Wilson Cook & Co

Engineering and Management Consultants
Advisers and Valuers

Reply to: Auckland Office
Our ref: 1102
Email: info@wilsoncook.co.nz

16 September 2011

The Chief Executive
Vector Ltd
101 Carlton Gore Road
NEWMARKET

Attention: Mr Brett Butler, Group Manager, Pricing & Valuation

Dear Sir,

RE: ENGINEERING REPORT (RE-SUBMISSION) IN RELATION TO COMMERCE COMMISSION'S ASSET ADJUSTMENT PROCESS

In accordance with your instructions of 18 April 2011 in relation to the re-submission of Vector Limited's (Vector's) response to the Commerce Commission's (Commission's) request for information under section 53ZD of the *Commerce Act 1986* issued to Vector on 16 March 2011 (the Notice), relating in turn to the electricity distribution default price-quality path determination process presently under way, we report as follows.

1 Adjustments

We understand that the asset adjustments that you propose to make are as follows:

(a) correction of asset registers: (i) adjustment to correct road classifications of low voltage cables: impact on traffic multiplier ($1.79 m); and (ii) adjustment to correct road classifications of low voltage cables: impact on business district multiplier ($2.84 m);

(b) adjustments to multipliers: (i) adjustment to business district multiplier for cables ($80.67 m, previously $18.67 m); and (ii) adjustment to rocky ground multiplier for cables ($24.74 m); and

(c) a further adjustment to achieve compliance with the Handbook, being an adjustment to correct remaining life calculations (treated by Vector as a correction to its asset register) ($1.31 m).

These adjustments, which total $111.4 m (previously $49.4 m), are further identified, described and explained in the attached table, prepared by you in the form of Schedule C of the Notice.

The table is supported by a report marked "re-submission" and dated September 2011 that was also prepared by you, is referred to in the table and should be read in conjunction with the table.

We note that, as a matter of practicality, neither the table nor its supporting documents contains enough information for a reader to verify the arithmetical accuracy of the asset adjustment

calculations as the calculations are made, in the main, in a computerised geographical information system (GIS) or in other such systems operated by your staff. However, we further note that those systems are of a type commonly used by electricity lines businesses for undertaking analyses and making calculations of the type concerned in relation to the present matter.

2 Circumstances Relating to Re-Submission

We note that the re-submission of your report in place of the report you submitted in April this year (in respect of which we issued a certificate on 13 May and a further certificate related to supplementary information on 24 June) arises, as far as the matters that we discuss in this letter are concerned, from the following circumstances.

First, your original (April) response to the Notice did not adjust multipliers that, in 2004, had been applied at rates below the permissible cap but focused instead on the examination and justification of those instances in which the multiplier would be applied at its full (and now increased) rate. However, you have now recognised that the multipliers in your "urban" subcategory of CBD situations warrant increases as well, even though they were (and are proposed to remain) at levels below the permissible cap. (The multiplier in your "business district" sub-category of CBD situations is also applied at a lower rate than the permissible cap but is not considered by you to warrant an increase.)

Second, your 2004 ODV included electricity network assets in Wellington that you have since sold. You have proposed in your report an adjustment to remove the impact of those assets on your average network asset age, given that the Wellington assets were older than the Auckland assets you retained. There is a need for this impact to be removed in conjunction with the roll-forward of the value of the assets you retained. Whilst we do not offer an opinion on your calculation of the resulting adjustment, as it is an accounting matter, we confirm in support of your proposed adjustment that our understanding of the stated relative ages of the two networks is as discussed in this paragraph.

3 Opinion

Having reviewed your material as identified above and after making reasonable enquiries with you, we are satisfied that to the best of our knowledge:

(a) subject to the qualifications in 4 below, the adjustments are of types that comply with the Commission's requirements, as set out in its determination of December 2010 and as summarised in the Notice;

(b) the data, information, criteria and assumptions employed, as set out in your documentation (but not repeated or paraphrased here for reasons of their length and for clarity), are appropriate and reasonable for the purpose of defining the adjustments;

(c) the methods of calculation employed to quantify the adjustments, as set out in your documentation, are appropriate for the purpose; and

(d) the ODV rules have been properly applied for assets that had not had an ODV valuation calculated originally.

Based on the foregoing, we consider that this report meets the requirements of Schedule C, subject to the qualifications stated in 4 below.

4 Qualifications

Values Determined under Generally Accepted Accounting Practice Not Reviewed by Us

The derivation of values of a type normally determined in accordance with generally accepted accounting practice is a matter outside our ambit and therefore no such values have been reviewed by us or are covered by our opinion.

The following adjustments are considered by us to fall into this category: depreciation amounts; the amendment of or inclusion of a value for intellectual property or other intangible assets; and the amendment of or inclusion of a value for work in progress.

Verification of Calculations by Audit Not Reviewed by Us

The verification of calculations by methods normally considered an audit (or using processes of a type that a qualified auditor would use) is also a matter outside our ambit and therefore no such calculations have been verified by us or are covered by our opinion.

Such calculations include those made in or derived from your GIS system or from other such systems.

No Consideration of Roll-Forward of Valuation

No consideration has been given by us to the roll-forward of any values from the year 2004.

The adjustment of asset ages or depreciation to take account of the sale of the Wellington network is considered by us to fall into this category.

No Determination of Impact of Professional Judgement

For reasons of practicality, no attempt has been made by us to quantify the impact of the exercise of professional judgement in your calculations, as the exercise of professional judgement is implicit in (and an integral part of) the calculations and the calculations would not be valid without the assumptions so made.

Additional Qualification

The adjustment described in section 6 of your report (section 5 in your April report) to correct the calculated remaining life of assets that are aged to within three years of their standard life as at the year 2004 is proposed by you on the ground that the correction is akin to the correction of asset ages and thus to the correction of your asset register. Although the correction appears justified, it is not clear that it falls within the bounds of the Notice. This matter may need to be determined by the Commission and, accordingly, we draw it to your attention and qualify our opinion in respect of it.

5 Qualifications of the Reviewer

This opinion has been prepared for and on behalf of Wilson Cook & Co Ltd by Mr Jeffrey Wilson. Mr Wilson believes that he meets the definition of "engineer" in clause 1.1.4 of the *Commerce Act (Electricity Distribution Services Input Methodologies) Determination 2010* as he is a chartered professional engineer, acting in that professional capacity and independent (defined in turn by the Commission as neither in a relationship with, nor having an interest in, for present purposes, Vector, that is likely to involve him in a conflict of interest between his duties to us and any normal professional duties to the Commission).

Mr Wilson is qualified professionally in engineering and commerce and has over forty years experience as a professional engineering adviser in the electricity supply industry, including more than 20 years of experience in asset valuations, regulatory assessments and related work.

No restriction or influence that we considered inappropriate was imposed on us or on the scope of our services by Vector's management or other circumstances.

6 Conditions Accompanying Our Opinion

Disclosure

Wilson Cook & Co Limited has prepared this report in accordance with the instructions of its client on the basis that all data and information that may affect its conclusions have been made available to it. No responsibility is accepted if full disclosure has not been made. No

responsibility is accepted for any consequential error or defect in our conclusions resulting from any error, omission or inaccuracy in the data or information supplied directly or indirectly.

Disclaimer

This report has been prepared solely for our client, Vector, for the purpose stated in the preamble to this report. Wilson Cook & Co Limited, its officers, agents, subcontractors and their staff owe no duty of care and accept no liability to any other party, make no representation or warranty as to the accuracy or completeness of the information or opinions set out in the report to any person other than to its client including any errors or omissions howsoever caused, and do not accept any liability to any party if the report is used for other than its stated purpose.

Non-Publication

With the exception of its publication by Vector in full as part of its response to the Commission, neither the whole nor any part of this report may be included in any published document, circular or statement or published in any way without our prior written approval of the form and context in which it may appear.

Yours faithfully

Wilson Cook & Co Limited

Encl. Letter of Engagement and Table of Adjustments

Vector Limited
101 Carlton Gore Road
PO Box 99882, Newmarket
Auckland, New Zealand
www.vector.co.nz

Corporate Telephone
+64-9-978 7788

Corporate Facsimile
+64-9-978 7799

18 April 2011

Mr Jeffrey Wilson
Managing Director
Wilson Cook & Co Ltd
PO Box 2296
Auckland
New Zealand

Dear Jeffrey

ENGINEERING REPORT AND OPINION IN RELATION TO ASSET ADJUSTMENT PROCESS – TERMS OF ENGAGEMENT

Thank you for agreeing to act as Vector Limited's (Vector) independent engineer for the purpose of our response to the Commerce Commission's request for information under section 53ZD of the Commerce Act 1986, in relation to the Commission's Commerce Act (Electricity Distribution Default Price-Quality Path) Determination process.

We are undertaking the asset adjustment process set out in clause 2.2.1 of the Commerce Act (Electricity Distribution Services Input Methodologies) Determination 2010 and are required to provide the Commission with certain expert opinions and supporting information.

Terms of Engagement

Wilson Cook & Co Ltd is engaged by Vector to provide your services to perform, on its behalf, the services set out below until 27 May 2011 or such date as we agree mutually.

You confirm that you meet the definition of "engineer" in clause 1.1.4 of the Commerce Act (Electricity Distribution Services Input Methodologies) Determination 2010 – namely, that you are (a) a Chartered Professional Engineer; (b) acting in that professional capacity; and (c) independent (defined in turn as neither in a relationship with, nor having an interest in, for present purposes, Vector, that is likely to involve you in a conflict of interest between your duties to us and your duties to the Commission).

The Services

The services are: (a) the preparation of a report complying with the requirements set out in Schedule C (including Table 1 of that Schedule) of the Commission's 16 March 2011 Notice to Supply Information; (b) reporting to us on the progress of your work as required; and (c) all other work as required by us from time to time during the engagement.

The commercial terms of your engagement have been agreed previously with us by way of a separate agreement.

Confidentiality
You will be required to keep confidential all information and documents that you acquire during this engagement, other than where we specifically authorise you in writing to disclose such information or where you must do so by law.

I look forward to hearing whether these terms are acceptable to you.

Yours faithfully

Brett Butler
Group Manager Pricing & Valuation

Appendix A - *Summary table of adjustments corresponding to Table 1 of Schedule C: Information requirements for engineer's report*

This Appendix includes all ODV adjustments, and supersedes our previously submitted report[24].

Nature of adjustment	**Adjustment to correct road classifications of LV cables - Impact on traffic multiplier**
Category of adjustment	Correct asset register errors
EDB IM cl. Ref	2.2.1(2)(b)
Designated asset type	Value modified
Description and number of assets	LV Cables: 27,198
Supporting information	Section 3 of Report
2004 ODV original ($000)	$ 21,265
2004 ODV adjusted ($000)	$ 23,058
Value of adjustment ($000)	$ 1,793

Nature of adjustment	**Adjustment to correct road classifications of LV cables - Impact on business district multiplier**
Category of adjustment	Correct asset register errors
EDB IM cl. Ref	2.2.1(2)(b)
Designated asset type	Value modified
Description and number of assets	LV Cables: 27,175
Supporting information	Section 3 of report
2004 ODV original ($000)	$ 21,258
2004 ODV adjusted ($000)	$ 24,101
Value of adjustment ($000)	$ 2,843

Nature of adjustment	**Adjustment to business district multiplier for cables**
Category of adjustment	Re-apply a modified multiplier
EDB IM cl. Ref	2.2.1(2)(d)
Designated asset type	Value modified
Description and number of assets	Subtransmission, Distribution & LV Cables: 216,918
Supporting information	Section 4 of report
2004 ODV original ($000)	$341,686
2004 ODV adjusted ($000)	$ 422,351
Value of adjustment ($000)	$ 80,665

[24] Published report: Adjustments to Vector Electricity Networks Optimised Deprival Valuations (as at 31st March 2004) Auckland, Northern & Lichfield (dated April 2011).

Nature of adjustment	**Adjustment to rocky ground multiplier for cables**
Category of adjustment	Re-apply existing multiplier
EDB IM cl. Ref	2.2.1(2)(c)
Designated asset type	Value modified
Description and number of assets	Subtransmission, Distribution & LV Cables: 102,983
Supporting information	Section 5 of report
2004 ODV original ($000)	$ 171,067
2004 ODV adjusted ($000)	$ 195,809
Value of adjustment ($000)	$ 24,742

Nature of adjustment	**Adjustment to correct remaining life calculation**	
Category of adjustment	Correct asset register errors	
EDB IM cl. Ref	2.2.1(2)(b)	
Designated asset type	Value modified	
Description and number of assets	Distribution & LV Cables:	3,827
	Distribution & LV Lines:	1,581
	Distribution Subs and Transformers:	200
	Distribution Switchgear:	1,176
	Other System Fixed Assets:	158
	Subtransmission:	133
	Zone Substations:	402
Supporting information	Section 6 of report	
2004 ODV original ($000)	Distribution & LV Cables:	$ 139
	Distribution & LV Lines:	$ 39
	Distribution Subs and Transformers:	$ 57
	Distribution Switchgear:	$ 179
	Other System Fixed Assets:	$ 124
	Subtransmission:	$ 29
	Zone Substations:	$ 680
	Total	$ 1,247
2004 ODV adjusted ($000)	Distribution & LV Cables:	$ 218
	Distribution & LV Lines:	$ 70
	Distribution Subs and Transformers:	$ 106
	Distribution Switchgear:	$ 369
	Other System Fixed Assets:	$ 194
	Subtransmission:	$ 63
	Zone Substations:	$ 1,541
	Total	$ 2,561
Value of adjustment ($000)	Distribution & LV Cables:	$ 79
	Distribution & LV Lines:	$ 31
	Distribution Subs and Transformers:	$ 48
	Distribution Switchgear:	$ 190
	Other System Fixed Assets:	$ 71
	Subtransmission:	$ 34
	Zone Substations:	$ 861
	Total	$ 1,314

ADJUSTMENTS TO VECTOR ELECTRICITY NETWORKS OPTIMISED DEPRIVAL VALUATION

(as at 31st March 2004)

AUCKLAND, NORTHERN & LICHFIELD EXCLUDING WELLINGTON

Resubmission:
September 2011

Contents

Appendix

1. Preface

This report describes Vector's electricity regulated asset base valuation processes, assumptions and outcomes in relation to meeting the requirements of the Commerce Commission's (the Commission's) Statutory Notices to supply information under section 52ZD of the Commerce Act 1986 of 16 March 2011 and 15 June 2011 (the Notices). Vector supplied information to the Commission on 26 May 2011 in response to the Notices.

The Commission subsequently wrote to electricity distribution businesses (EDBs) on 2 September 2011 stating *inter alia* that "an EDB ... may adjust the application of multipliers to their 2004 ODV valuations where better information has become available since 2004 on the appropriate application of those multipliers but this must be done to provide further insight into 2004 costs".

In addition, the Commission more broadly allowed EDBs to amend and re-submit other aspects of their responses to the Notices where considered justified, noting that such submissions would be considered by the Commission on a case-by-case basis.

The Commission also provided guidance and clarification for submitters, as published on its website on 7 September 2011.

In light of the Commission's additional guidance and clarification, Vector has reconsidered the use and application of multipliers in the information we provided to the Commission under the Notices. Our original (April) response to the Notices did not adjust multipliers that, in 2004, had been applied at rates below the permissible cap, focusing instead on the examination and justification of those instances in which the multiplier would be applied at its full rate. We have now identified that the multipliers in our "urban" subcategory of Business District warrant increases as well, even though they were (and are proposed to remain) at levels below the permissible cap.

Where necessary (in the absence of better information), we have utilised post-2004 data to help verify the proposed increases in these multipliers, making appropriate adjustments for input cost inflation (i.e. the impact of commodity prices and CPI and for other factors as necessary to ensure that the figures so derived are representative of costs prevailing in the year 2004.

The timeframe available to us under the Commission's Notices to amend and resubmit our valuation has been limited and, as a result, we have 4not had been able to investigate as full a range of projects to the level of detail that we would like or would normally use to support a valuation of this nature.

Although we believe the information we have supplied supports the application and use of revised multipliers in the way we propose, we acknowledge that in some instances, the limited information makes the quantification of uplift in the multiplier difficult to determine. We also acknowledge that making allowances to convert more recent data to the 2004 base year is difficult to determine precisely. However, we have made

appropriate assumptions in these regards to ensure that the 2004 ODV Handbook principles have been applied (including in relation to economies of scale) and they are explained and discussed in the main text of this submission.

Taking into account such areas of uncertainty, we have adopted a conservative approach to specifying the extent to which the multiplier will be changed. Our general approach to this has been to adopt a mid-point between the multiplier used in 2004 and that supported by the post-2004 cost data. Our report outlines where these assumptions are applied in the relevant sections.

2. Introduction and Summary

The Input Methodologies Determination of 2010[1] (2010 IM) requires electricity distribution networks such as Vector to produce an initial regulatory asset base (RAB) as of 31 March 2009. For Vector the initial RAB consists of the disclosed electricity ODV valuation of 31 March 2004[2] (2004 ODV) as a starting point plus asset additions, disposals, depreciation and indexing in the following years up to 31 March 2009.

Vector is amending and resubmitting the valuation, based on additional clarifications and guidance on the interpretation of the IMs as provided by the Commerce Commission in their post decision correspondence. This report supersedes Vector's earlier report[3], and describes the adjustments made to the 2004 ODV starting point as allowed for in the 2010 IM.

For clarity, this 2004 valuation and initial RAB, and supporting cost information, excludes any aspect related to the Wellington distribution network which was sold by Vector in 2009.

The following is a summary of Vector's adjustments and their impacts on the 2004 ODV.

Original 2004 ODV	$ 1,504.4 million
Adjustment to correct road classifications of LV cables:	
- Impact on traffic multiplier	$ 1.79 million
- Impact on business district multiplier	$ 2.84 million
Adjustments to business district multipliers for cables	$ 80.67 million
Adjustment to rocky ground multiplier for cables	$ 24.74 million
Adjustment to correct remaining life calculation	$ 1.31 million
Adjustment to correct asset ages	$ 0 million NoteA
Adjustment to include Intangible Assets	$ 7.17 million
Total adjustment	$ 118.52 million
Adjusted 2004 ODV	$ 1,622.9 million

Notes:

A. Adjustment does not impact on the 2004 ODV value.
B. The above values exclude the Wellington network as this was sold by Vector in 2008 and therefore does not impact on the initial RAB.

[1] Commerce Act (Electricity distribution services input methodologies) Determination 2010 – 22 December 2010

[2] Published report: Vector optimised deprival valuation (as at 31st March 2004) Auckland, Wellington & Lichfield electricity networks

[3] Published report: Adjustments to Vector Electricity Networks Optimised Deprival Valuations (as at 31st March 2004) Auckland, Northern & Lichfield (dated April 2011).

3. Adjustment to correct road classification of LV cables

Background

Local councils and Transit New Zealand classify roads as Level 0, Level 1 or Level 2 according to the level of traffic. In the 2004 ODV the road level classification formed the basis for determining traffic management cost allowances for all cables and replacement cost multipliers for cables in business districts. Vector's 2004 ODV report describes in detail the valuation methodologies and processes followed[4].

The process followed in the 2004 ODV involved spatial analysis which identified cables located within a specified distance from road centre lines. A number of cables were however omitted from this analysis by error. Consequently cables that are located within the specified distance of Level 1 and 2 roads were incorrectly assigned to the default category Level 0. The Level 0 category does not include any allowance for additional traffic management costs or higher business district multipliers and cables were therefore undervalued.

Implementation

The omission of cables from the spatial analysis in the 2004 ODV was due to an incomplete electronic file for low voltage cables. To correct the error all low voltage cables with no 2004 ODV classification (defaulted to Level 0) were re-analysed based on the same methodology and road classifications used in the 2004 ODV. A breakdown of all low voltage cables is shown below.

2004 ODV Classification	Corrected Classification	% of total length
Level 2	Level 2	8.7%
Level 1	Level 1	50.1%
Level 0	Level 2 Level 1 Level 0	0.4% 10.9% 29.8%
Grand Total		**100.0%**

The table shows that approximately 40% of low voltage cables were categorised as Level 0 in the 2004 ODV. A small amount was reclassified as Level 2 and 10.9% of the total population were reclassified as Level 1.

Reconciliation and uplift

In the 2004 ODV the total value of the traffic management allowance for cables is $27 million and the total value of the business district multiplier is $130 million.

As described in detail in the 2004 ODV report[5], the ODV value of cables with Level 1 and Level 2 road classifications include additional cost allowances for traffic management and higher business district replacement cost multipliers. The value of cables reclassified

[4] Published report: Vector optimised deprival valuation (as at 31st March 2004) Auckland, Wellington & Lichfield electricity networks

[5] Ibid footnote 3

from Level 0 to Levels 1 and 2 will therefore increase. Using the same methodologies as in the 2004 ODV, the table below shows the uplift in the 2004 ODV.

Cable value increase from:	**2004 $ uplift**
Additional traffic management allowance	$ 1,793,334
Higher business district multipliers	$ 2,843,409

4. Adjustment to business district multiplier for cables

Background

The 2004 ODV Handbook specifies a replacement cost multiplier for cables in business districts including main arterial roads radiating from these areas – refer paragraph A.15. It intends to capture the additional costs associated with laying cables in dense developments due to restricted access times, congestion of utility services, special reticulation requirements, substantial reinstatement, concrete cutting or special backfilling.

In the 2004 ODV, Vector implemented this multiplier by categorising cables into three categories based on the road classifications of local councils and Transit New Zealand. These were:

Category	Road classification
CBD	Level 2
Urban	Level 1
Not applicable	Level 0

The "urban" and "CBD" classifications only captured cables in or immediately adjacent to Level 1 or 2 roads. Cables on side roads within congested area such as commercial and industrial precincts were omitted.

The 2010 IM allows for adjustments to the multipliers used in the 2004 ODV where more accurate information has subsequently become available – refer Subpart 2 paragraph 2.2.1 (2) (c), and also extends the maximum multiplier value from 2.0 to 2.5 – refer Subpart 2 paragraph 2.2.1 (2) (d) (ii).

The Vector 2004 ODV report[6] and other regulatory submissions[7] have consistently stated that the maximum multiplier of 2.0 in the ODV Handbook was insufficient to reflect the actual costs of laying cables in major congested areas such as the central business districts in larger cities. An adjustment compliant with the 2010 IM was therefore implemented as described below.

Implementation

In addition to the original 2004 ODV categories based on road classifications, Vector used new information in the form of a geographical layer showing dense clusters of commercial and industrial buildings to more accurately define business district areas.

Each building cluster was assessed according to the characteristics described below and assigned to one of three categories:

[6] Published report: Vector optimised deprival valuation (as at 31st March 2004) Auckland, Wellington & Lichfield electricity networks

[7] Report to the Electricity Networks Association – Revised ODV Handbook by PricewaterhouseCoopers and Sinclair Knight Merz. July 2010

- Central business district
- Business district
- Urban

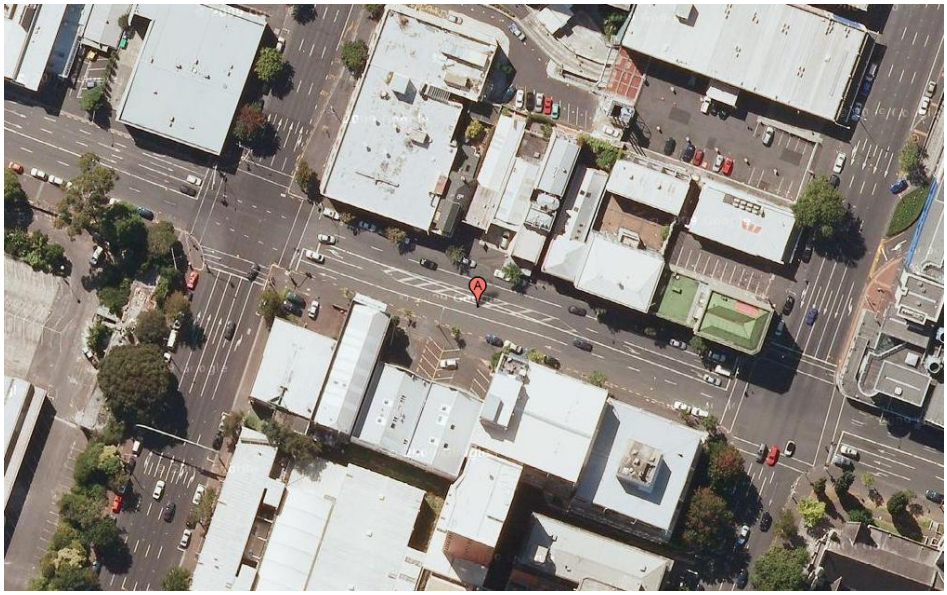
Central business district category - Characteristics

The "central business district" category consists of the downtown Auckland area and neighbouring business centres. These areas are subject to:

- Very high density of development including commercial and retail premises with associated parking access requirements
- Very high density of utilities and services requiring involved installation procedures, often resulting in non-optimal cable routes
- High vehicle and pedestrian volumes resulting in road and foot path congestion[8]
- Significant manual trenching and supervision
- Special backfill requirements
- Significant public relations management, notices and signage
- Special requirements for access to driveways and commercial premises
- Restricted access times for extended business hours
- Strict footpath reinstatement requirements. Often whole footpaths need to be reinstated instead of trench widths only
- Significant council application, consenting and compliance requirements

The following photos show a typical "central business district" scenario:

[8] The 2004 ODV Handbook provides an additional traffic management adjustment to reflect some of the costs associated with high vehicle and pedestrian volumes.



Business district category - Characteristics

The "business district" category comprises commercial and retail building clusters outside the downtown Auckland area and neighbouring business centres, usually along major arterial routes. These centres are subject to similar constraints as the "central business district" category but are slightly less onerous and usually contained within an area of two or three adjacent streets.

This category also includes all cables along Level 2 roads previously classified as "CBD" in the 2004 ODV. Renaming the old "CBD" category to "business district" differentiates these from roads inside the defined "central business district" area.

The following photos show a typical "business district" scenario:

Urban category - Characteristics

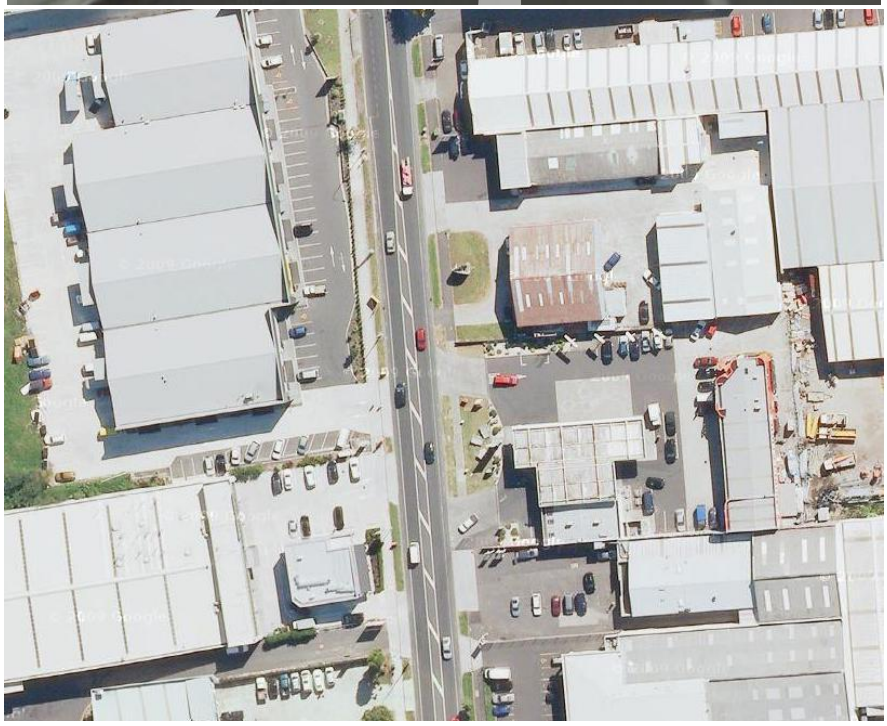
The "urban" category comprises major industrial building clusters as well as all Level 1 roads previously classified as "urban" in the 2004 ODV. This category captures all areas that have higher costs than standard suburban areas and roads. Contributors to higher cabling costs in these areas include:

- Special requirements for access to driveways and industrial premises
- Restricted access times for extended business hours in industrial areas
- Public relations management, notices and signage
- High levels of heavy commercial vehicle traffic[9]
- Significant concrete cutting along industrial access ways

The following photos provide two examples of "urban" scenarios.

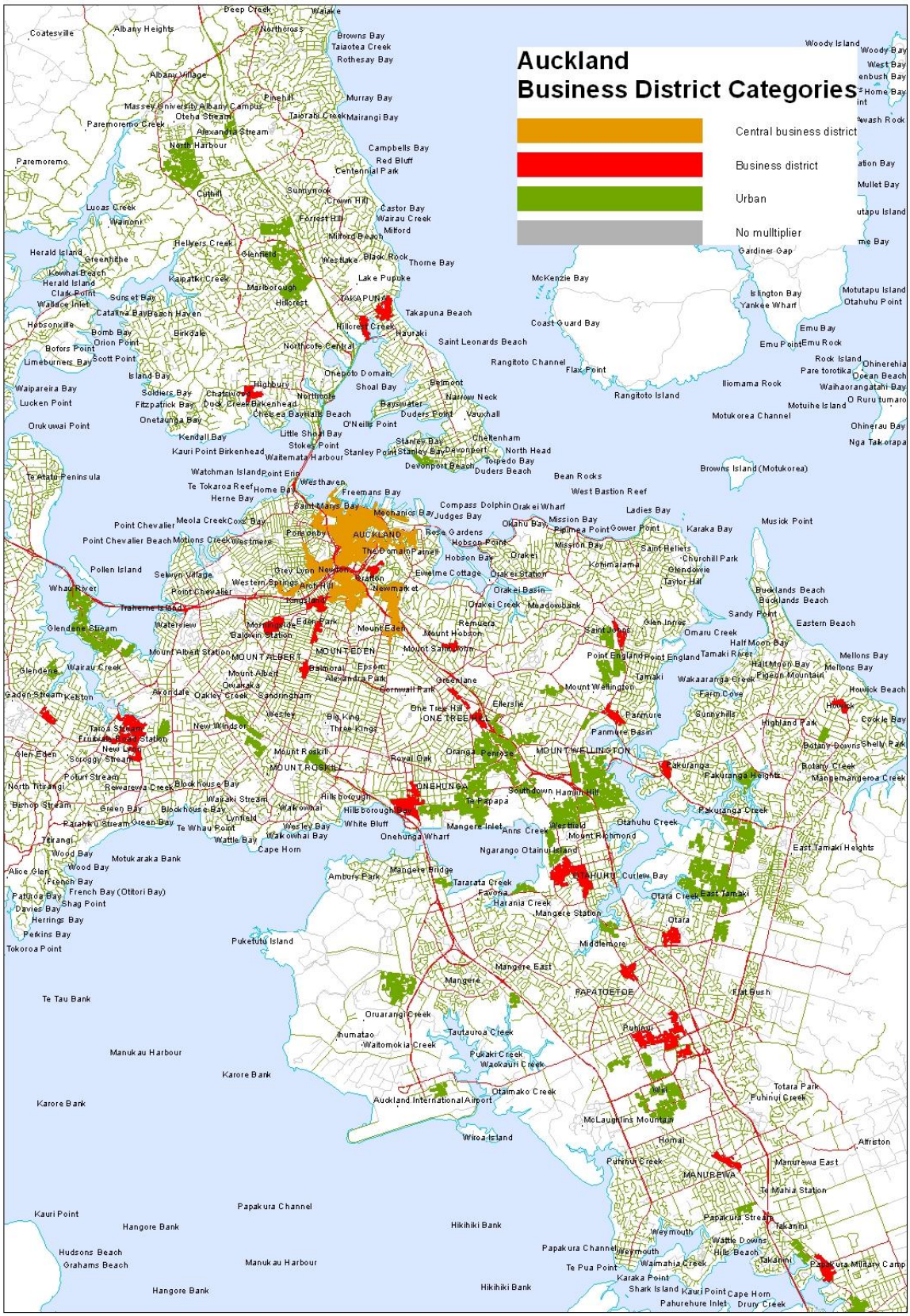
[9] The 2004 ODV Handbook provides an additional traffic management adjustment to reflect some of the costs associated with high vehicle and pedestrian volumes.

Example 1 - Urban



Example 2 - Urban

The following figure shows building clusters and roads of the Auckland area categorised according to the business district categories.



The following is a breakdown of all Vector cable lengths classified according to the business district categories. The breakdown includes the adjustment (described in Section 2 above) to correct for low voltage cables which were omitted from the road level classification process in the 2004 ODV.

Business district category	% of total length
Central business district	3.7%
Business district	16.2%
Urban	57.1%
No Multiplier	23.0%
Grand Total	**100%**

Modified Multipliers

The 2010 Commission IM provided an increased range of replacement cost multipliers for the cables installed in business districts. The permitted multipliers range from 1 for urban areas to 2.5 for CBD business areas.

The following table shows the replacement cost business district multipliers used in the 2004 ODV and the modified categories applied in the adjusted valuation.

2004 ODV classification	Modified business district categories	2004 ODV Multiplier Applied	Modified Multiplier Applied	Max permitted In IM
Not applicable	Central business district	n/a	2.5	2.5
CBD	Business district	2.0	2.0	2.5
Urban – Subtransmission cables	Urban – Subtransmission cables	1.8	2.0	2.5
Urban – Distribution cables	Urban – Distribution cables	1.15	1.5	2.5

All multipliers have been applied within the new range permitted in the Commission IMs.

Multipliers higher than applied in the 2004 ODV have been used for the 'Central Business District' and 'Urban' subcategories but the multiplier for the 'Business District' subcategory has not been altered from the level used in the 2004 ODV.

Approach to justifying modified multipliers

Vector uses actual project cost information to justify multiplier levels.

For the newly-defined 'Central Business District' subcategory, Vector obtained project cost information related to projects specifically located in these areas to justify the multiplier associated with this new category. Further detail is provided in the sections below.

For the 'Urban' subcategory, Vector has further investigated projects in urban areas and obtained additional cost information since our April submission[10]. This provided further

[10] As noted in the preamble to this submission, our original (April) response to the Notices did not adjust multipliers that, in 2004, had been applied at rates below the permissible cap, focusing instead on the examination and justification of those instances in which the multiplier would be applied at its full rate. We

cost information for an updated analysis of the associated multiplier. Further detail is provided in the sections below.

For the 'Business District' subcategory, Vector has relied on the previously applied cost information.

Project Cost Evidence

For each modified multiplier, Vector has reviewed the actual costs of a range of projects undertaken since 2004. Actual project cost information was collated to determine an installed cable unit rate ($/m) for each project.

Any discernable costs which should not be part of the base unit cost have been removed. They include:

- costs not associated with installation of cables, for example switchgear and transformer installation costs; and
- identifiable project costs for traffic management and specialist rock breaking, which are covered by other ODV cost multipliers or allowances.

Consideration of post-2004 commodity price increases and inflation

The additional information we have to support the use of modified business district multipliers for cables relates to projects that have been completed after 2004. In order to translate the nominal costs of these projects into 2004 equivalent projects, Vector has considered and addressed the increase in commodity prices and the effects of inflation since 2004.

This has been demonstrated by illustrating in graphical format the nominal cost of individual projects over time. On the same chart we have plotted the 2004 ODV Handbook replacement cost and applied the multiplier(s) we believe are supported by our project costs. The 2004 ODV Handbook replacement costs have been escalated for each of the subsequent years using two alternative indices to provide a comparison with the actual project nominal costs and 2004 handbook and multiplier equivalents in those years. These comparisons are displayed for each specific multiplier justification in the relevant sections later in this report.

Whilst numerous cost indices exist, the relevance and appropriateness of these for distribution network assets have been challenged as not being sufficiently specific and accurate[11]. In the absence of a readily available, published industry indexes, Vector has used the following indices as we believe they reflect either a range corroborated by external engineering experts or more widely reflect an industry wide view on actual cost increases between 2004 and 2010. The two indices modelled are:

1. Consumers Price Index ("CPI"):
    - CPI is used as an index in the Commissions DPP

have now identified that the multipliers in our "urban" subcategory of Business District multipliers warrant increases as well, even though they were (and are proposed to remain) at levels below the permissible cap.

[11] Meyrick and Associates, "Indexing the Regulatory Asset Base of Electricity Lines Businesses" Report prepared for the Commerce Commission, 8 July 2005.

- The Meyrick and Associates report[12], 2005 provided this as the suggested index to the Commission.

2. PWC SKM Revised 2010 Handbook Index ("PWC SKM Handbook Index")
   - PWC and SKM prepared a report to the Electricity Networks Association[13] outlining proposed 2010 Replacement Costs based on input from distribution network businesses.
   - The report indicates increases in cable cost between the 2004 ODV Handbook and the 2010 PWC SKM Handbook.
   - Vector has applied 2004-2010 cost indices as follows:
     - 11kV (heavy) single circuit cables: 78%
     - 22kV (heavy) single circuit cables: 66%
     - 33kV (heavy) single circuit cables: 55%

Consideration of work requirements post-2004

As Vector's cost evidence is obtained from projects completed after 2004, consideration of the consistency in the requirements for projects completed since 2004 and those in 2004 has been taken into account. On the basis that the same Auckland Utility Operators Group (AUOG) Codes of Practice for Working in the Road have applied since its introduction in 2003, Vector believes that there is consistency in the requirements for projects post-2004. Vector has therefore not made any adjustments to post-2004 project costs to address the work requirements.

Addressing economies of scale

The actual projects Vector has used to identify specific costs reflect a range of project scale, from smaller projects up to significant, large projects. The 2004 ODV Handbook costs are theoretical costs based on a "significant" scale of construction[14].

It is difficult to specifically address the issue of scale as it relates to a range of individual projects. A uniform adjustment factor is likely to over compensate a large project compared with a smaller project. Given the scale variation inherent in projects from which the actual cost data is drawn, our cost information has been plotted in chart form to demonstrate the overall cost trends when compared to 2004 ODV replacement costs.

To account for economies of scale, the actual project costs shown on the charts could be reduced by a theoretical 15% with the majority remaining above the theoretical ODV methodology costs.

Size of project cost dataset investigated

When reviewing the range of projects that have been undertaken since 2004, Vector has attempted to isolate the projects where robust data is available in relation to the effects of business district multipliers. This has been achieved by reviewing the list of projects completed since 2004 and only including those projects which include appropriate asset types, or where the cost data can be readily extracted within the limited timeframe available.

---

[12] idib footnote 10.

[13] Report to the Electricity Networks Association, "Revised ODV Handbook", 9 August 2010

[14] Handbook for Optimised Deprival Valuation of System Fixed Assets of Electricity Lines Businesses published by the Commerce Commission on 30 August 2004

Of the approximately 160 cabling projects available roughly 80 meet these criteria. From this dataset, 26 projects have been analysed and plotted for comparison purposes: 14 projects related to "Central Business District" projects and 12 related to "Urban" Business District projects.

Vector also has an active overhead improvement (undergrounding) program, which generally implements larger scale projects in co-ordination with other local utility operators and territorial bodies. Such projects have been structured with Vector, the relevant Council, Telecom, and other utilities partnering together to achieve a least cost "dig once" concept. Undergrounding projects capture significant cost synergies with Council footpath replacement programmes, local town centre precinct upgrades, road realignments. The result of these initiatives is that the actual cost data is not directly comparable to typical efficient projects considered under an ODV valuation approach. Based on this, in conjunction with the time limitations provided, undergrounding projects have not been investigated as part of our cost evidence.

"Central Business District" Multipliers – modified multiplier justification

Vector has applied the maximum multiplier of 2.5 as provided in the 2010 IM for the new "central business district" category. As we have applied a multiplier to a new sub-category of assets we have gathered additional evidence to identify the appropriate multiplier within the range specified in the IM.

Information from cable installation projects in or around the central business district area of Auckland is now available from a significant number of projects undertaken since 2004. Actual project cost information was collated to determine an installed cable unit rate ($/m) for each project.

The unit rates were calculated to reflect typical conditions for installing cables in the central business district by including costs due to:

- Restricted access times and higher levels of public relations management
- Working in heavy pedestrian areas
- Working in areas with dense installations of utilities, including utility relocation or difficult work
- Substantial levels of trenching and reinstatement, including higher levels of concrete

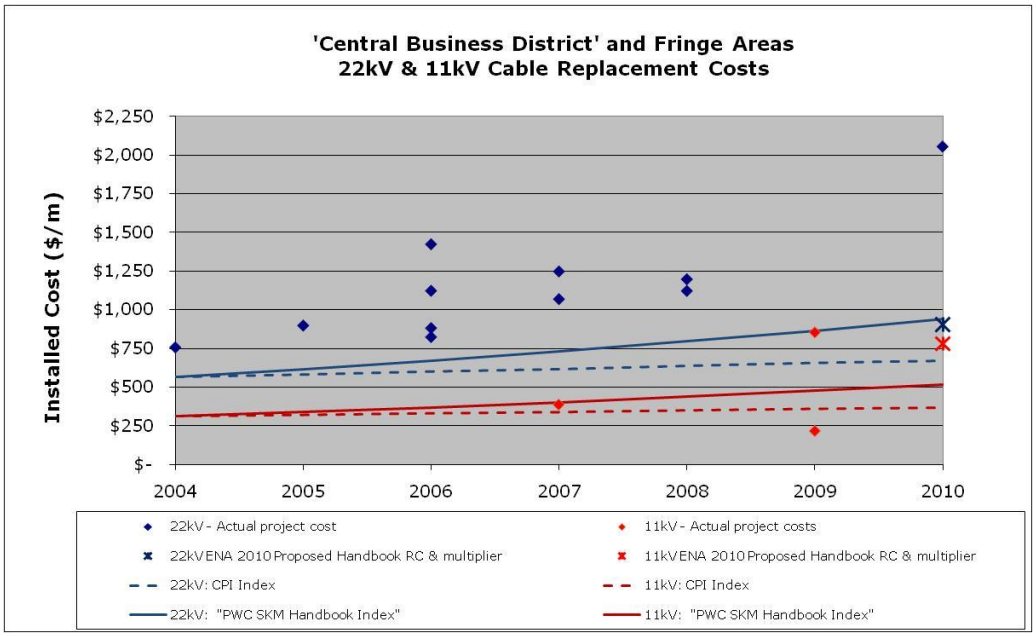
Chart 1 provides a comparison for the costs associated with 11kV and 22kV cables installed in Central Business District areas, showing:

- Actual project cost information (unit rate $/m)

Against:

- 2004 ODV replacement costs:
  - multiplied by the modified urban multiplier; and
  - indexation adjustments by CPI and the "PWC SKM Handbook Index"; and
  - shown as a trend lines

Chart 1: 'Central Business District' cabling costs comparison



Note – Actual project costs shown reflect the year that they were incurred in and are presented in the nominal dollars of the day.

Chart interpretation

For the 11 kV cables the 2004 ODV replacement cost is the standard 2004 Handbook value for "heavy" type cables. For 22 kV cables the 2004 ODV replacement cost is an approved non-standard replacement cost which takes into account Vector's standard policy to install higher capacity 22kV cable (copper material) to provide suitable capacity for the core network around the central business district area. The 22 kV non-standard cost is higher than the standard 2004 Handbook replacement cost for "heavy" type cables.

The chart also includes maximum central business district cable costs as proposed by the PWC & SKM in their draft 2010 handbook[15] submitted under the 2010 input methodologies consultation process. The draft 2010 handbook is based on the responses from a number of electricity lines businesses.

The chart demonstrates that the majority of actual costs of projects in the central business district over the period 2004-2010 are significantly higher than those allowed for under the ODV valuation methodology using a 2.5 multiplier. Projects costs near or

[15] Report to the Electricity Networks Association – Revised ODV Handbook by PricewaterhouseCoopers and Sinclair Knight Merz. July 2010

below the ODV methodology tend to be projects on the fringes of the "central business district" area which are typically subject to less onerous constraints.

Outcome:
Based on the projects that Vector has evaluated, there is prima facie evidence that the costs in 2004 terms, and considering only 2004 factors and influences, supports the use of a modified multiplier of at least 2.5 for cables in "central business districts". The range maximum of 2.5 has been adopted.

"Business District" multipliers

Vector has not amended the value of the Business District multiplier of 2.0 that was used in the 2004 ODV.

"Urban" business district multiplier – modified multiplier justification

Vector has modified the value of the multipliers applied to the 2004 category of "'urban" business district. The multipliers used in 2004 were 1.15 for distribution cables and 1.8 for subtransmision cables. We have identified that the multiplier level adopted in 2004 had a limited amount of analytical support due to limited available data. We have therefore utilised post-2004 data to verify the level of this multiplier.

A sample of post-2004 projects has shown that the multiplier level used in 2004 and in the previous response to the Notices is inadequate. However, given the short period of time available to Vector to prepare and resubmit and amended valuations, we have not had sufficient time to investigate as full a range of projects to the level of detail that we would like and would normally use to support a regulated asset valuation of this nature. We acknowledge the inherent uncertainty and lower statistical confidence this provides, and have taken this into account in determining our multiplier selection.

Our cost evidence provides insight into costs in 2004 and the trends since then. While we believe that our cost data supports the application of a higher multiplier, we have exercised a level of conservatism in selecting a multiplier.

To reflect the relatively small sample sets modelled, and to account for economies of scale, Vector has applied a conservative approach by selecting the mid-point between the multiplier used in 2004 and that supported by the post-2004 cost data.

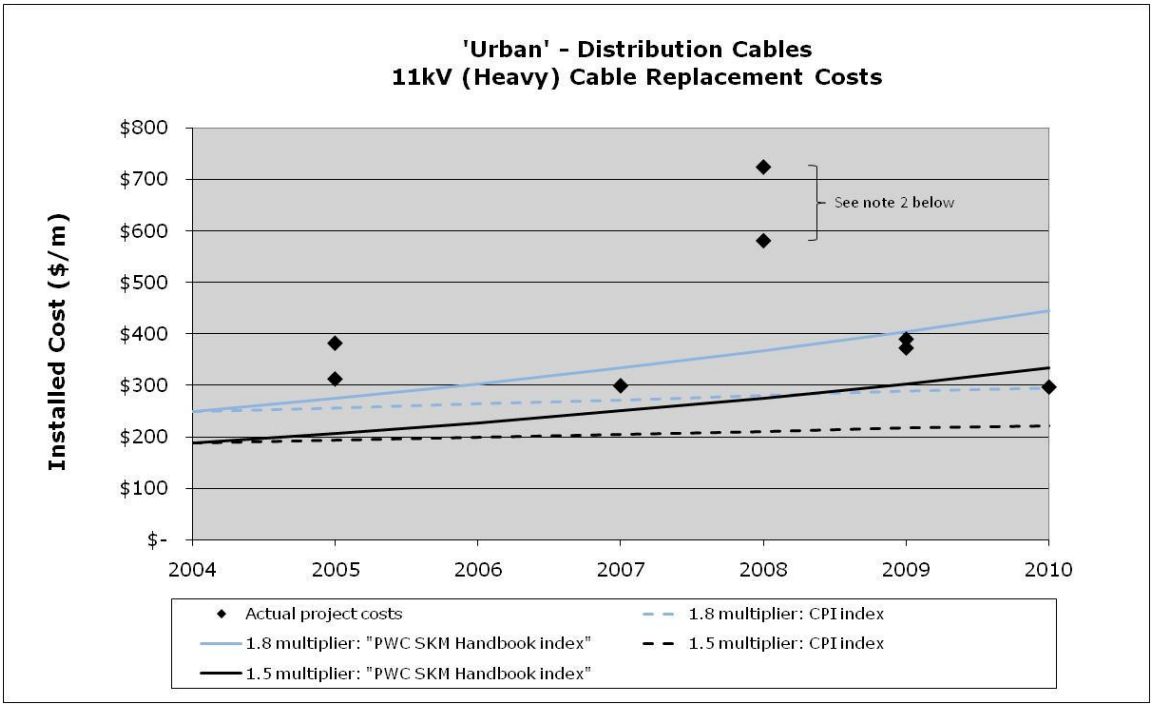
Comparisons
The following charts provide comparisons for the costs associated with 11kV and 33kV cables installed in 'urban' Business District areas, showing:

- Actual project cost information (unit rate $/m)

Against:

- 2004 ODV replacement costs:
    - multiplied by the modified urban multiplier; and
    - indexation adjustments by CPI and the "PWC SKM Handbook Index"; and
    - shown as a trend lines

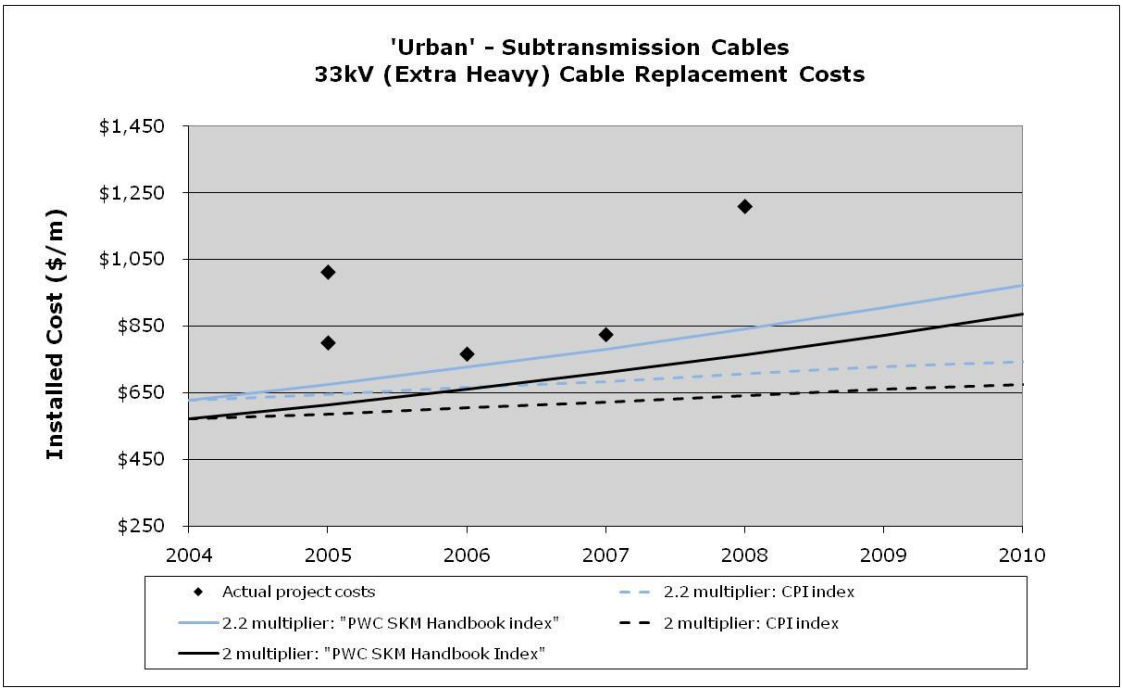
Chart 2 – 'Urban – Distribution' business district cabling costs comparison



Note 1 – Actual project costs shown reflect the year that they were incurred in and are presented in the nominal dollars of the day.

Note 2 - the two project examples in 2008 reflect higher costs as they are located in areas which have higher density of industrial businesses, as included in Vector's urban business district category description outlined earlier in this report.

Chart 3 – 'Urban – Subtransmission' business district cabling costs comparison



Note – Actual project costs shown reflect the year that they were incurred in and are presented in the nominal dollars of the day.

Interpretation of cost data comparisons
Chart 2 demonstrates that actual costs for 'Urban' distribution cables[16] are consistently above or in-line with the indexed 2004 replacement costs using a multiplier of 1.8. The mid-point multiplier of 1.5 (rounded) is also shown.

Chart 3 demonstrates that actual costs for 'Urban' subtransmission cables[17] are consistently above the indexed 2004 replacement costs using a multiplier of 2.2. The mid-point multiplier of 2.0 is also shown..

Outcome:
Based on the projects that Vector has evaluated, there is prima facie evidence that the costs in 2004 terms, and considering only 2004 factors and influences, are above a level that support the use of a modified multiplier of:

- 1.5 for distribution cables in 'urban' areas
- 2.0 for subtransmission cables in 'urban' areas

Reconciliation and uplift

Modified "Urban" business district category only:
The impact of the modified "urban" business district multipliers for cables on the 2004 ODV is detailed in Table 2 below.

Table 2: Impact of modified urban category of business district multiplier

Urban business district category	% of urban cable length	Original 2004 ODV $	Modified 2004 ODV $	2004 ODV Uplift $
Distribution cables	97.3%	$ 243,376,829	$ 303,611,703	$ 60,234,874
Subtransmission cables	2.7%	$ 49,661,856	$ 54,591,951	$ 4,930,096
Grand Total	**100%**	**$293,038,684**	**$358,203,654**	**$65,164,970**

Impact from all modified Business District Multipliers
The impact of all the modified business district multipliers for cables on the 2004 ODV is detailed in Table 3 below.

This provides a reconciliation summary comparing:

- the 2004 ODV
- Vector's resubmitted ODV (including the corrections outlined in this report).

This table replaces the information previously submitted[18].

[16] For 11kV cables the 2004 ODV replacement cost is the standard 2004 Handbook value for "heavy" type cables.
[17] For 33kV cables the 2004 ODV replacement cost is the Vector 2004 ODV non-standard value for "extra heavy" type cables.
[18] Published report: Adjustments to Vector Electricity Networks Optimised Deprival Valuations (as at 31st March 2004) Auckland, Northern & Lichfield (dated April 2011).

Values in the Table 3 include a correction (as detailed above in this report) for low voltage cables which were omitted from the road level classification process in the 2004 ODV. This correction is valued at $2,843,409 and is shown in Table 3.

Overall the net uplift from all modifications to business district multipliers described in this section is therefore **$ 80,664,951** ($83,508,361 less the $2,843,409 correction).

Total value of business district multipliers

In the 2004 ODV the total value of the business district multipliers for cables was approximately $130 million. Application of the modified multipliers has increased the total value of the business district multipliers for cables to $210 million.

Table 3: Reconciliation & uplift from all business district multipliers

Modified Business district Categories	2004 ODV Classification	% of total length	Original 2004 ODV	Modified 2004 ODV	2004 ODV Uplift
Central Business District	CBD	1.1%	$ 22,171,781	$ 25,027,514	$ 2,855,733
	Urban	2.0%	$ 11,564,208	$ 19,821,567	$ 8,257,360
	No Multiplier	0.6%	$ 2,280,457	$ 4,651,096	$ 2,370,639
Central Business District Total		**3.7%**	**$ 36,016,445**	**$ 49,500,177**	**$ 13,483,732**
Business District	CBD	14.2%	$ 212,478,009	$ 212,478,009	$ -
	Urban	1.2%	$ 6,319,471	$ 9,521,693	$ 3,202,222
	No Multiplier	0.8%	$ 2,226,445	$ 3,883,881	$ 1,657,436
Business District Total		**16.2%**	**$ 221,023,925**	**$ 225,883,583**	**4,859,658**
Urban	Urban	48.8%	$ 265,593,572	$ 320,338,511	$ 54,744,939
	No Multiplier	8.3%	$27,445,113	$ 37,865,144	$ 10,420,301
Urban Total		**57.1%**	**$ 293,038,684**	**$358,203,654**	**$ 65,164,970**
	No Multiplier	23.0%	$ 62,320,945	$ 62,320,945	-
No Multiplier Total		**23.0%**	**$ 62,320,945**	**$ 62,320,945**	**-**
Grand Total		**100%**	**$ 612,399,999**	**$ 695,908,360**	**$83,508,361**
LV Cable Correction *(see note above)*					**- $ 2,843,409**
Grand Total					**$80,664,951**

5. Adjustment to rocky ground multiplier for cables

Background
The 2004 ODV Handbook provides a rocky ground multiplier for cables which intends to capture the additional costs associated with trenching, drilling and reinstatement in rocky ground – refer paragraph A.15.

For the 2004 ODV, Vector implemented this multiplier by identifying cables in three ground conditions:

- Soil (standard conditions)
- Weak rock
- Hard rock

The classifications were based on information and interpretations from the Institute of Geological and Nuclear Sciences Limited (GNS) available at the time and intended to provide a range for increasing costs associated with laying cables in different rock strengths.

The 2010 IM allows for adjustments to the multipliers used in the 2004 ODV where more accurate information has subsequently become available – refer Subpart 2 paragraph 2.2.1 (2) (c), and also extends the rocky multiplier to situations where cables are laid in loose rock or sand – refer Subpart 2 paragraph 2.2.1 (2) (d) (iii). The extended use intends to capture increased costs where loose rock or sand creates challenging drilling environments or requires trenching and shoring of trench walls. The allowed multiplier ranges from 1 to 2.

In 2007 Vector re-engaged GNS to provide improved classification of ground conditions as it relates to the installation of assets in the ground such as gas pipes and electricity cables. This work was initiated as a result of the Commerce Commission requiring Vector to revise and resubmit their valuation for the control of the Auckland gas distribution network. Subsequently the improved GNS classification was used to adjust the Auckland 2003 gas distribution valuation which was accepted by the Commerce Commission as the opening RAB for the Gas Final Authorisation.

GNS created a drillability index which reflects the gradual decrease in the suitability of ground conditions for horizontal drilling. The drillability index considers rock and soil strength, occurrence of large hard clasts and excavated trench stability[19]. Ground conditions are categorised as:

- Good drillability
- Moderate drillability
- Moderate drillability due to hard rock
- Poor drillability due to coarse rock
- Poor drillability due to infills

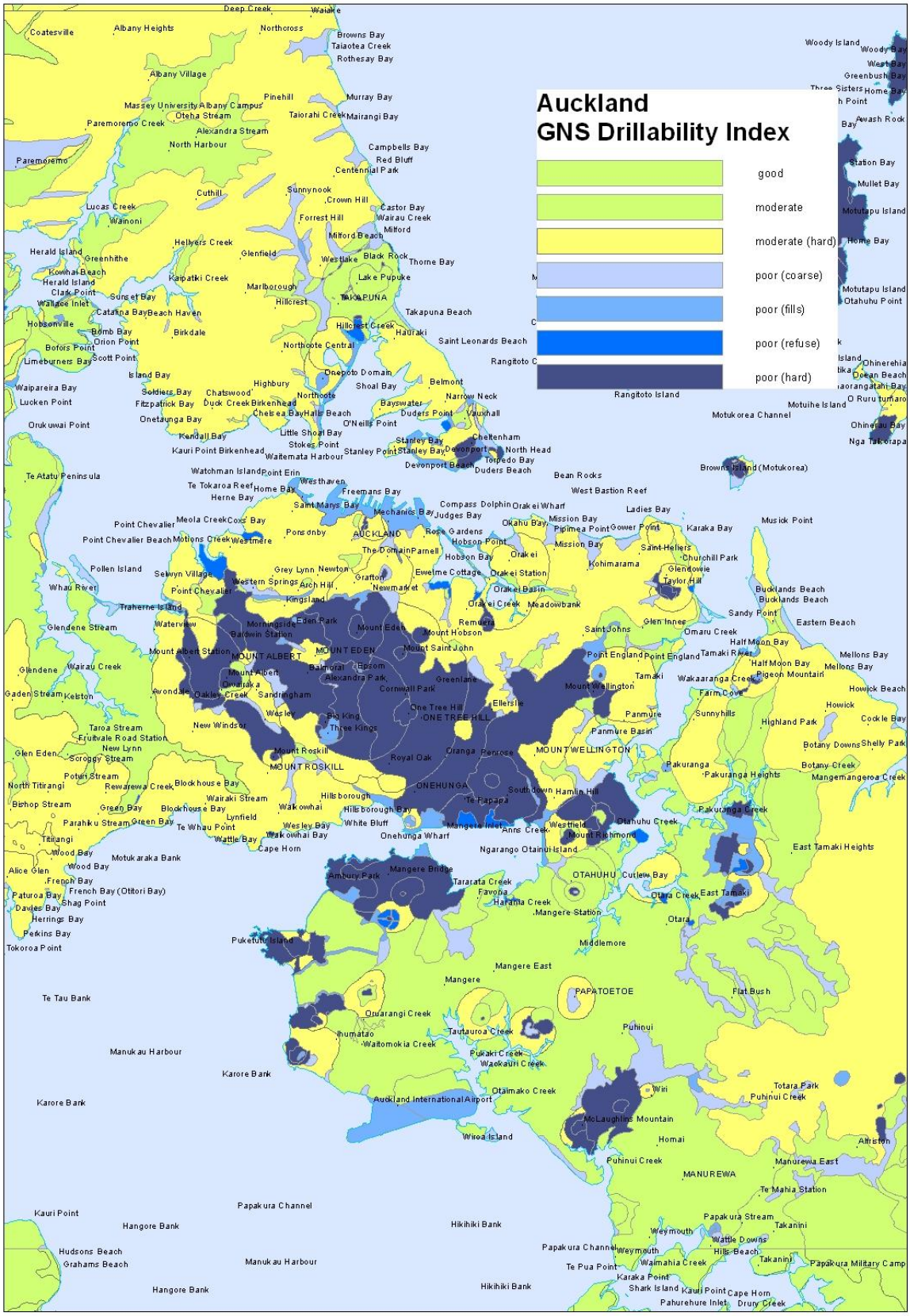
[19] Unpublished report - Geological ground conditions along the Vector Limited gas mains pipeline network in the Auckland region by M.S. Rattenbury & G.D. Dellow, GNS Science Consultancy report 2007/352, November 2007

- Poor drillability due to refuse
- Poor drillability due to hard rock

Vector considers the GNS drillability index to be much more accurate information which would have been used for the 2004 ODV if it was available. In addition to clear definitions based on independent scientific considerations, the updated model also addresses trenching in loose rock and sand as specified by the 2010 IM. The new classification of rocky areas also matches internal engineering experience.

Implementation

The following figure shows the geology of the Auckland area classified according to the drillability index.



The drillability index was implemented as an adjustment to the 2004 ODV by reclassifying all cables according to the new index. Following is a breakdown of all Vector cable lengths classified according to the new index regrouped into four groups.

Drillability index	% of total length
Good or moderate drillabilty	46.4%
Moderate drillabilty due to hard rock	40.6%
Poor drillability due to coarse rock, fills or refuse	5.0%
Poor drillability due to hard rock	8.0%
Grand Total	**100%**

Multipliers

Decreasing suitability for drilling results in a gradual increase in costs due to trenching instead of drilling, shoring or casing for trenches and having to use special rock breaking equipment. In the 2004 ODV the gradual increase in costs was modelled by using two categories i.e. a "weak rock" category with a multiplier of 1.35 and a "hard rock" category with a multiplier of 2. These multipliers were based on actual project costs and contractor rates[20].

Vector has not attempted to recalculate or justify new replacement costs or multipliers for the adjusted 2004 ODV. A comparison of the major geological mapping units showed a good correlation between the following old and new classifications and therefore the same multipliers were considered appropriate.

2004 ODV classification	GNS drillability index	2004 Multiplier
Soil	Good or moderate drillabilty	1.00
Weak rock	Moderate drillabilty due to hard rock	1.35
Hard rock	Poor drillability due to hard rock	2.00

A multiplier of 1.35 is considered appropriate for the 5% of cables that fall within the "poor drillability due to coarse rock, fills or refuse" category. Similar to the "weak rock" category these conditions will require significant trenching resulting in a higher cost but do not need the use of special rock breaking equipment which is required for trenches in the "poor drillability due to hard rock" category. In addition these areas will require shoring of trench walls.

Most of the geological mapping units now categorised as "poor drillability due to coarse rock, fills or refuse" were previously in the "soil" classification because the 2004 ODV handbook definition did not extend the multiplier to loose rock or sand environments requiring trenching and shoring of trench walls.

Reconciliation and uplift

The following is a reconciliation summary between the original and the new ground condition classifications which shows the impact on the 2004 ODV.

[20] Published report: Vector optimised deprival valuation (as at 31st March 2004) Auckland, Wellington & Lichfield electricity networks

Drillability index	Original 2004 ODV classification	2004 ODV map resolution	% of total length	Original 2004 ODV $	Modified 2004 ODV $	2004 ODV $ uplift
Good or moderate drillabilty	**Soil**	High	41.7%	$ 189,979,575	$ 189,979,575	$ -
		Low	3.3%	$ 20,194,212	$ 18,778,566	-$ 1,415,646
	Weak Rock	High	0.0%	$ 197,633	$ 164,385	-$ 33,248
		Low	0.6%	$ 3,755,018	$ 3,033,472	-$ 721,546
	Hard Rock	High	0.0%	$ 1,151,949	$ 704,899	-$ 447,049
		Low	0.8%	$ 9,853,353	$ 6,494,024	-$ 3,359,329
Good or moderate drillabilty Total			**46.4%**	**$ 225,131,740**	**$ 219,154,921**	**-$ 5,976,819**
Moderate drillabilty due to hard rock	**Soil**	High	15.7%	$ 63,280,853	$ 78,627,281	$ 15,346,429
		Low	0.2%	$ 1,210,332	$ 1,399,371	$ 189,038
	Weak Rock	High	20.6%	$ 166,103,337	$ 166,103,337	$ -
		Low	3.9%	$ 20,763,170	$ 21,212,251	$ 449,081
	Hard Rock	High	0.1%	$ 434,474	$ 313,877	-$ 120,597
		Low	0.1%	$ 1,061,734	$ 817,995	-$ 243,738
Moderate drillabilty due to hard rock Total			**40.6%**	**$ 252,853,900**	**$ 268,474,113**	**$ 15,620,213**
Poor drillability due to coarse rock, fills or refuse	**Soil**	High	4.5%	$ 30,299,846	$ 36,879,158	$ 6,579,311
		Low	0.1%	$ 588,269	$ 686,354	$ 98,085
	Weak Rock	High	0.1%	$ 557,227	$ 557,227	$ -
		Low	0.2%	$ 1,165,934	$ 1,188,343	$ 22,410
	Hard Rock	High	0.0%	$ 312,823	$ 233,647	-$ 79,175
		Low	0.1%	$ 422,382	$ 332,564	-$ 89,818
Poor drillability due to coarse rock, fills or refuse Total			**5.0%**	**$ 33,346,480**	**$ 39,877,293**	**$ 6,530,812**
Poor drillability due to hard rock	**Soil**	High	1.0%	$ 6,437,578	$ 10,487,907	$ 4,050,329
		Low	0.1%	$ 266,920	$ 447,823	$ 180,903
	Weak Rock	High	1.0%	$ 10,835,232	$ 13,502,180	$ 2,666,948
		Low	0.8%	$ 4,129,061	$ 5,747,755	$ 1,618,694
	Hard Rock	High	5.1%	$ 79,018,615	$ 79,018,615	$ -
		Low	0.0%	$ 380,473	$ 429,112	$ 48,639
Poor drillability due to hard rock Total			**8.0%**	**$ 101,067,879**	**$ 109,633,392**	**$ 8,565,514**
Grand Total			**100%**	**$ 612,399,999**	**$ 637,139,719**	**$ 24,739,720**

The table above is split into a "high" and "low" map resolution for the 2004 ODV classifications. In 2004 only two GNS maps were available for the Auckland area i.e. a high resolution (1:50,000) map covering central Auckland and a low resolution ((1:1000,000) map covering the whole electricity network. The multipliers for cables outside the high resolution map area were adjusted by a scale factor to take into account inaccuracies of the low resolution map. This was not necessary again because the new GNS drillability index made use of a more accurate 1:250,000 resolution geological maps for cables outside the high resolution map area. Only a small amount of cables still remain outside the 1:250,000 map.

The table shows that the uplift from cables in the "poor drillability due to coarse rock, fills or refuse" category is in the order of $6.5 million. As discussed earlier this category corresponds with the 2010 IM extension of the rocky multiplier to situations where cables are laid in loose rock or sand.

A significant portion of the uplift in the table resulted from cables previously categorised as "soil" and are now categorised as "moderate drillability due to hard rock". The majority of these cables are actually located within the historical "weak rock" area and were therefore undervalued in the 2004 ODV. The cables are now correctly included in the "moderate drillability due to hard rock" category.

Total value of rocky ground multipliers

In the 2004 ODV the total value of the rocky ground multiplier for cables was approximately $68 million. Application of the modified rocky ground multipliers has increased the total value of the rocky ground multiplier for cables to $93 million.

6. Adjustment to correct remaining life calculation

Background

The Vector 2004 ODV needs to be compliant with the Commerce Commission's ODV Handbook[21]. In paragraph 2.55 the ODV handbook specifies a minimum residual life of three years for all assets. Remaining life is calculated as ODV Handbook standard life minus the age of an asset.

In the 2004 ODV Vector did not age its assets correctly as it did not implement this rule for 7,477 assets whose ages as at 31 March 2004 were within three years of their ODV Handbook standard life. Only assets whose ages were more than the ODV Handbook standard life were correctly given the three year minimum residual life.

The 2010 IM allows adjustments to the 2004 ODV to correct incorrect asset ages - refer Subpart 2 paragraph 2.2.1 (2) (b) (iii). The remaining lives of the affected 7,477 assets were corrected to three years under this allowance.

Reconciliation and uplift:

A summary of the affected 7,477 assets and the uplift in values are provided in the following table. The total uplift in the 2004 ODV is $1.31 million.

Asset categories	Nr of assets	2004 ODV $ uplift	
Distribution & LV Cables	3,827	$	79,374
Distribution & LV Lines	1,581	$	30,579
Distribution Substations and Transformers	200	$	48,373
Distribution Switchgear	1,176	$	190,159
Other System Fixed Assets	158	$	70,528
Subtransmission	133	$	33,621
Zone Substations	402	$	861,448
Grand Total	**7,477**	**$**	**1,314,082**

[21] Handbook for Optimised Deprival Valuation of System Fixed Assets of Electricity Lines Businesses published by the Commerce Commission on 30 August 2004

7. Adjustment to correct asset ages

Vector has made a correction to remove the impact of the Wellington electricity network assets on its average asset age, as the Wellington assets, which on average were older than the Auckland assets, are no longer part of Vector's regulated asset base.

The average asset age and lives assumed for depreciation calculations in 2005 to 2009 disclosures were established in 2004 when Vector still owned the Wellington electricity network. The Wellington network had a materially older age profile than the Auckland and Northern networks, resulting in materially incorrect asset ages used when determining 2005 to 2009 depreciation calculations for the Auckland and Northern networks.

As outlined in the Vector submission on EDB and GPB Asset Valuation[22], Vector has previously rolled forward its historical 2004 ODV valuation on an annual basis for disclosure purposes using high level aggregated asset information.

This approach was a proxy for the RAB roll forward between the periodic ODVs that were intended to occur under the price-quality threshold/information disclosure regime at the time. This approach was taken on the basis that each subsequent full valuation would result in a full wash-up of any estimation errors in the intervening years.

However, rolling forward the RAB at this aggregate level relied on a number of assumptions, including those relating to the average age of assets.

Vector has now elected to correct this error as allowed under the IM clause 2.2.1(2)(b)(iii) where "assets ... [have been] given an estimation of ... age ... now known to be incorrect ...". All assets in the asset register are affected by this error and are therefore classified as "value modified" under IM clause 2.2.1(1). The corrected depreciation calculations from 2005 to 2009 are now calculated on an individual asset basis, considering each asset's correct commissioning date and remaining life.

The age corrections do not affect the value of assets in the year it enters the RAB asset register. The correction only affects depreciation values in subsequent years.

As per the Commission's guidance[23], this adjustment is not required in Schedule A4 but is included in an amended table (Appendix A) which complies with the requirements set out in Table 1, Schedule C of the Notice issued on 16 March 2011.

The Independent Engineer has not reviewed this adjustment.

---

[22] http://comcom.govt.nz/assets/Pan-Industry/Input-Methodologies/Draft-Reasons-Papers/Draft-Reasons-EDBs/AssetValuationSub/Vector-Attachment-Submission-on-EDBs-and-GPBs-Input-Methodologies-Asset-Valuation-Duncan-Ian-Head-Statement-Public-23-August-2010.pdf (refer to paragraphs 5.35 to 5.39)

[23] Electricity Distribution Business Notice to Supply Information to the Commerce Commission – Guidance, 7 Sep 2011, Commerce Commission website

8 Inclusion of Intangible Assets

Vector has included a value of $7.174 million for intangible assets (excluding goodwill) as allowed under the IM clause 2.2.1(2)(b)(i) for assets omitted in error. This asset is treated as an 'included' type and has been included in 2004.

The value has been established in accordance with NZ IAS 38 paragraph 24 (as specified in 4.1.8 of the Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons Paper December 2010 and has been reviewed by a qualified accountant.

The Independent Engineer has not reviewed this inclusion.

Appendix A - *Summary table of adjustments corresponding to Table 1 of Schedule C: Information requirements for engineer's report*

This Appendix includes all ODV adjustments, and supersedes our previously submitted report[24].

Nature of adjustment	**Adjustment to correct road classifications of LV cables - Impact on traffic multiplier**
Category of adjustment	Correct asset register errors
EDB IM cl. Ref	2.2.1(2)(b)
Designated asset type	Value modified
Description and number of assets	LV Cables: 27,198
Supporting information	Section 3 of Report
2004 ODV original ($000)	$ 21,265
2004 ODV adjusted ($000)	$ 23,058
Value of adjustment ($000)	$ 1,793

Nature of adjustment	**Adjustment to correct road classifications of LV cables - Impact on business district multiplier**
Category of adjustment	Correct asset register errors
EDB IM cl. Ref	2.2.1(2)(b)
Designated asset type	Value modified
Description and number of assets	LV Cables: 27,175
Supporting information	Section 3 of report
2004 ODV original ($000)	$ 21,258
2004 ODV adjusted ($000)	$ 24,101
Value of adjustment ($000)	$ 2,843

Nature of adjustment	**Adjustment to business district multiplier for cables**
Category of adjustment	Re-apply a modified multiplier
EDB IM cl. Ref	2.2.1(2)(d)
Designated asset type	Value modified
Description and number of assets	Subtransmission, Distribution & LV Cables: 216,918
Supporting information	Section 4 of report
2004 ODV original ($000)	$341,686
2004 ODV adjusted ($000)	$ 422,351
Value of adjustment ($000)	$ 80,665

[24] Published report: Adjustments to Vector Electricity Networks Optimised Deprival Valuations (as at 31st March 2004) Auckland, Northern & Lichfield (dated April 2011).

Nature of adjustment	**Adjustment to rocky ground multiplier for cables**
Category of adjustment	Re-apply existing multiplier
EDB IM cl. Ref	2.2.1(2)(c)
Designated asset type	Value modified
Description and number of assets	Subtransmission, Distribution & LV Cables: 102,983
Supporting information	Section 5 of report
2004 ODV original ($000)	$ 171,067
2004 ODV adjusted ($000)	$ 195,809
Value of adjustment ($000)	$ 24,742

Nature of adjustment	**Adjustment to correct remaining life calculation**	
Category of adjustment	Correct asset register errors	
EDB IM cl. Ref	2.2.1(2)(b)	
Designated asset type	Value modified	
Description and number of assets	Distribution & LV Cables:	3,827
	Distribution & LV Lines:	1,581
	Distribution Subs and Transformers:	200
	Distribution Switchgear:	1,176
	Other System Fixed Assets:	158
	Subtransmission:	133
	Zone Substations:	402
Supporting information	Section 6 of report	
2004 ODV original ($000)	Distribution & LV Cables:	$ 139
	Distribution & LV Lines:	$ 39
	Distribution Subs and Transformers:	$ 57
	Distribution Switchgear:	$ 179
	Other System Fixed Assets:	$ 124
	Subtransmission:	$ 29
	Zone Substations:	$ 680
	Total	$ 1,247
2004 ODV adjusted ($000)	Distribution & LV Cables:	$ 218
	Distribution & LV Lines:	$ 70
	Distribution Subs and Transformers:	$ 106
	Distribution Switchgear:	$ 369
	Other System Fixed Assets:	$ 194
	Subtransmission:	$ 63
	Zone Substations:	$ 1,541
	Total	$ 2,561
Value of adjustment ($000)	Distribution & LV Cables:	$ 79
	Distribution & LV Lines:	$ 31
	Distribution Subs and Transformers:	$ 48
	Distribution Switchgear:	$ 190
	Other System Fixed Assets:	$ 71
	Subtransmission:	$ 34
	Zone Substations:	$ 861
	Total	$ 1,314

Nature of adjustment	**Adjustment to correct asset age**	
Category of adjustment	Correct asset register errors	
EDB IM cl. Ref	2.2.1(2)(b)(iii)	
Designated asset type	Value modified	
Description and number of assets	Land Electricity	142
	Buildings Electricity	102
	Easements Electricity	3
	Subtransmission	9,032
	Zone Substations	4,096
	Distribution Switchgear	30,070
	Distribution Subs and Transformers	39,596
	Distribution & LV Lines & Cables	473,756
	Other System Fixed Assets	330,057
Supporting information	Section 7 of report	
2004 ODV original ($000)	Land Electricity	$30,280
	Buildings Electricity	$25,807
	Easements Electricity	$6,877
	Subtransmission	$327,660
	Zone Substations	$130,435
	Distribution Switchgear	$83,266
	Distribution Subs and Transformers	$175,564
	Distribution & LV Lines & Cables	$613,114
	Other System Fixed Assets	$111,443
	Total	$1,504,445

Nature of adjustment	**Adjustment to correct asset age**	
Category of adjustment	Correct asset register errors	
EDB IM cl. Ref	2.2.1(2)(b)(iii)	
Designated asset type	Value modified	
Description and number of assets	Land Electricity	2
	Buildings Electricity	26
	Subtransmission	55
	Zone Substations	44
	Distribution Switchgear	566
	Distribution Subs and Transformers	448
	Distribution & LV Lines & Cables	531
	Other System Fixed Assets	366
Supporting information	Section 3 of Vector Report September 2011	
2005 value ($000)	Land Electricity	$200
	Buildings Electricity	$1,177
	Subtransmission	$55,358
	Zone Substations	$2,289

	Distribution Switchgear	$3,615
	Distribution Subs and Transformers	$5,340
	Distribution & LV Lines & Cables	$14,946
	Other System Fixed Assets	$12,867
	Total	$95,792

Nature of adjustment	**Adjustment to correct asset age**	
Category of adjustment	Correct asset register errors	
EDB IM cl. Ref	2.2.1(2)(b)(iii)	
Designated asset type	Value modified	
Description and number of assets	Buildings Electricity	9
	Easements Electricity	2
	Subtransmission	206
	Zone Substations	32
	Distribution Switchgear	1,488
	Distribution Subs and Transformers	1,719
	Distribution & LV Lines & Cables	18,654
	Other System Fixed Assets	18,229
Supporting information	Section 3 of Vector Report September 2011	
2006 value ($000)	Buildings Electricity	$1,396
	Easements Electricity	$73
	Subtransmission	$14,447
	Zone Substations	$1,212
	Distribution Switchgear	$10,088
	Distribution Subs and Transformers	$16,721
	Distribution & LV Lines & Cables	$51,853
	Other System Fixed Assets	$26,932
	Total	$122,721

Nature of adjustment	**Adjustment to correct asset age**	
Category of adjustment	Correct asset register errors	
EDB IM cl. Ref	2.2.1(2)(b)(iii)	
Designated asset type	Value modified	
Description and number of assets	Land Electricity	1
	Buildings Electricity	22
	Easements Electricity	1
	Subtransmission	205
	Zone Substations	25
	Distribution Switchgear	1,003
	Distribution Subs and Transformers	823
	Distribution & LV Lines & Cables	8,819
	Other System Fixed Assets	1,910

Supporting information	Section 3 of Vector Report September 2011	
2007 value ($000)	Land Electricity	$370
	Buildings Electricity	$3,031
	Easements Electricity	$148
	Subtransmission	$21,105
	Zone Substations	$1,757
	Distribution Switchgear	$9,216
	Distribution Subs and Transformers	$9,830
	Distribution & LV Lines & Cables	$43,458
	Other System Fixed Assets	$9,048
	Total	$97,963

Nature of adjustment	**Adjustment to correct asset age**	
Category of adjustment	Correct asset register errors	
EDB IM cl. Ref	2.2.1(2)(b)(iii)	
Designated asset type	Value modified	
Description and number of assets	Land Electricity	3
	Buildings Electricity	25
	Easements Electricity	1
	Subtransmission	587
	Zone Substations	73
	Distribution Switchgear	1,982
	Distribution Subs and Transformers	1,706
	Distribution & LV Lines & Cables	14,727
	Other System Fixed Assets	5,632
Supporting information	Section 3 of Vector Report September 2011	
2008 value ($000)	Land Electricity	$1,509
	Buildings Electricity	$4,210
	Easements Electricity	$1,092
	Subtransmission	$29,597
	Zone Substations	$7,184
	Distribution Switchgear	$13,108
	Distribution Subs and Transformers	$16,716
	Distribution & LV Lines & Cables	$36,195
	Other System Fixed Assets	$48,800
	Total	$158,411

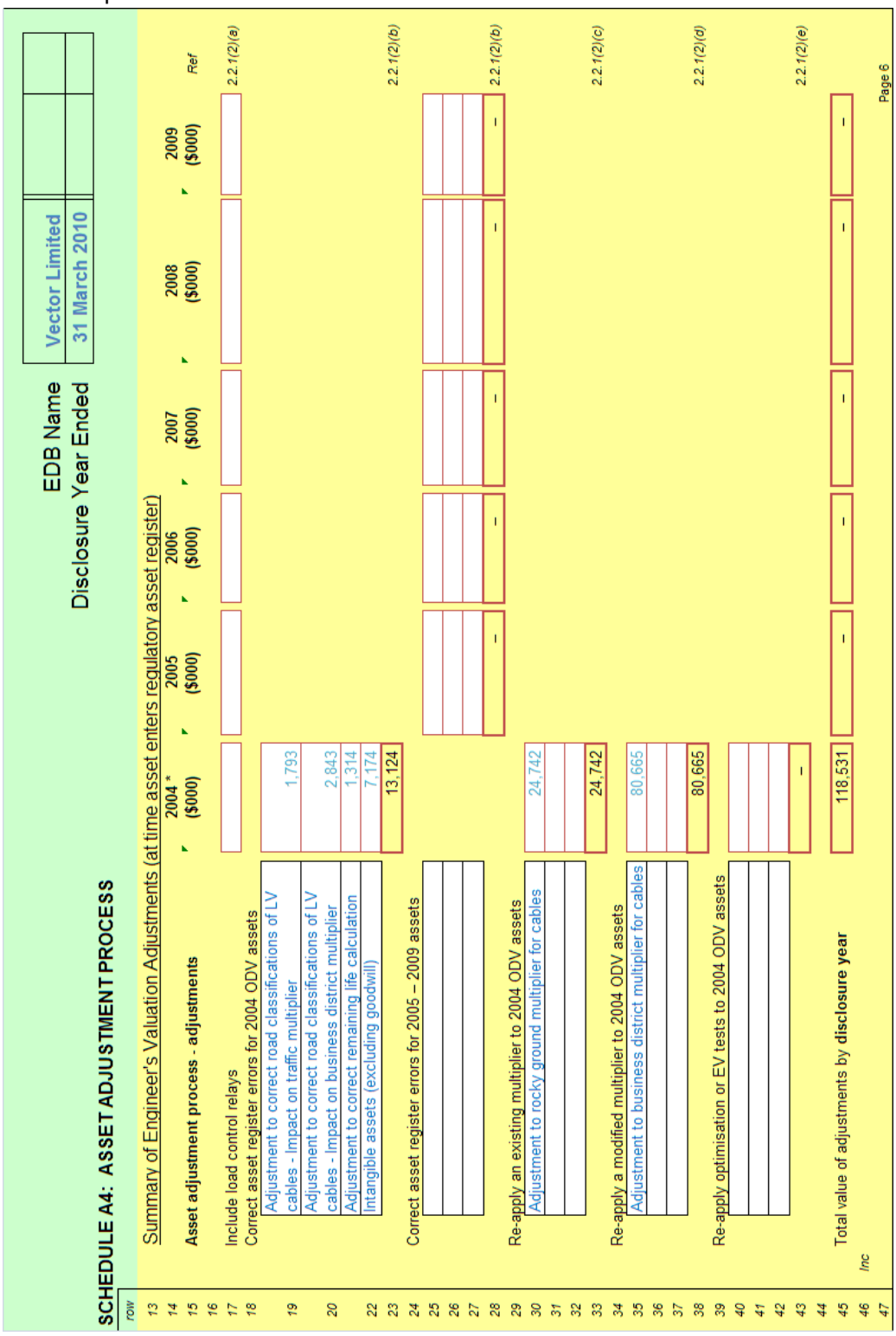
Nature of adjustment	**Adjustment to correct asset age**	
Category of adjustment	Correct asset register errors	
EDB IM cl. Ref	2.2.1(2)(b)(iii)	
Designated asset type	Value modified	
Description and number of assets	Land Electricity	2

	Buildings Electricity	53
	Easements Electricity	4
	Subtransmission	470
	Zone Substations	234
	Distribution Switchgear	1,132
	Distribution Subs and Transformers	975
	Distribution & LV Lines & Cables	10,737
	Other System Fixed Assets	12,877
Supporting information	Section 3 of Vector Report September 2011	
2009 value ($000)	Land Electricity	$329
	Buildings Electricity	$2,627
	Easements Electricity	$499
	Subtransmission	$13,709
	Zone Substations	$19,701
	Distribution Switchgear	$7,540
	Distribution Subs and Transformers	$13,200
	Distribution & LV Lines & Cables	$42,483
	Other System Fixed Assets	$25,257
	Total	$125,345

Nature of adjustment	**Inclusion of Intangible Assets**
Category of adjustment	Correct asset register errors
EDB IM cl. Ref	2.2.1(2)(b)(i)
Designated asset type	Included
Description and number of assets	Intangible Assets (excluding goodwill): 1 asset
Supporting information	Section 8 of Report
Value of adjustment in 2004 ($000)	$ 7,174

Appendix B - *Schedule A4 of the Information Disclosure Notice*

This Appendix includes all ODV adjustments, and supersedes the Appendix submitted in our previous report[25] .



SCHEDULE A4: ASSET ADJUSTMENT PROCESS

EDB Name: Vector Limited
Disclosure Year Ended: 31 March 2010

Summary of Engineer's Valuation Adjustments (at time asset enters regulatory asset register)

row	Asset adjustment process - adjustments	2004 * ($000)	2005 ($000)	2006 ($000)	2007 ($000)	2008 ($000)	2009 ($000)	Ref
13								
14								
15								
16	Include load control relays							2.2.1(2)(a)
17	Correct asset register errors for 2004 ODV assets							
18	Adjustment to correct road classifications of LV cables - Impact on traffic multiplier	1,793						
19	Adjustment to correct road classifications of LV cables - Impact on business district multiplier	2,843						
20	Adjustment to correct remaining life calculation	1,314						
22	Intangible assets (excluding goodwill)	7,174						
23		13,124						2.2.1(2)(b)
24	Correct asset register errors for 2005 – 2009 assets							
25								
26								
27			-	-	-	-	-	2.2.1(2)(b)
28	Re-apply an existing multiplier to 2004 ODV assets							
29	Adjustment to rocky ground multiplier for cables	24,742						
30								
31								
32		24,742						2.2.1(2)(c)
33	Re-apply a modified multiplier to 2004 ODV assets							
34	Adjustment to business district multiplier for cables	80,665						
35								
36								
37		80,665						2.2.1(2)(d)
38	Re-apply optimisation or EV tests to 2004 ODV assets							
39								
40								
41		-						2.2.1(2)(e)
42								
43	Total value of adjustments by **disclosure year**	118,531	-	-	-	-	-	
44								
45								
46	*Inc*							
47								

Page 6

[25] Published report: Adjustments to Vector Electricity Networks Optimised Deprival Valuations (as at 31st March 2004) Auckland, Northern & Lichfield (dated April 2011).

Vector Limited
101 Carlton Gore Road
PO Box 99882, Newmarket,
Auckland, New Zealand
www.vector.co.nz
Corporate Telephone
+64-9-978 7788
Corporate Facsimile
+64-9-978 7799

Pieter Nel
Director
Nel Consulting Limited
Auckland

9 July 2012

Dear Mr Nel

RE: ASSET ADJUSTMENT QUERIES – ELECTRICITY

In accordance with your email of 22 June 2012, Vector's report "Supplementary Information Required By the Commerce Commission on Adjustments to Vector Electricity Networks Optimised Deprival Valuation (as at 31st March 2004) Auckland, Northern & Lichfield Excluding Wellington" dated July 2012 is attached providing responses to the queries you raised. This report should be read in conjunction with and supplementary to the September 2011 report referred to in your email.

We have engaged with Wilson Cook & Co, who acted as an Independent Engineer in relation to the September 2011 report, in order to provide the supplementary information. Attached is a letter from Wilson Cook & Co that acknowledges they have seen the July 2012 report and that the submission of that information does not require them to modify their letter dated 16 September 2011 titled, 'Re: engineering report (re-submission) in relation to Commerce Commission's asset adjustment process".

If you would like to discuss this matter further please contact Brett Butler, Group Manager Pricing & Valuation on 09 978 8286 or at brett.butler@vector.co.nz.

Yours sincerely

p.p.

Allan Carvell
Group General Manager Regulation & Pricing

Wilson Cook & Co
Engineering and Management Consultants
Advisers and Valuers

Reply to: Auckland Office
Our ref: 1212
Email: info@wilsoncook.co.nz

6 July 2012

The Chief Executive
Vector Ltd
101 Carlton Gore Road
NEWMARKET

BY EMAIL

Attention: Mr Brett Butler, Group Manager, Pricing & Valuation

Dear Sir,

RE: SUBMISSION BY VECTOR OF SUPPLEMENTARY INFORMATION IN RELATION TO COMMERCE COMMISSION'S ASSET ADJUSTMENT PROCESS FOR ELECTRICITY

We refer to your request in relation to your electricity asset adjustment process for a letter that, if considered appropriate, "notes that [Wilson Cook & Co is] aware of additional information being provided by Vector [in relation to the value of intellectual property associated with Vector's electricity network] and confirms that [Vector's] submission of that information does not require [us] to modify [our letter dated 16 September 2011 titled, *'Re: engineering report (re-submission) in relation to Commerce Commission's asset adjustment process'*]".

That indeed is the case, as our letter of 16 September 2011 specifically excluded from its ambit any matters to do with intellectual property and it is intellectual property that is the subject of your additional material. The title of your document, as provided to us this morning, is *'Supplementary information required by the Commerce Commission on adjustments to Vector electricity networks optimised deprival valuation (as at 31st March 2004) – Auckland, Northern and Lichfield excluding Wellington'*, July 2012.)

The reason for this exclusion on our part was and remains that we are not able to express an opinion on the value of intellectual property, as to do so would be outside our field of competence and thus potentially misleading.

Additional Certifying Parties

In relation to this matter, we recommend that you draw to the Commission's attention a statement made by Mr Pieter Nel, the Commission's consultant, in his email to Vector of 22 June 2012, reading,

> *It is recognised that specific asset adjustments, as in the case of intangible assets, are more appropriately reviewed by a qualified party (or party other than the Independent Engineer).*

Registered Office
Wilson Cook & Co Limited
Level 2, Fidelity House
81 Carlton Gore Road
PO Box 2296 Auckland 1140
W www.wilsoncook.co.nz

Auckland
8 Harapaki Road
Meadowbank Auckland 1072
T +64 **(9) 578 0770**
M +64 (21) 645 521
E info@wilsoncook.co.nz

We agree with that view and thus consider that Mr Nel was wrong to have continued in his email, stating,

> *However, as per the Commission's Information Request ("Notice To Supply Information to the Commerce Commission – Section 53ZD of the Commerce Act 1986"), should an EDB elect to undertake an asset adjustment process, a written engineer's report complying with the requirements specified in Schedule C must be provided. It is for this reason that a signed statement from Wilson Cook & Co (we note that you have engaged Wilson Cook & Co as your independent engineer) which at a minimum should state that where values under Generally Accepted Accounting Practice have been relied on (for this instance, for the proposed inclusion of intangible assets), the values have been supplied or reviewed by an appropriately qualified party (typically identifying the qualified party/accountant, type and date of review performed, supporting documentation which provides a breakdown of the proposed adjustment with a description of each to improve the ability of the reader of the Independent Engineer's report to better understand the proposed adjustment), and that based on this, the corresponding values in relation to the proposed asset value adjustment for intangible assets meets the requirements of Schedule C.*

For the reason explained, we are not able to accede to Mr Nel's request but there would appear to be no reason why Vector could not provide another method of certification in relation to this asset class if considered necessary in addition to the material it has already provided.

Yours faithfully,

Wilson Cook & Co Limited

SUPPLEMENTARY INFORMATION REQUIRED BY THE COMMERCE COMMISSION ON ADJUSTMENTS TO VECTOR ELECTRICITY NETWORKS OPTIMISED DEPRIVAL VALUATION

(as at 31st March 2004)

AUCKLAND, NORTHERN & LICHFIELD EXCLUDING WELLINGTON

July 2012

A. Introduction

Additional information is provided in response to an emailed query from the Commerce Commission received on 22 June 2012. This information is supplementary to, and should be read in conjunction with, "Adjustments to Vector Electricity Networks Optimised Deprival Valuation (as at 31st March 2004), Auckland, Northern & Lichfield excluding Wellington, Resubmission: September 2011".

B. Additional Information Requirements

1. Intangible assets

Request from Commerce Commission

"*It is recognised that specific asset adjustments, as in the case of intangible assets, are more appropriately reviewed by a qualified party (or party other than the Independent Engineer). However, as per the Commission's Information Request ("Notice To Supply Information to the Commerce Commission – Section 53ZD of the Commerce Act 1986"), should an EDB elect to undertake an asset adjustment process, a written engineer's report complying with the requirements specified in Schedule C must be provided. It is for this reason that a signed statement from Wilson Cook & Co (we note that you have engaged Wilson Cook & Co as your independent engineer) which at a minimum should state that where values under Generally Accepted Accounting Practice have been relied on (for this instance, for the proposed inclusion of intangible assets), the values have been supplied or reviewed by an appropriately qualified party (typically identifying the qualified party/accountant, type and date of review performed, supporting documentation which provides a breakdown of the proposed adjustment with a description of each to improve the ability of the reader of the Independent Engineer's report to better understand the proposed adjustment), and that based on this, the corresponding values in relation to the proposed asset value adjustment for intangible assets meets the requirements of Schedule C.*"

Vector response

Vector included a value of $7.174 million for intangible assets (excluding goodwill) as allowed under the Input Methodologies (IM) clause 2.2.1(2)(b)(i) for assets omitted in error. This asset is treated as an 'included' type and has been included in 2004.

The value is based on an internal Vector investigation in September 2011 to identify and value intangible assets to be included in the RAB. The investigation was conducted under the guidance of the suitably qualified senior employees of Vector – the Vector Group Financial Controller (BCom, CA) and the Vector Acting Chief Financial Officer (BCA, LLB (Hons), CA) who are considered by Vector to be qualified parties under Schedule C. A review of the information was performed by KPMG in their capacity as auditor under the March 2011 s53ZD notice in order to provide their audit certificate.

The value is made up of a number of intangible assets listed in Table 1. The list only includes items which meet the intangible asset recognition criteria summarised below.

The Input Methodologies allow the inclusion of intangible assets in the RAB providing the intangible asset is not goodwill and meets the GAAP definition for intangible assets. Under NZ GAAP (NZ IAS 38) for items to be recognised as intangible assets, certain recognition criteria must be met. These criteria are specifically referred to in the IM Reasons Paper:

- it is capable of being separated or divided from the entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, asset or liability, or arises from contractual or other legal rights, and
- it is probable that future economic benefits that are attributable to the asset will flow to the entity and the cost of the asset can be measured reliably.

Items meeting the recognition criteria were valued on a cost to re-create basis which is consistent with the IM's guidance that intangibles should be included at cost. Operational staff and management involved in creating the information or involved in creating similar information provided estimated times to create. Hourly rates were established for each relevant area of the business to provide an accurate calculation for each activity.

As all hourly rates were determined in 2009 terms the overall value of intangible assets ($7.302 million as per Table 1) was adjusted by CPI (Series SE9A) movements between 2004 and 2009 to reflect costs in 2004 terms ($7.174 million).

The useful life for intangible assets was determined to be similar to the useful life of underlying physical assets. A weighted average remaining life of 40 years was determined.

TABLE 1 - Intangible Assets included in RAB

Intangible Asset Item	Description	Basis for Estimated Cost	Cost (2009 Dollars)
Engineering Standards	Policies, guidelines, specifications, standards, instructions, standard drawings acquired from UNL.	Estimated 27,000 hours to establish the standards multiplied by an average time writing rate for the Vector Asset Investment (AI) team of $95 per hour.	$2.565m
Asset Management Plan (AMP)	Asset Management Plan acquired from UNL.	Estimated 8,500 hours to establish the AMP multiplied by an average time writing rate for AI of $95 per hour.	$0.808m
Operating Standards	Substation & critical asset contingency plans, electricity operating standards, special electricity operating standards, databases such as switching database acquired from UNL.	Estimated 13,400 hours to establish the standards multiplied by an average time writing rate for the Vector Service Delivery (SD) team of $83.46 per hour.	$1.118m
Models	Demand forecast model and connectivity model acquired from UNL. Cost model developed by Vector i.e. internally generated.	Estimated 1,920 hours for development of demand forecast model and 960 hours for development of connectivity model multiplied by the AI team average time writing rate $95 per hour. Estimated 960 hours to develop multiplied by AI team average time writing rate of $95 per hour.	$0.274m $0.091m
Pricing Models	Acquired from UNL: • Default Price-Quality Path compliance models, policies, processes and procedures investment models, policies, processes and procedures • Investment models, policies, processes and procedures	Estimated 4,160 hours to establish the models, policies and procedures multiplied by an estimated rate for the Vector Pricing team of $100 per hour.	$0.416m

Intangible Asset Item	Description	Basis for Estimated Cost	Cost (2009 Dollars)
	• Cost of supply models, policies, processes and procedures • Valuation models, policies, processes and procedures • Pricing models, policies, processes and procedures • Regulatory compliance models, policies, processes and procedures • Pricing methodologies policies, processes and procedures Developed by Vector i.e. internally generated: • Default Price-Quality Path compliance models, policies, processes and procedures • Investment models, policies, processes and procedures • Cost of supply models, policies, processes and procedures • Valuation models, policies, processes and procedures • Pricing models, policies, processes and procedures • Regulatory compliance models, policies, processes and procedures • Pricing methodologies policies, processes and procedures	Estimated 4,160 hours to establish the models, policies and procedures multiplied by an estimated rate for the Vector Pricing team of $100 per hour.	$0.416m
Retailer Contracts	Cost to re-create the existing interposed contracts purchased as part of the acquisition of UNL	Estimate from Group Legal Counsel to develop without precedents and negotiate with all retailers.	$1.000m
Protection and	Protection and control standards acquired from UNL	Estimated 840 hours to establish the	$0.080m

Intangible Asset Item	Description	Basis for Estimated Cost	Cost (2009 Dollars)
Control Standards		standards multiplied by an average time writing rate for AI team of $95 per hour.	
Project Crossroads	Development of RFP, negotiation and selection of contractors resulting in contracting methodologies and practices. Developed by Vector i.e. internally generated.	Estimated 5,984 hours develop multiplied by an average time writing rate for AI & SD teams of $89.23 per hour.	$0.534m
Total			**$7.302m**