector without response from the Commission or its consultant, would be to adopt an overarching Handbook principle that allowed actual costs to be used where a competitive tender process has been used and audited. This is the only appropriate test for determining "efficient costs", which is the Commission's objective. At present, actual costs have to be used if they are less than the prescribed replacement costs; however, this principle is not consistently applied where actual costs are greater, which is illogical and unfair.

Substance aside, Vector considers the Commission's process in this area is flawed in a number of ways, including requiring considerable work in this area before final decisions have been made; absence of information on other important parts of the valuation picture (including the elaboration of the historic cost method); uncertainty over whether the Commission agrees with the views of its consultant; absence or insufficient response to key submissions made previously by Vector and other lines businesses; and failure to make public the analysis and investigation of the Commission's consultant with respect to important judgements it has made.

With respect to information disclosure, the wholesale adoption of the current regime (which is not required but done by the Commission) is not appropriate. Given the purpose of disclosure has changed, the Commission should have, and needs to, assess all disclosure requirements to ensure they have validity under the Commission's regime. The benefits and costs of regular disclosure must also be assessed against alternative approaches available to the Commission.

In Vector's view, the shortcomings in both process and substance should be remedied through further consultation on a final draft of the new Handbook and disclosure requirements, including a public conference given the importance of the issues being considered. This would not compromise the Commission's desire to have valuations conducted at 31 March 2004, as these can be prepared ex post. Ensuring the Handbook and other disclosure requirements are optimal for the Commission's purposes must be the primary focus; not a deadline that, in effect, is arbitrary.



**Mark Franklin**  
Chief Executive Officer



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## 1 INTRODUCTION

- 1.1 This submission from Vector Ltd (Vector) is in response to the following publications from the Commerce Commission ("the Commission"):
- (a) Development of a Handbook for Optimised Deprival Valuation of System Fixed Assets of Electricity Lines Businesses (Draft report from Parsons Brinckerhoff Associates ("PB") to the Commission, 23 December 2003 ("the PB Report"));
  - (b) Handbook for Optimised Deprival Valuation of System Fixed Assets of Electricity Lines Businesses (23 December 2003, "the Draft New Handbook");
  - (c) Electricity Information Disclosure Handbook (Commerce Commission paper, 24 December 2003 ("the Disclosure Paper"); and
  - (d) Electricity Information Disclosure Requirements 2004 (24 December 2003 ("the Draft Disclosure Requirements")).
- 1.2 Vector appreciates the opportunity to comment on these papers and draft requirements. We would be happy to elaborate on any of our views if useful to you.
- 1.3 Vector is also a party to a submission made by the Electricity Networks Association (ENA). Vector, having been part of the process culminating in that submission, endorses the views put forward by ENA. Vector's own submission focuses on providing additional information in areas of particular importance to us.

### **Company overview**

- 1.4 Vector is a major infrastructure provider in New Zealand, owned by the Auckland Energy Consumer Trust. Vector has total assets of approximately \$3 billion comprising the following businesses:
- (a) electricity distribution businesses located in Auckland, North Auckland and Wellington. It is the largest electricity distributor with 610,000 consumers, representing 42% of the national market;
  - (b) a gas distribution business in the Auckland region with 68,000 consumers;
  - (c) a telecommunications business, Tangent, in Auckland and Wellington;

- (d) a majority interest in the Stream Information Partnership, which provides metering services.
- (e) an industry training organisation, Utilitech; and
- (f) a joint venture interest in Treescape, a tree and vegetation management company.

### **Structure of submission**

1.5 Vector's submission is structured as follows:

- o Part I: General comments on valuation and disclosure work; and
- o Part II: Specific comments on the Draft New Handbook.

1.6 Due to a number of Vector's submissions on the Commission's earlier papers on the ODV Handbook and information disclosure regime not being addressed, nor acknowledged, this submission repeats some of the material submitted to the Commission on 18 November 2003.

1.7 More generally, while appreciative of the extent of the task of considering submissions and the desire to advance work expeditiously, Vector is becoming increasingly frustrated with the government sector not responding to, or discussing in documents, submitters' issues and concerns. Vector does not expect all matters raised in its submissions to be addressed; however, we do expect key concerns and suggestions to be acknowledged and, if not accepted, explained why.

## **PART 1: GENERAL COMMENTS**

### **2 INTRODUCTION**

2.1 Vector's general comments on the review of the Handbook and information disclosure development are discussed under the following headings:

- o procedural concerns with the Handbook review – including with respect to not knowing the Commission's own views, lack of context for the review and lack of transparency with PB's investigations and analysis;
- o valuations must be fit for purpose – a comprehensive approach to valuation is required (including on the basis of guidelines, not prescription), and the use of the Handbook in the regulatory regime (as distinct for comparative purposes only under the disclosure regulations) increases the importance of true, accurate and comprehensive valuations; and
- o information disclosure.

### **3 PROCEDURAL CONCERNS**

3.1 While we appreciate the Commission's desire to further evolve the regulatory regime for electricity lines businesses as quickly as possible, it is important the process for developing any ODV Handbook is properly sequenced within the Commission's overall process.

3.2 With respect to the Commission's process for development of a ODV Handbook, Vector has the following procedural concerns:

- (a) lines businesses and other interested parties have been asked to devote considerable resource to the Handbook process without understanding why the Commission is reviewing and developing the Handbook at this time;
- (b) the Commission has not made final decisions on the role of asset valuation generally and the method(s) that could be used. The Commission has made only *draft* decisions. While not optimal, the Commission could theoretically decide that ODV could not be used by lines businesses in the regulatory regime. The Commission should, therefore, make final decisions on asset valuation before the process of Handbook review goes any further;

- (c) despite asking wide ranging and broad questions in its Issues Paper, the Commission's process seems to be focussed on tinkering with the Handbook without properly addressing bigger picture considerations, such as the context for the use of the Handbook and valuation principles (including valuation of non system fixed assets). On a related point, submissions in these important areas appear to have been largely ignored;
  - (d) it is not clear (but Vector suspects not) whether the Electricity Commission has been properly engaged to ensure the Handbook properly accommodates a range of issues that the Commission will work on (for example, the PB Report notes the inherent problems for asset valuation associated with distributed generation);
  - (e) to what extent, if at all, the Commission concurs with the views of PB, as set out in their report. At this time, it is not clear what the Commission's own views are and, as such, what weight, if any, can be given to the PB Report;
  - (f) the PB Report does not provide evidence or analysis to rationalise the adoption of allowable costs. For example, the amount allowable for traffic management is, in Vector's experience, about only 10% of the actual maximum incurred costs, without any explanation of why that specific amount is, in PB's view, appropriate. This would not be an acceptable way for the Commission to make decisions in other areas of its work, and should not be here;
  - (g) in respect of timing, as advised previously to the Commission, requiring lines businesses and other interested parties to review and comment on a draft ODV Handbook (a significant, prescriptive and technical document) within 6 weeks over the Christmas and New Year holiday period, alongside considerable other regulatory activity, is unreasonable. While Vector has made every effort to ensure a comprehensive submission; our ability to respond has been hampered by the Commission's timeframe, which, given valuations can be prepared ex post, is arbitrary.
- 3.3 In Vector's view, the collective effect of these concerns is that the process to date cannot be considered a comprehensive revision of the ODV methodology to fit the new regulatory environment. Rather, the process has simply been an updating of an existing specification of the ODV methodology that was previously used for a different purpose.
- 3.4 Vector's process concerns, summarised above, should be addressed by the Commission through release for of a final draft of the new Handbook for public document, with an accompanying report that sets out the draft views of the Commission (as distinct from PB), including with respect to addressing submissions made by interested parties.

- 3.5 Given the importance of the issues being considered, and the widely held procedural concerns with the Commission's process, a public conference should also be held to allow interested parties to present and discuss their views and concerns with Commission Members.
- 3.6 If the Commission is concerned that further process steps would pass 31 March 2004 – being the date the Commission seems to be driven by to complete the Handbook review – then it should signal to lines businesses that a valuation will need to be prepared *as at that date* at some point in the future. Ensuring the Handbook is optimal should be of far greater importance to the Commission than rushing its completion to meet, in effect, an arbitrary deadline.

#### Lines businesses committing to a particular method

- 3.7 A further procedural concern is that lines businesses have not been given sufficient information to feel informed about the Commission's intentions with respect to making a choice of asset valuation method.
- 3.8 In its draft decisions on asset valuation, and subsequently, the Commission has noted that lines businesses will be required to choose one valuation method for regulatory purposes (ODV or historic cost) and use that for an opening valuation in perpetuity (noting that, if historic cost were chosen, ODV would be deemed that opening value).
- 3.9 While the Commission has made this clear in principle, there has been no advice, that Vector is aware of, on when the choice of method needs to be made and how it would be of a legally binding nature. These are important procedural matters that need to be resolved. These issues were raised by Vector in its last submission, but have not been addressed, nor acknowledged. Lines businesses are still in the dark as to when any choice would need to be made and on what basis. A critical element of the choice process – being the Commission's elaboration of the historic cost method – has also still not been consulted on.
- 3.10 In Vector's view, lines businesses should not be required to commit to use of a valuation method for regulatory purposes until the full detail of the Commission's approach to valuation has been decided on and finalised.

#### Terms of reference for the Handbook work

- 3.11 In their report, PB refers to the terms of reference for their work being available on the Commission's Website. Vector could not find the terms of reference, although the Commission's Request for Proposals for the work appended a draft terms of reference ("the TOR"), which, given PB's comment, we have assumed is the same as the final version.

3.12 Done properly, it seems that completion of the TOR may have addressed a number of Vector's procedural concerns summarised above, and possibly some of our general concerns with the Handbook itself. Having considered the TOR and PB's report, Vector is concerned that a number of elements of the TOR (assuming they were reflected in the final version) do not appear to have been looked into and/or completed, including:

- (a) "recommend a process where by replacement costs could be updated routinely and periodically ....";
- (b) "comment on the margins of error associated with estimating asset costs and asset class lives";
- (c) "comment on the costs and benefits of requiring lines businesses to maintain an up-to-date asset register on an ongoing basis";
- (d) "develop guidelines on asset register accuracy...";
- (e) "comment on the significance of optimisation risk"; and
- (f) "comment on the frequency with which lines businesses should update their ODV valuations...."; and
- (g) "present any other relevant findings that emerge while undertaking [the work]" (being ample scope, in Vector's view, for PB to consider the use of actual costs based on an auditable competitive process).

3.13 There is also a general theme/undertone to the TOR, as generally expected in such work, that PB will provide the information and analysis upon which it has formed its opinions and conclusions. Throughout their report, PB refer to background work they have undertaken, for example:

- (a) "after reviewing all the available costing data...";
- (b) "relevant cost data obtained during the asset recalibration audit ... has also been reviewed...";
- (c) "PB Associates also sought basic cost data from manufacturers..."; &
- (d) "PB Associates has benchmarked these costs [transmission system fixed assets] against international data and data gathered during the 2001/2002 asset recalibration audit ..." (Vector finds this surprising in light of the Commission coming to a previous view that benchmarking costs internationally – both for transmission and distribution – was difficult and contentious).

- 3.14 While PB may have done these things, this analysis and investigation should have been appended to PB's report for interested parties to comment on; something that would happen in most, if not all, parts of the Commission's other work. It would also not be acceptable for lines businesses to make submissions without supporting information; in fact, the Commission has expressly requested that "all submissions should be supported by documentation and evidence, where appropriate". The same expectation should apply to PB.
- 3.15 Many of the above are important areas, underscoring why further consultation, including a public conference, is required on a final draft of the new Handbook and an accompanying report that addresses all relevant matters, as well as robustly considers the views of submitters.

#### PB recommended approach for Transpower

- 3.16 Having benchmarked international transmission costs, PB recommends that transmission replacement costs do not require updating (albeit PB's analysis has not been publicly disclosed).
- 3.17 However, Vector questions whether it is appropriate for PB to make recommendations on whether or not Transpower's request to use its 2003 ODV valuation (updated for additions at actual cost and deletions), instead of undertaking a new valuation, is appropriate.
- 3.18 Based on the TOR, there seems little justification for PB advising on this matter. However, now that they have, it raises the obvious question as to, if the Commission in fact agrees with PB, whether an equivalent option will be offered to distribution businesses.

## **4 VALUATIONS MUST BE FIT FOR PURPOSE**

### A comprehensive approach to valuation is required

- 4.1 While use of asset valuation in the regulatory regime should be a last resort, there is benefit in having a Handbook to provide certainty as to how the Commission will value assets, if required to do so.
- 4.2 However, in Vector's view, the Commission has dived into the detail of one valuation component too quickly, without focussing on the valuation big picture first. As discussed above, the Commission has also embarked on a costly process (for itself and the industry) of updating the ODV Handbook without first making final decisions on what valuation method(s) can be used for regulatory purposes.

- 4.3 In order for the Commission's approach to valuation to be clear, it must provide further information on all relevant valuation matters. This could best be achieved by an overarching valuation handbook, which would contain (drawing on ENA's earlier work in this area (submitted on 18 November 2003)):
- (a) the purposes to which asset valuation would be used under the regulatory regime, including with reference to relevant work undertaken by the Electricity Commission;
  - (b) requirements for disclosing information on asset valuation and why such requirements exist;
  - (c) a description of all permissible valuation methods, including:
    - (i) ODRC/ODV and historic cost for system fixed assets;
    - (ii) how other fixed assets may be valued;
    - (iii) how intangible assets may be valued;
  - (d) a description of how the Commission's asset valuation requirements will be applied and when, including through reference to the Commission's guidelines for the investigation and control phases of the regulatory regime.
- 4.4 This approach would also be consistent with Vector's submission that the full valuation picture be understood before lines businesses make a choice as to which valuation method for system fixed assets they wish to use.

Comprehensive valuations are required

- 4.5 Given the current Handbook was designed as a comparative tool for lines business' performance (through the information disclosure regulations), the comprehensiveness of valuations was not as important as is now the case. Any shortcomings generally affected all lines businesses and, therefore, any shortcomings in the Handbook were not as detrimental as would now be the case under the Commission's regulatory regime.
- 4.6 While consistency between valuations will always be an important design principle for valuation methods, more important when direct valuation-based regulation is possible is that they reflect the "right" value to ensure lines businesses are not forced to under recover or under invest in their networks. Importantly, consistency and the "right" value are not mutually exclusive; rather the primary emphasis needs to be on accurately reflecting allowable costs, which can then be consistently applied.

- 4.7 In its earlier submission, Vector provided summary statistics of the degree to which the ODV Handbook was under-representing the true value of system fixed assets. The difference in valuation was significant, with the Handbook not accounting for 16% of Vector's GAAP approved value.
- 4.8 While Vector has not, in the time available, been able to re-calculate its ODV valuation using the Draft New Handbook, based on our analysis the valuation would still be below that obtained using FRS-3, largely due to the inability to use actual costs, when these exceed calculated replacement costs. However, this is not surprising given the Handbook is, by definition (given the use of estimated multipliers and standard replacement costs) an inferior alternative to the (FRS-3 recognised) competitive processes Vector and other lines businesses use to determine the actual level of costs.
- 4.9 The PB Report assumes away the relevance of FRS-3 valuations exclusively on the basis that the requirements and objectives of FRS-3 are not consistent with regulatory objectives, including as a result of engineering-based judgements being required for optimisation purposes under ODV. In Vector's view, PB's dismissal of FRS-3 is too light, as there is no strong reason to believe the two valuations properly done should diverge to any large degree. In Vector's experience, the divergence to date relates almost entirely to the ODV Handbook specifying sub-optimal costs; a situation that may persist going forward if further changes to the Handbook are not made.

#### Guidelines not prescription

- 4.10 In Vector's previous submission (18 November 2003), we suggested the Commission should adopt a general set of valuation principles, rather than a prescriptive set of allowable assets, costs and pre-determined lives. Principles are better suited to dealing with a range of complex issues that may arise over time. Principles can also readily ensure a true and fair valuation, so long as their application is scrutinised by an independent, auditing party (as well as the Commission if it chooses to undertake such an audit role).
- 4.11 While there is merit in providing a set of general maximum costs as a guide, it is unlikely that any broad based maxima will be sufficient to cover all scenarios for all companies over time.
- 4.12 Vector, therefore, suggested, and continues to suggest, that the Handbook have an over arching principle of allowing the use of actual costs where it can be demonstrated to an independent auditing party that a competitive tender process has been used. This principle would ensure that companies facing different operating environments can recover a return on the true (and efficient, if evidenced by a competitive process) costs of investment.

4.13 This principle would also be consistent with that partially adopted in the ODV Handbook, which PB explains as followed (pg 4-14):

*“where the replacement cost value based on the product of the standard replacement cost and multiplier factor exceeds the actual replacement cost, the lower figure should be used in any case.”*

4.14 In other words, actual costs should be used, so long as they are *less than* the allowable amount. For consistency, this principle should be made neutral as to whether actual costs exceed those allowable in the Handbook. The asymmetry of this principle’s application is, in Vector’s view, illogical and inherently unfair.

4.15 Because the Handbook does not expressly provide for audited, actual costs to be used, there will be a range of instances where application of the Handbook is simply inappropriate, including due to multipliers and replacement costs being significantly out of line with reality. It is unfair and inefficient to require lines businesses to value assets at a lower cost than actually paid through a competitive process.

#### Review period

4.16 As noted in Vector’s earlier submission, adopting this principle would also reduce the importance of updating asset tables over time (although an update will still be necessary in Vector’s view to ensure the document costs do not get too out of line with market reality).

4.17 On this process point, neither the PB Report nor the Handbook discuss or set out what process would apply and when for updating the Handbook over time. Such a process is a critical addition to the Handbook or the Commission’s final report to provide certainty of updates over time, in order to prevent significant out-dating as is presently the case, and reduce regulatory uncertainty by mitigating the risk of the Handbook being updated on an impromptu, ad-hoc basis. Like for this process (albeit with the process deficiencies discussed above), updating of the Handbook should be based on examination of:

- o existing contract rates established during competitive tendering processes; and
- o actual historical costs from an analysis of specific projects that reflect the real costs for the replacement of, and incremental development of lines businesses’ networks.

## 5 INFORMATION DISCLOSURE

- 5.1 As discussed in Vector's earlier submission, the regulatory environment has changed, through the operationalisation of the Electricity Commission, since the Commerce Commission was tasked by Parliament with a responsibility in the information disclosure area.
- 5.2 Notwithstanding the appropriateness of the Commerce Commission continuing to administer the thresholds and control regime – a submission Vector has strongly made to the Commerce Select Committee on the Electricity and Gas Industries Bill – it must be questioned as to whether it remains logical for the Commerce Commission to take responsibility for the existing disclosure regime. To do so would entail further work for the Commission in a new area; with the risk of fragmentation of disclosure requirements generally as the Electricity Commission work gets further underway, including as a result of the possible transfer of the lines regime to the Electricity Commission after the end of 2005 (only 2 years away).

### Concerns with wholesale adoption of the existing disclosure regime

- 5.3 Vector is concerned that the Commission, presumably out of convenience, has opted for a wholesale adoption of the current disclosure regime. Given the purpose of disclosure for the present use differs from that in the past, the Commission should have considered in detail the necessity of all disclosure requirements to ensure they continue to have validity under the Commission's regulatory regime. For example, Vector is unclear why the Commission considers it appropriate that Transpower is exempt from a number of requirements (e.g. disclosing indirect costs per consumer and an Asset Management Plan). A careful, considered analysis of the disclosure requirements is clearly required.
- 5.4 Vector has not in the time available considered the applicability of all disclosure requirements to the Commission's regime. However, on the other hand, it is by no means clear that the Commission is minded to do this itself given no such assessment has been undertaken.
- 5.5 Vector suggests that, as part of further consultation on the Handbook, the Commission release an assessment of why it considers the existing disclosure regime is required in entirety for the Commission's regime. The benefits and costs of disclosure in this way should also be assessed relative to the Commission requiring information alongside threshold compliance statements (as it has done to date), or requesting information when needed (being when a threshold is breached) using the Commission's information gathering powers.

- 5.6 In stating these views, Vector is cognisant that the purpose of the relevant subpart of Part 4A is relatively broad, which seems to have resulted in the Commission deciding the wholesale adoption of a very broad disclosure regime is appropriate. However, to Vector's knowledge, the Commission has not explained its interpretation of the relevant purpose statement, nor tested that in consultation. In Vector's view, there should be a debate as to what disclosure regime is appropriate for the Commission's regime, particularly given there is no requirement for the Commission to take over responsibility for the existing disclosure regime.

#### Importance of coordination with the Electricity Commission

- 5.7 In principle, Vector considers there should be one disclosure regime, and the two Commissions should work closely together to ensure this is the case now, including carefully considering the implications of the Electricity Commission's work for development of the Handbook.
- 5.8 Given the Commerce Commission is a well-established organisation, and having made considerable headway implementing the electricity lines regulatory regime, it can take a leadership role in ensuring the two Commissions work closely together on relevant issues.
- 5.9 The implications of the Electricity Commission's work for development of the Handbook, include (all being areas the Electricity Commission is working on):
- (a) how any investment made for the connection of distributed generation is treated under the optimisation provisions of the Handbook if it becomes stranded through such generation being abandoned (at no fault of a lines business). The PB Report also notes (page 5-19) the valuation difficulties arising from consideration of distributed generation;
  - (b) the treatment of security standards the Electricity Commission is likely to be interested in from a security of supply perspective;
  - (c) ripple control plant and how any mandated requirement related to ripple control (both installation and operation) is treated under the Handbook;
  - (d) the relevance of the Part F investment decision making rules and the impact of transmission investment on distribution networks; and
  - (e) what reference is made to the Handbook (and for what purpose) under any model distribution agreements developed by the Electricity Commission and how such agreements take into account valuation-related matters, such as service quality.

5.10 Given the importance of the Electricity Commission being consulted and involved in development of the Handbook, Vector submits that the Commission, in releasing a further version of the Handbook for comment, should include a summary of the Electricity Commission's views. The process for updating the Handbook over time (not addressed to date) should also note the importance of the Electricity Commission being engaged in that work.

#### Comment

5.11 As discussed above, in Vector's view, the Commission should have, and still needs to, review each and every disclosure requirement to assess its validity in the context of the Commission's regulatory regime. It is not appropriate to simply adopt the complete regime, which was developed for a different purpose; particularly given there is no statutory requirement for the Commission to do so.

5.12 Vector emphasises that it has not had sufficient time to carry out a detailed assessment of the existing disclosure regime to determine which components remain relevant to the Commission's regulatory regime. While this task should be led by the Commission given its developmental responsibility for the disclosure regime, Vector would be happy to assist the Commission if useful. Vector has an open mind as to how much of the existing disclosure regime will be useful to the Commission's regime; the key point is that a process should be gone through to assess this.

## PART II: SPECIFIC COMMENTS

Specific comments on the review of the Handbook are set out below.

### 6 STANDARD REPLACEMENT COSTS

- 6.1 This section builds on the earlier general discussion about the importance of valuations being comprehensive and fit for purpose, including with respect to allowing actual costs to be used where a competitive process has been followed and can be audited.

#### Replacement costs do not reflect reality

- 6.2 PB states that the replacement costs in the draft Handbook are its “best estimate of the costs that would be paid by an efficient distribution business using the most cost effective methods ... .. and purchasing all items (equipment and services) at the best possible rates.”<sup>1</sup>
- 6.3 While the revised Handbook costs for standard installations have moved in the right direction, PB appears to be operating under a set of assumptions regarding the cost of doing business in non-standard areas (such as rocky ground, high traffic areas and CBD zones) that are not consistent with the practical reality faced by lines businesses. The resulting maximum handbook values that are allowable for non-standard work are therefore grossly understated leading to ODV valuations that are not reflective of the true deprival costs.

#### Lack of transparency on investigation/analysis

- 6.4 Because of the outcome, Vector questions whether PB used sufficient rigor to investigate the setting of Handbook costs, including whether real world examples were considered. To our knowledge, no lines business was questioned regarding the appropriateness of the new costs as a proxy for the realities faced or questioned as to how the standard costs included with lines business’ submissions, or available via the 2003 FRS-3 reports, were derived. In any case, if some lines businesses were questioned, Vector would have appreciated the opportunity to explain its position, including the actual costs we face day-to-day in building and maintaining our network.

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<sup>1</sup> PB Report para 4.3.5

- 6.5 From Vector's review of the PB Report and earlier submissions, it appears that some of the new costs chosen by PB are below the market information supplied by PricewaterhouseCoopers (for 19 lines businesses), Vector, Orion and Powerco. The PB Report (para 4.3.5) states that "all data has been reviewed", although there is no explanation of why the chosen figure was adopted and others rejected. It would have been both helpful and appropriate to receive some indication as to why PB has chosen to deviate from the actual costs faced by most lines businesses, especially when a competitive tender process has been used to establish costs. This could have included, or could still include going forward, direct discussion between PB and lines businesses.

Level of deviation to actual costs

- 6.6 In Vector's earlier submission, we summarised the difference between Vector's actual costs, as evidenced through FRS-3 valuations, and costs permitted under the existing Handbook. In light of there not being sufficient movement in the costs in the Draft New Handbook, this summary is repeated again, followed by further evidence.

		<b>Handbook value (average)</b>	<b>FRS-3 (average)</b>	<b>% undervalued by ODV Handbook</b>
Subtransmission	33 kV lines	46,000	50,000	8%
	33 kV cables	215,000	245,000	12.3%
Distribution	11 kV lines	21,000	32,000	34.4%
	11 kV cables	116,000	135,000	14.1%

### Examples of Undervaluing Assets

- 6.7 Despite going through a competitive tender process to get the most efficient rates for major projects, Vector remains in the position of not being able to account in its valuation for the real costs of investment because of inadequate Handbook costs, which will continue to become more out of date as time goes on.
- 6.8 The following two examples illustrate the costs of the value shortfalls that Vector faces under the draft Handbook's standard costs. The Vector costs and multipliers used in the equations are taken from our detailed 2003 FRS-3 valuation and are based on competitive tenders for actual projects or competitively tendered third-party contract rates. The multipliers developed represent the actual costs incurred over a "standard" installation, i.e. non-CBD and no rock.

#### *Example 1 – Heavy 11kV Cable*

Example One	11kV Cable Heavy (\$)	CBD* multiplier	Rocky ground multiplier	Multiplier	Maximum Rate ( \$/m)	Maximum Rate ( \$/km)	Traffic provision (\$/km)	Total rate (\$/km)	Shortfall (\$/km)
Handbook 4th Ed	\$125	1.25	2	2.25	\$281	\$281,250	\$0	\$281,250	\$95,750
PB proposal	\$125	1.25	2	2.25	\$281	\$281,250	\$4,000	\$285,250	\$91,750
Vector Actual	\$130	2.1	1.8	2.9	\$377	\$377,000	\$0	\$377,000	\$0
<b>Total km of 11kV Heavy Cable on Vector network</b>					<b>1099km</b>				

- 6.9 Taking the standard replacement costs and multipliers for Heavy 11kV cable, the table shows that the Draft New Handbook has not moved substantially to reflect the actual costs of doing business. The only change relates to the (inadequate) allowance for traffic management.
- 6.10 Vector's costs in the above table were derived working back from the actual project cost to an appropriate standard cost. The multipliers spun out of this analysis show the actual deviation from a "standard" project when rocky ground or CBD investment projects occur. This analysis was prepared prior to the Draft New Handbook (and, therefore, traffic management was not separated out). For Vector's analysis, traffic management is bundled within the CBD multiplier. However, it is clear that the proposed \$4,000 per km allowable under the Draft New Handbook grossly understates the true cost. Actual traffic management costs reach up to \$50,000 per km (as evidenced in Vector's FRS-3 valuation) in Vector's high density areas. We again question the assumptions used by PB for determining this rate.
- 6.11 Based on Vector's actual costs, the current handbook produces a significant potential valuation shortfall. This predominantly arises from the inadequate CBD multiplier, even after taking into consideration the new traffic management allowance.

6.12 The result is that Vector would be forced to under report asset values by up to \$91,750 per km, which equates to 24% of the competitively tendered costs of installation for this cable type. Vector currently owns 1099km of Heavy 11kV cable, underscoring the large valuation shortfall that the Handbook entails.

*Example 2 – Medium 11kV Cable*

Example Two	11kV Cable Medium (\$)	CBD multiplier	Rocky ground multiplier	Multiplier	Maximum Rate (\$/m)	Maximum Rate (\$/km)	Traffic provision (\$/km)	Total rate (\$/km)	Shortfall (\$/km)
Handbook 4th Ed	\$90	1.25	2	2.25	\$203	\$202,500	\$0	\$202,500	\$142,500
PB proposal	\$97	1.25	2	2.25	\$218	\$218,250	\$4,000	\$222,250	\$122,750
Vector Actual	\$100	2.4	2.05	3.45	\$345	\$345,000	\$0	\$345,000	\$0
<b>Total km of 11kV Medium Cable on Vector network</b>					<b>940km</b>				

6.13 As for example 1, a significant valuation shortfall is experienced for Medium 11kV cable, being \$122,750 per km, or 36% of the average cost of installation. Again, while the standard costs are similar, the multipliers representing additional costs, such as traffic management and reinstatement, are grossly inadequate.

*Summary comment*

6.14 If PB or the Commission requires further information to substantiate the above, Vector would be happy to provide such, including showing the documented process that Vector goes through. We invite both PB and Commission staff to visit us to discuss this matter and see first hand the systems and processes used, and documentation produced, as part of competitive processes for network build and maintenance.

The appropriate fix is allowing auditable actual costs

6.15 The above discussion, and the ongoing debate on appropriate standard replacement costs (including over time as the Handbook is periodically updated), underscores the problem of trying to use a prescriptive valuation process to approximate a complex reality, whereby a number of parties operate in different economic and physical environments.

6.16 This issue was raised and discussed in Vector's original submission, as well as above. Vector put forward the suggestion, and continues to suggest, that if a lines business has competitively tendered costs, and that process and the costs can be audited, then these actual costs are valid (and more accurate) substitutes for standard handbook costs. In such circumstances, the principle objectives advocated by PB for determining standard costs would be met, i.e. being those of an "efficient distribution business" while obtaining the "best possible rates". Competitively tendered costs would also meet the principles of ODV valuation.

- 6.17 It is not clear at this time to what extent, if at all, the Commission has considered using actual costs where a competitive process has been followed and can be audited. Vector strongly suggests the Commission seriously consider, or reconsider, this matter, in order to ensure valuations are fair and efficient, including over time.

## 7 OPTIMISATION AND PLANNING PERIODS

- 7.1 The optimisation process is designed to ensure that lines businesses do not “gold plate” their networks at the expense of consumers. There is, however, little evidence of any gold plating in New Zealand’s networks, as evidenced by the low levels of optimisation in the valuation reports. The optimisation that does occur is largely due to the inadequate planning horizons allowed by the Handbook; an issue that has not been adequately addressed in the Draft New Handbook.
- 7.2 Compared to the actual life span of the assets in question, and the actual planning windows used by system planners, the requirements in the Draft New Handbook remain short of reality.
- 7.3 In their report, PB note that *“[t]here is no fundamental reason why the valuation period should align with the optimum engineering period”*<sup>2</sup> Vector strongly disagrees with this sentiment. If the planning period is not aligned with the optimisation period, perverse incentives will be created for sub-optimal infrastructure to be built. Specifically, given the valuation rules, investment will be biased toward short term investments, which may cost consumers more in the long-run given the need for upgrades or replacements as capacity runs out before the assets have reached the end of their useful lives.
- 7.4 Part of the reason PB have not suggested longer, more appropriate periods rests in their arbitrary distinction between sub-transmission and distribution with respect to access to cable routes and ability to increase capacity. These issues – which PB have used to rationalise a longer period for sub-transmission – equal apply to distribution and also appropriately lengthen the planning period used.

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<sup>2</sup> PB Report para 5.3

## 8 UNDERGROUND CABLES

- 8.1 In its report, PB acknowledge that the current Handbook provision for such costs was too low and did not accurately reflect costs of traffic management and reinstatement. However, the Draft New Handbook costs remain too low.
- 8.2 While PB has added a traffic multiplier, they have assumed that a reasonable cost for reinstatement is provided for by not adjusting the old multiplier. This approach is flawed. Either actual project costs should be able to be used where a competitive tender process can be demonstrated (preferred) or the multiplier range needs to be increased (second-best).
- 8.3 As further evidence in this area, set out below are the *average* costs incurred by Vector. The last column for all tables reflects the maximum allowable replacement costs, as per the revised handbook rates and multipliers.

*Contract Rates for 3x1c/185AL 33kV Cable (Standard)*

Conditions	Trenching	Cabling	Reinstatement	Diversions & Extras	Traffic Control	Total	Draft New Handbook
Brownfields urban, normal ground	\$60	\$105	\$10			\$175/m	\$175/m
Brownfields urban, rocky ground	\$150	\$105	\$10			\$265/m	\$350/m
Brownfields CBD, normal ground	\$60	\$105	\$50	\$75	\$45	\$335/m	\$223/m
Brownfields CBD, rocky ground	\$150	\$105	\$50	\$75	\$45	\$425/m	\$397/m

The comparison with the new handbook rates show lower Vector replacement costs for Brownfields urban, rocky ground areas. This is only because two different multipliers are reflected. The last column for the table reflects the maximum allowable replacement costs, as per the revised handbook rates and multipliers. The Vector equivalent reflects a lower multiplier for rocky ground, 1.4 compared to a maximum handbook multiplier of 2, based on actual ground conditions for the projects analysed. If the same multiplier is used for this category, there will be no cost difference because the base rate (normal ground) is the same.

*Contract Rates for 3c/35AL 11kV Cable (Light)*

Conditions	Trenching	Cabling	Reinstatement	Diversions & Extras	Traffic Control	Total	Draft New Handbook
Brownfields urban, normal ground	\$45	\$22	\$10			\$77/m	\$77/m
Brownfields urban, rocky ground	\$150	\$22	\$10			\$182/m	\$154/m
Brownfields CBD, normal ground	\$45	\$22	\$50	\$75	\$20	\$212/m	\$100/m
Brownfields CBD, rocky ground	\$150	\$22	\$50	\$75	\$20	\$317/m	\$177/m

*Contract Rates for 3c/185AL 11kV Cable (Medium)*

Conditions	Trenching	Cabling	Reinstatement	Diversions & Extras	Traffic Control	Total	Draft New Handbook
Brownfields urban, normal ground	\$45	\$45	\$10			\$100/m	\$97/m
Brownfields urban, rocky ground	\$150	\$45	\$10			\$205/m	\$194/m
Brownfields CBD, normal ground	\$45	\$45	\$50	\$75	\$25	\$240/m	\$125/m
Brownfields CBD, rocky ground	\$150	\$45	\$50	\$75	\$25	\$345/m	\$222/m

*Contract Rates for 3c/300AL 11kV Cable (Heavy)*

Conditions	Trenching	Cabling	Reinstatement	Diversions & Extras	Traffic Control	Total	Draft New Handbook
Brownfields urban, normal ground	\$45	\$75	\$10			\$130/m	\$125/m
Brownfields urban, rocky ground	\$150	\$75	\$10			\$235/m	\$250/m
Brownfields CBD, normal ground	\$45	\$75	\$50	\$75	\$30	\$275/m	\$160/m
Brownfields CBD, rocky ground	\$150	\$75	\$50	\$75	\$30	\$380/m	\$285/m

For the table immediately above, the comparison with the Draft New Handbook rates shows lower Vector replacement costs for Brownfields urban, rocky ground areas. This is only because two different multipliers are reflected. The last column for the table reflects the maximum allowable replacement costs, as per the revised handbook rates and multipliers. The Vector equivalent reflects a lower multiplier for rocky ground, 1.8 compared to a maximum handbook multiplier of 2, based on actual ground conditions for the projects analysed. If the multiplier from the Draft New Handbook was applied to Vector's costs, these would change from \$235/m to \$260/m; a cost difference of \$10 per meter on the Draft New Handbook's maximum cost.

*Contract Rates for LV Cable (Medium)*

Conditions	Trenching	Cabling	Reinstatement	Diversions & Extras	Traffic Control	Total	Draft New Handbook
Brownfields urban, normal ground	\$30	\$28	\$5			\$63/m	\$63/m
Brownfields urban, rocky ground	\$105	\$28	\$5			\$138/m	\$126/m
Brownfields CBD, normal ground	\$30	\$28	\$50	\$20	\$15	\$143/m	\$83/m
Brownfields CBD, rocky ground	\$105	\$28	\$50	\$20	\$15	\$218/m	\$146/m

## 9 ASSET LIVES

### Buildings

- 9.1 While the Draft New Handbook provides for an increase in this area in the right direction (to 50 years), Vector considers that a 60 year life is more appropriate, which is in line with the standard lives used in recent independent FRS-3 valuations of its buildings. Vector has over 40 buildings that are older than 50 years and still in good condition.
- 9.2 Vector supports the proposed change for bring distribution substations standard lives in line with transformer lives.

### Ripple control systems

- 9.3 Zellweger ripple injection plant installed in the mid to late 1970s is expected to continue to operate for several years to come. The 20-year life for ripple injection plant is, therefore, considered inadequate and should be extended to 35-40 years in line with other network equipment. Again, there is no good reason why the Handbook provisions should vary so significantly from the practical reality being faced.

## 10 REPLACEMENT COSTS

- 10.1 Vector does not support the newly specified costs for indoor and outdoor 33kV switchgear, which are too low. Vector has had a number of recent projects involving the installation of outdoor 33kV Vacuum breakers, which cost around \$55,000 per unit including foundations, stands, civil works, design and project management.
- 10.2 Similarly modern 33kV indoor SF6 switchgear in a recently built zone substation, cost about \$50,000 per unit installed, excluding protection.

## 11 EXCLUDED ASSETS

### GIS

- 11.1 PB has increased the requirement for lines businesses to invest in management systems (e.g. GIS for asset registers) but somewhat paradoxically have specifically excluded them from the ODV.
- 11.2 PB, however, allow SCADA equipment to be incorporated as it is an “operational” system. In Vector’s view, the distinction between what is ‘in’ and ‘out’ is weak as each system is a *necessity* to properly run a lines business, including for expected reporting for regulatory purposes.
- 11.3 GIS and customer information systems are integral control tools (and not just asset management tools). For example, Vector has just implemented a SCADA/DMS system, which is heavily reliant on data from the GIS and customer information system.
- 11.4 GIS (and similar) systems are very costly (Vector’s cost in the order of \$20-25 million). Lines businesses clearly need to get a return on such investments. If the Commission is envisaging such assets being valued in another way, outside the Handbook, then this should be explained; underscoring the importance of the Commission enunciating its overall approach to valuation.

### Mobile stations

- 11.5 In their report, PB argue that mobile substations and mobile generators are “potentially contestable” and as such “should be allocated to the incremental business...”. Vector does not agree with this conclusion.

- 11.6 Lines businesses face regulatory requirements to improve reliability, and these assets provide a cost-effective way of improving supply quality. As such, it is inconsistent and inefficient that these assets should then not be treated as part of the asset base. A limit on the extent of ownership of such assets for the core business may be appropriate; however, an outright prohibition for valuation purposes does not make sense.

#### Street lighting

- 11.7 Vector supports the ENA submission regarding the treatment of street lighting relays. The test of whether these assets should be included in the system fixed asset base should once again be on a service basis – are they an integral part of the asset base conveying electricity at the required service level – rather than on an asset category basis.

## **12 ECONOMIC VALUE TESTING**

- 12.1 The approach proposed in the PB Report and Draft New Handbook can be described as “ODRC unless ODV is mandated on an ad-hoc basis”.
- 12.2 Vector questions whether the flexibility accorded to the Commission to require EV testing on certain assets is warranted given the uncertainty this creates around the valuations for lines businesses, as well as, more fundamentally, the very limited foreseeable occasions that such a test would be appropriate to apply. The Commission should make clear that ODRC is the valuation method being elaborated in the Handbook and focus on the optimal specification of that method.
- 12.3 As noted previously to the Commission as an example of the insignificance of the EV test, in 2001, UnitedNetworks spent several person-months analysing spurs, developing tools to extract the data and matching ODRC and energy data to the identified assets. The result was an EV write-down of only \$700,000, or 0.06% of the valuation. This test is costly for lines businesses to implement and results in very limited changes to ODRC valuations.

## **13 LOAD CONTROL**

- 13.1 Vector supports the ENA submission which challenges PB’s assumptions that load control is mainly an incremental service provided to retailers or street light providers.

## 14 REPORTING REQUIREMENTS

- 14.1 While Vector agrees in principle to the necessity to supply information for transparency purposes, some of the reporting requirements in the draft Handbook will be particularly onerous, such as the requirement to report on all changes to asset lives.
- 14.2 In the past, lines businesses determined the age of lines based on the cost-weighted average of pole ages and wire ages. The new requirement to base the age of a line on pole ages alone will cause considerable changes to the age of any line, every time a valuation is undertaken. Every time a pole is replaced, the age of the line that it is associated with will change accordingly. It is not feasible to report on every instance of such a change. Such changes should be reported on at a macro level, with detail provided only on "big ticket" items such as zone transformers, if for any reason the age is changed.
- 14.3 Similarly, schedules of network optimisations, multipliers etc should be limited to a macro level, as tens of thousands of asset records can be affected by these and to report them individually would be time consuming and costly for no apparent benefit. If there is perceived to be a large benefit to such reporting (which Vector cannot see), then this should be clearly explained.

## 15 STANDARD OF ENGINEERING

- 15.1 The Draft New Handbook requires that lines businesses examine the engineering of the network "to confirm that the asset base is valued in a manner that minimises the replacement cost to meet the required quality of supply". The valuer must use the lines businesses "documented design and construction standards, and standard of engineering applied to its most recent projects ... as the benchmark for this test".
- 15.2 Vector does not understand why this approach is being adopted, including why PB considers it provides greater benefits than the status quo, in terms of limiting any gold-plating. Specifically, this issue is already addressed under the modern equivalent asset (MEA) approach; for example, many lines businesses have PILC armoured cables, but under the MEA approach must value them as XLPE. Similarly, cables or lines with copper conductors are valued based on the aluminium equivalent.
- 15.3 Without properly understanding the detailed rationale for the new approach, in Vector's view, it does not appear to offer significant benefits; but will certainly impose further administrative costs. The rationale should be further explained.

## 16 APPENDIX B – CABLE TRENCHING

- 16.1 PB has changed the wording for common trenching from cables *in the same trench* to those *“running close together, or on the same side of the street”*. Vector strongly opposes this change. There are a variety of reasons that cables are laid in close proximity, but are not in the same trench. These include (but are not limited to):
- (a) timing differences of investment;
  - (b) thermal ratings of some cables that require multiple trenches; and
  - (c) environmental factors.
- 16.2 The proposed optimisation standard would further increase the gap between actual costs of investment and that reported under ODV. Perverse incentives would also be created to locate cables in sub-optimal areas purely to ensure that actual investment costs are recordable.

## 17 ASSET DATABASE

- 17.1 While Vector supports maintenance of a comprehensive database of system fixed assets, there appears to be a misunderstanding between what is achievable and what is suggested in the Draft New Handbook.
- 17.2 Vector’s primary source of data for valuation is its geographical information system (GIS). The GIS holds over 95% of Vector’s assets by value; the remaining 5% being those assets which do not necessarily have a physical location that can easily be shown in the GIS (e.g. SCADA centralised master stations, spares, bus structures, control panels etc). As such, the third sentence in paragraph 2.5 should be updated to *“However, where practical, all new system fixed assets are to be recorded...”* since there are some assets that are not practical to hold in the GIS.
- 17.3 Aside from those (5%) remaining assets, the GIS fits the requirements of paragraph 2.1 of the Handbook in that it is kept up to date as projects are commissioned and is able to be verified in the field (in particular for Vector via mobile PDAs and laptops). It provides spatial information that allows the valuers to determine whether assets are in common trenches, in CBD locations and/or buried in hard rock conditions.
- 17.4 However, the GIS is not designed to be a valuation database, and thus it cannot calculate an ODV, nor does it hold the extra information such as multipliers used and optimisations to be applied.

- 17.5 Instead, Vector’s ODV valuation data is held in a static Microsoft Access database where fixed asset data from the GIS (and other data sources) is placed on the 31<sup>st</sup> March of the valuation year. The database also contains a number of tables, which hold the cost and life data, multipliers, optimisations, data grouping levels etc, and queries that calculate the valuation, summarise it at different levels and so on.
- 17.6 It takes over 24-hours for Vector’s system fixed assets to be categorised (e.g. determining whether lines are double circuit) and extracted from the GIS. It then can take several person-weeks to process the data to fill in gaps (such as missing feeder information) and get the database to the point where it can calculate the valuation. The exercise is obviously resource intensive. For this reason, it is not feasible to keep the valuation database up to date on a regular basis, except when a new valuation is required for the next regulatory valuation date.
- 17.7 Vector requests that the Handbook be updated to clarify that the Asset Database is defined as the source of data for valuation and not the tool for calculating the valuation (the latter should be called the valuation database). References to storing the multiplier in the asset database would need to be removed; multipliers and optimisations should only be stored in the valuation database.

## 18 OTHER SPECIFIC ITEMS IN THE HANDBOOK

Ref	Heading	Issue
2.3 p7	Bullets	“Multipliers” is incorrectly spelt
2.8 p8	“Assets owned by the ELB...”	Clarification is required – what are the “Commission’s current requirements”?
2.28 p12	Bullet a)	Currently <b>excludes</b> 22kV and 33kV. Needs to be changed to “being networks with a voltage of 22kV and above”
Appendix A A.37 P24	Refurbishment	“...with an equivalent engineering <b>serve</b> potential, ...” should be “service”
Table A.1	Zone Substations & Subtransmission •33 kV Outdoor Circuit Breakers	New replacement costs are too low. The cost of a modern outdoor vacuum 33kV circuit breaker installed without protection is around \$55,000.

Table A.1	Zone substation buildings	Standard life should be 60 years to be consistent with FRS-3 valuations. Vector has over 40 substation buildings that are older than 50 years and still in good condition.
Table A.1	<p>Zone Substations</p> <ul style="list-style-type: none"> <li>•33 kV Indoor Switchgear Cubicle</li> <li>•33kV Bus Section/ Coupler Indoor Switchgear</li> </ul>	<p>New replacement costs are too low.</p> <p>The cost of a modern indoor vacuum 33kV circuit breaker installed without protection is around \$50,000.</p>
Table A.1	<p>Zone Substations</p> <ul style="list-style-type: none"> <li>•Incoming Outdoor Swgr</li> <li>•Transformer Outdoor Swgr</li> <li>•Feeder Outdoor Swgr</li> <li>•Bus Section/Coupler Outdoor Swgr</li> </ul>	<p>The references to "Outdoor switchgear" should be changed to indoor with clarification that it is distribution (22kV or 11kV) e.g.</p> <ul style="list-style-type: none"> <li>• 11/22kV Indoor Incoming Switchgear</li> <li>• 11/22kV Indoor Feeder Switchgear</li> <li>• 11/22kV Bus Section Switchgear</li> </ul> <p>They should have a standard life of 45 to be consistent with 33kV indoor switchgear, but no maximum lives.</p>
Table A.1	<p>Zone Substations</p> <ul style="list-style-type: none"> <li>•LV Supplies</li> </ul>	20 year life is inconsistent with other LV assets e.g. LV cables are 45-70 years, LV customer service connections 45 years. The life should be at least 40 years.
Table A.1	<p>Distribution Lines &amp; Cables</p> <ul style="list-style-type: none"> <li>•Cable 11kV U/G DCct Heavy</li> <li>•Cable 11kV U/G DCct Medium</li> </ul>	Cost should be increased in line with single circuit.
Table A.1	<p>Distribution Switchgear</p> <ul style="list-style-type: none"> <li>•Circuit breakers</li> </ul>	Standard life should be 45 years if installed indoors and extendible to 55 years as per note d – to be consistent with zone substation distribution circuit breakers.
p30	Note "t"	The note is made but not referenced in Table A.1

<p>Appendix B P45</p>	<p>Optimisation of Network Configuration (a) Connection/Supply Points (including embedded generation connections)</p>	<p>As far as Vector is aware, Transpower has not optimised out any grid exit points supplying lines businesses, although it occasionally optimises GXP equipment down based on future utilisation. Why then is it necessary for lines businesses to determine whether points of supply could be optimised out?</p> <p>Also, embedded generation is connected to our network for commercial reasons that suit the generator, as per any load coming off the network. As such, there is no good reason why a lines business should optimise out these points of connection given the commercial obligation to provide the connection.</p> <p>This optimisation clause should be removed.</p>
<p>Appendix B P46</p>	<p>Optimisation of Network Configuration (c) Substations/Zone Substations/Primary Distribution Substations</p>	<p>Third Issue – “substation engineering”</p> <p>Vector requests more information as to what PB is attempting to achieve by the introduction of this requirement. We would also appreciate an indication as to the value of this task, with an estimate of the time and cost to lines businesses versus the benefit to optimisation. This should include what benefit over using modern equivalent assets this optimisation step produces.</p> <p>Other questions that need to be addressed before we can fully comment on the proposed requirement include:</p> <p>(a)How does ownership changes and adoption of different asset utilisation standards (deterministic vs probabilistic) affect the analysis?; and</p> <p>(b)How are non standard projects or customer requested configurations that are outside of the normal standards treated?</p>
<p>Appendix B P46</p>	<p>Optimisation of Network Configuration (d) High Voltage Distribution Network</p>	<p>First Issue – “and engineering of high voltage”</p> <p>Vector has the same questions in this area as those set out immediately above.</p>

Appendix B P46	Optimisation of Network Configuration (d) High Voltage Distribution Network	<p>Second Issue – “Use of very low capacity ... lines”</p> <p>This is a particularly onerous task that is required of lines businesses, being to look at thousands of rural spurs to determine whether all the customers are single phase. In many cases, because they are in rural areas, customer addresses are difficult to locate on the GIS and hence match to transformers, feeders etc. Thus, it is likely that in many cases lines businesses will not be able to determine whether ICPs on a given spur are single or three phase.</p> <p>The marginal cost difference between three phase and SWER is \$4,000 per km. If a lines business had say 100km of three-wire spurs that could be identified as able to be optimised to single-phase, the optimisation would be in the order of \$400,000 or say \$200,000 once depreciation is taken into account. This is an immaterial optimisation, imposing cost for little benefit.</p> <p>For these reasons, this optimisation requirement should be removed.</p>
Appendix B P46	Optimisation of Network Configuration (d) High Voltage Distribution Network	<p>Third Issue – “Valuation of single wire earth return circuits”</p> <p>First comment about “[no] standard costs ... provided for single wire earth return circuits” is incorrect. Table A.1 (p27) has a standard cost of \$21,000 for “11kV single phase or SWER lines”</p>
Appendix B p48	(b) Substations/zone/ primary distribution substations	<p>Second Issue – “Land and Buildings”</p> <p>The requirement to optimise indoor substations to outdoor is analogous to the optimisation of underground cables to overhead, which has been rightly removed from the handbook. Lines businesses are facing increasing pressure from local councils to minimise the impact of their assets on neighbourhoods. This means that substation buildings need to blend in with their surroundings; incoming and outgoing lines need to be underground and high voltage equipment such as transformers and switchgear need to be inside to meet boundary noise requirements as well as visual requirements.</p> <p>Whilst the optimisation approach allows lines businesses to not optimise based on local authority requirements, as with the</p>

		<p>underground-overhead optimisation, for companies such as Vector, Powerco and Unison whose assets cover a multitude of local and regional authorities, compiling this information is a time-consuming exercise and it is sometimes difficult for lines businesses to get proof from each and every council that this is the case.</p> <p>It should also be noted that Vector has a number of outdoor substations, such as Browns Bay, that were built in the 1970s in rural settings. In recent years, however, urban sprawl has resulted in subdivisions being built around them, resulting in increasing pressure to make these substations fit in with their neighbourhoods.</p> <p>Similarly, the requirement to “reduce the replacement cost of buildings to that of a simple standard modern structure using pre-fabricated or other low cost designs” and the need to “provide objective evidence to show that a low cost design will not meet local authority planning requirements” causes the same problems. Irrespective of whether there is a council design requirement, pre-fabricated and other low cost designs would simply not be acceptable to the residents in many areas; something such consumers continually raise with Vector.</p>
Appendix B p49	(d) High voltage distribution	<p>Second Issue – “Underground Cable Trenching”</p> <p>Vector disagrees with assuming cables “close” or on same side of street are in the same trench. Our arguments have been summarised further above in this submission.</p>
Appendix B p49	(d) High voltage distribution	<p>Third Issue – “Achievement of satisfactory customer voltage”</p> <p>This is another marginal optimisation that requires a lot of effort for little gain. The marginal cost difference between overhead line sizes is \$2000-\$3000/km, whereas capacitors cost in the vicinity of \$15,000 and voltage regulators between \$80,000 and \$160,000. These devices introduce harmonics and resonant circuits, and impose greater maintenance costs on lines businesses than overhead lines on their own.</p> <p>The use of capacitor banks and voltage regulators is generally considered cost effective when trying to defer capital expenditure, particularly when faced with the inability to upgrade lines due to regulatory constraints (largely the RMA).</p>

		<p>Vector has installed significant numbers of capacitor banks and a few voltage regulators in its Waitemata networks to improve power quality and voltage levels.</p> <p>Optimal network design in today's environment is a complex mix of factors, which include environmental considerations (network losses) and RMA laws (easements across private land). Voltage support is generally only required in rural networks. Generally speaking, the marginal cost associated with using larger conductor sizes on overhead lines is similar to that required for small conductor size with capacitors and/or regulators. Further, the RMA often creates significant cost when line upgrades are required.</p> <p>Vector does not consider that, in the current environment, the long run cost of its network could be reduced if rural lines were redesigned using smaller conductors and capacitor banks and/or voltage regulators.</p> <p>As such, this clause requires lines businesses to undertake a large amount of analysis work on hundreds of feeders for a likely immaterial optimisation. It should therefore be removed from the Handbook.</p>
Appendix B P50	(g) Low Voltage Distribution	<p>First Issue – Underground Trenching</p> <p>See comments for HV issue</p>
Appendix B P50	(g) Low Voltage Distribution	<p>Second Issue – “Whether the configuration and engineering of the <b>high</b> voltage...” – “high”</p> <p>Should “high” be replaced with “low”?</p> <p>Vector’s comments on the standard of engineering are also relevant here.</p>
Appendix B p51	(h) System Control	<p>Second Issue – load control</p> <p>Load control equipment is primarily used by lines businesses for the management of its network assets and transmission costs.. As such, “customer requirements” and disclosed quality of supply criteria are either irrelevant or of limited importance in determining what equipment to install. This test should, therefore, be removed.</p>

## 19 CLOSING COMMENT

- 19.1 In closing, Vector thanks the Commission for considering its submission. We would be happy to provide any additional information if useful to the Committee. We have requested that the Commission convene a public conference in this area and look forward to making an oral submission if the Commission accepts our recommendation.

**END**