

ANALYSES AND SENSITIVITY

PART FOUR

INTERNAL RATE OF RETURN (IRR)

See part 4, page 4-1, Appraisal Two, Diagram 4-1. The final land value (178.24(000)) determined in Part 3 has now been included in the DCF to provide a complete DCF. Note that when the DCF is discounted at 20% per annum it yields a NPV = 0. This is the "internal rate or return" (IRR) which is the most used measure of investment viability.

HIGHEST AND BEST USE: The definition of highest and best use can now be restated in terms of the cash flow in Diagram 4-1:

"The highest and best use of development land is that use which generates the highest land value at a discount rate commensurate with the risk of development".

NPV RATE OF RETURN

See pp 4-2/3, Appraisal Two. The NPV rate of return should be calculated as well as the IRR as it is a useful check on the accuracy of the IRR. If there is a major difference, it will alert the valuer to anomalies or problems in the DCF.

UNDER AND OVER CAPITALIZATION

When considering the value of a building the valuer must determine the "highest and best use" of the land. As has been pointed out the value of a building will only equal its "replacement cost new" (RCN) if it is new and the highest and best use of the land. Highest and best use is that use of the land which generates the highest land value commensurate with the risk of development. Generally, that is also the highest improved value (land and building value).

EXAMPLE: Suppose the subject site is zoned "light industrial" and fronts a busy arterial road. Upon consideration the valuer considers that there are 3 possible alternative uses:

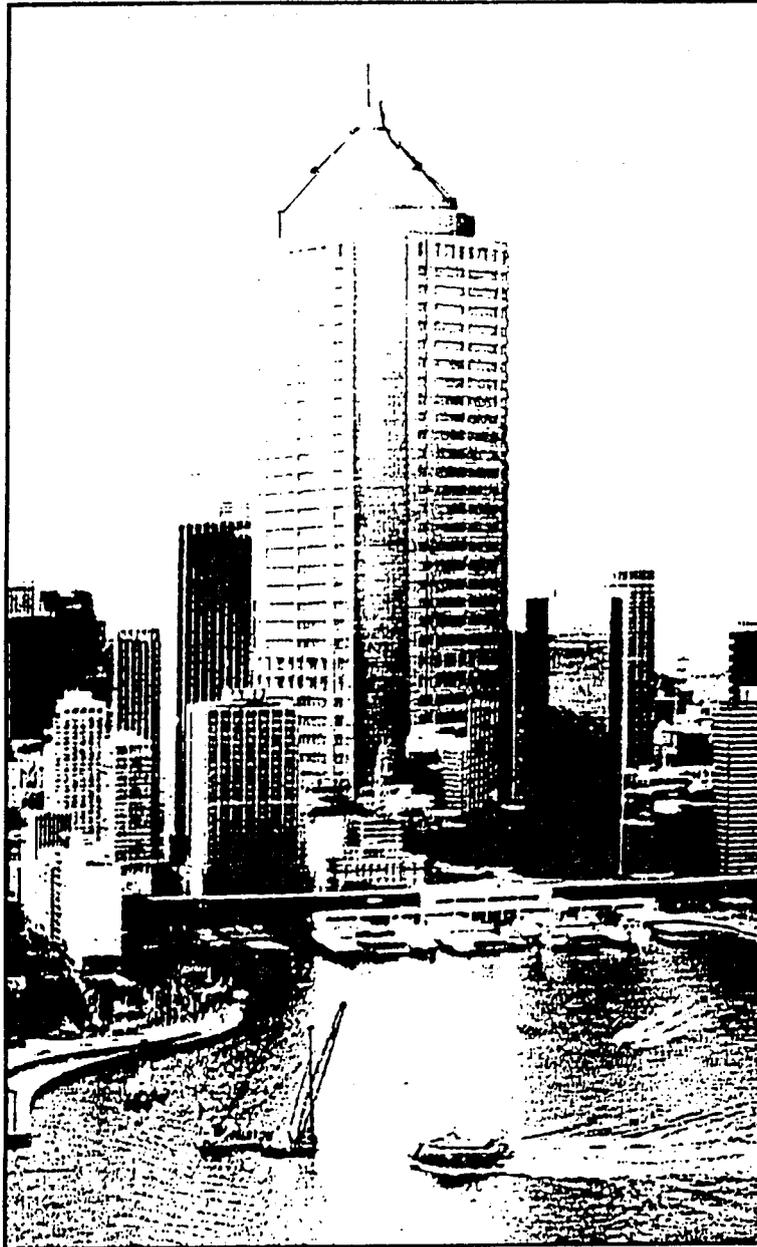
- * The development of density residential as already outlined
- * Development into a "standard" warehouse equivalent to a number already developed in the area.
- * Development into a motel based on a perceived "market gap" demand for motels within a large industrial area.

PIONEER LAND USE: The motel concept although proven and tried in a number of other large cities, is a new and novel concept in Adelaide and therefore, there is a high risk attached to the proposal. A novel land use such as this is called a "pioneer" land use. An example, of a pioneer land use is the first redevelopment of old office blocks in Sussex and Clarence streets, Sydney into "upmarket residential" by Tim Copeland in the early 1980s - see Diagram 10. Initially, this was a land use which he alone could see and therefore at auction he would bid one bid only above the consensus land use of refurbished office space. However, once he had successfully developed a number of such buildings the competition could see the new value so that it no longer became a "pioneer" use. At the next auction the opposition would be prepared to bid up to the new value. For the subject site, the appropriate "profit and risk" factors adopted for the 3 alternative uses are:

ANALYSES AND SENSITIVITY

DIAGRAM 11

**IF SUCH A BUILDING WAS BUILT IN SYDNEY'S CBD IT WOULD BE
"OVERCAPITALIZATION"**



ANALYSES AND SENSITIVITY

DETERMINING THE DISCOUNT RATE (IRR)

As stated above the relevant IRR for a proposed development is a function of risk. A pioneer land use is riskier than an established use and therefore, the developer would require a higher IRR in compensation for taking the marginal risk. The risk of a development is a function of:

- * **Size.** The larger the size the greater the risk
- * **Novelty** of land use. Is it a pioneer or established land use? Complexity of land use is also important in this regard. For example, consider the Opera House when it was first mooted?
- * **Competition** from alternative investments. This will include future land availability. That is why the valuer should consider the land stock of bodies such SA Urban Land Trust and the Housing Trust. See Diagrams 12 and 13.

CAPM: To determine the discount rate based on risk the CAPM method is most suitable. This requires the determination of a "riskless" rate to which is added a margin for the risk of the particular project. This method is covered in Part 6, Appraisal Two, pp 6-6/8. An idea of the riskless rate can be gleaned from very safe investments. Examples of these are shown in Diagrams 14/16.

The "riskless" rate at the moment would appear to be about 8% pa This is a very important indicator in feasibility studies because if the proposal does not meet the riskless rate, it is uneconomical. A margin must be added to the riskless rate to take into account:

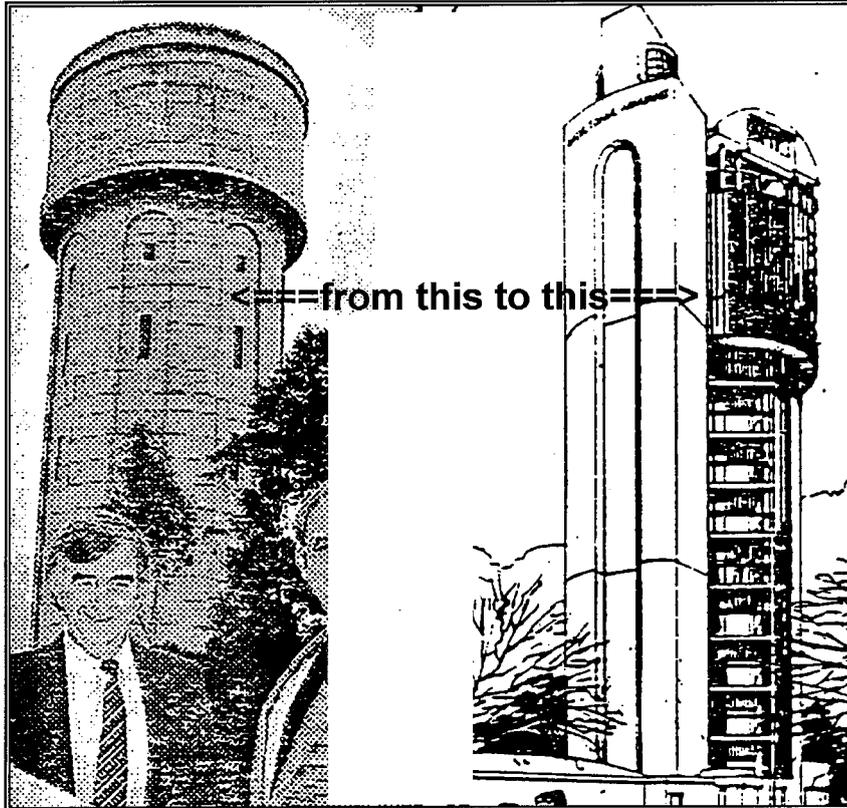
- * The illiquid nature of real estate investment
- * The inherent extra risk.

The margin is traditionally thought to be about 2/3% for a safe real estate investment.

ANALYSES AND SENSITIVITY

DIAGRAM 12

IS THE OBSOLETE WATER TOWER "UNDERCAPITALIZATION"? NOT IF IT CAN BE CONVERTED INTO OFFICES/RESIDENTIAL OFFERING SOME COMPARATIVE ADVANTAGE EG VIEWS!



INCOME TAX FACTORS

See pp 4-7/9, Appraisal Two.

SENSITIVITY ANALYSIS

In feasibility studies (and DCF generally) there is not one answer. Rather it produces a range of answers which should be included in the feasibility report under the heading of "Scenarios". The feasibility should be presented under 3 scenarios:

1. Expected
2. Optimistic
3. Pessimistic

Sensitivity analysis is best shown as a table and graph in which the key variables are adjusted up and down 10%. See Appraisal Two, pp 4-10/11.

Under the subject scenario the following table can be set up on the spreadsheet:

ANALYSES AND SENSITIVITY

SENSITIVITY TABLE: See pp 4-9/11, Appraisal Two. Construct a sensitivity table for the subject DCF (Diagram 4-1) using the following adjustments:

1. Land value +/-10%
2. End market value +/-10%
3. Construction costs +/-10%
4. Period of development 4 and 6 quarters.

How can the table be used to determine expected, optimistic and pessimistic scenarios? You can set up a Sensitivity Table as follows:

A42: SENSITIVITY ANALYSIS

A44: VARIABLE

A46: Land value:

A47: End market value:

A48: Cost of construction:

A49: Dev Time (4/6qtrs):

C43: NEW IRR AFTER CHANGE

C44: + (positive change of 10%)

D44: - (negative change of 10%)

After the changes are made separately to each of the key variables the results are recorded on in the table as follows:

C46: 13.63

C47: 13.8

C48: 33.9

C49: 17.2

D46: 27.15

D47: 26.3

D48: 4.7

D49: 25.4

The differences are calculated in the difference column:

E44: DIFF

E46: =C46-D46

Copy E46 to E47:E49

CONCLUSION: This shows that the most sensitive variable is end market value (29.2), more than twice as sensitive than the next variable land value (13.82). The sensitivity analysis shows that the developer should spend most time on increasing or at least maintaining the end market value compared with other factors of development. If the market can absorb a higher priced more "upmarket" building then the analysis shows that this option should be implemented.

SENSITIVITY ANALYSIS		FEASDCF3.XLS		
	NEW IRR AFTER CHANGE			
VARIABLE	+	0	-	DIFF
Land value:	13.63	20	27.15	-13.52
End market value:	33.9	20	4.7	29.2
Cost of construction:	13.8	20	26.3	-12.5
Development time (4/6 qtrs):	17.2	20	25.4	-8.2

ANALYSES AND SENSITIVITY

OPTION 1: 20% per annum: A risky land use, riskier than the development of density residential in an established residential area. There are no other equivalent developments nearby.

OPTION 2: 15% per annum: A proven land use and relatively safe because warehouses of the same design have sold well in this area.

OPTION 3: 25% per annum: A pioneer land use. The first time a motel has been built within an industrial area in Adelaide and therefore, a potential investor would require a high return as compensation for the high risk.

LAND VALUES

DCF's are prepared using the above discount rates to obtain the relevant land values:

OPTION 1: 80 000

OPTION 2: 120 000

OPTION 3: 90 000

Therefore, the highest and best use of the site is as a warehouse because that use shows the maximum land value of 120 000 with the appropriate IRR of 15% per annum.

OVERCAPITALIZATION

If the owner of the land above went ahead and built the motel, its value on completion would be less than "replacement cost new". This is because the market value of the motel is determined by the present value of all future income and benefits (as it is an investment property). The net income generated will not be sufficient to cover the cost of building and at the same time provide sufficient reward to the developer for the high risk. Such developments are examples of "overcapitalization". Other examples are:

* A large and prestigious house built in a "rundown" neighbourhood.

* A large planned regional shopping centre has just been completed. The Highways Department issues a statement that a major traffic bypass will be created diverting traffic away from the regional centre. Therefore, the shopping centre is now too large for the reduced trade area. The site is overcapitalized.

See Diagram 11 for a CBD example,

UNDERCAPITALIZATION

"Undercapitalization" is the opposite to overcapitalization. The density residential development is a much lower land use than the highest and best use; as a warehouse. It does not capture the full potential of the site. Therefore, the density residential proposal is an example of undercapitalization. See Diagram 12.

DIAGRAM 13

AAA rated Government Guaranteed Investment.

Earn up to
7.9%

Queensland Bonds are guaranteed by the AAA rated Queensland Government. Interest is paid quarterly or half yearly, the rate is fixed for the term of your investment and your money is accessible at all times.

To secure your investment, just complete this application form and post it with your cheque. If you would like to discuss this bond issue, or any aspect of Queensland Bonds, please don't hesitate to call us locally on (07) 224 5753 or outside Brisbane toll free on 1800 777 166.

ISSUER: Queensland Treasury Corporation - (the "Corporation") is the issuer of the Bonds. The Bonds will be issued as inscribed stock of the Corporation which will be subject to the provisions of the Queensland Treasury Corporation Inscribed Stock Regulations 1989 (the "Regulations").
*TAX FILE NUMBER: It is not against the law if you choose not to give your Tax File Number or exemption, but if you don't tax may be taken out of your interest payments.



MAIL THIS APPLICATION TO QUEENSLAND TREASURY CORPORATION

G.P.O. Box 2589,
Brisbane,
Qld, 4001.

LOAN No. 58/58Q

Stamp of Broker/Receiving Off:

Date of Lodgement

In accordance with the Terms and Conditions of the above issue I/we apply for Queensland Bonds shown hereunder, and I/we undertake to pay in full the amount applied for or any lesser amount that may be allotted to me/us in conformity with the said Terms and Conditions. The price of issue is 100. First interest is payable on 15 August 1994 on quarterly rates and 15 November 1994 on half-yearly rates.

BLOCK LETTERS PLEASE

Surname(S)		Given Name(S)	
Mr	_____		
Mrs	_____		
Miss	_____		
Address _____			
Telephone No. _____		Postcode _____	

MINIMUM \$500. THEREAFTER MULTIPLES OF \$100

Paid Quarterly Tick Series Required	<input checked="" type="checkbox"/>	Paid 6 Monthly Tick Series Required	<input checked="" type="checkbox"/>	Maturity Date	Amount Applied For
5.0%		5.1%		15 May 1995	\$ _____
6.0%		6.1%		15 May 1996	\$ _____
7.3%		7.4%		15 May 1999	\$ _____
7.8%		7.9%		15 May 2004	\$ _____

PLEASE COMPLETE IF UNDER 18 YEARS OF AGE

The sum of _____ dollars is tendered herewith, being payment in full. Cheques should be crossed "Not Negotiable" and made payable to Queensland Treasury Corporation.
If the applicant is under 18 years of age please provide date of birth _____ and the application must be signed by a parent or guardian.

PLEASE COMPLETE IF INTEREST OR PRINCIPAL IS TO BE PAID TO BANK ACCOUNT

Please pay Interest Principal on maturity to: Account No. _____

Name of financial institution _____

Full address of financial institution _____

Branch Code _____

PLEASE SIGN HERE

_____ X AND HERE X _____

(Usual Signature) (Specimen Signature(s))

OFFICE USE ONLY

Date _____ * Tax File Numbers(S) _____

DATE RECEIVED	STOCKOWNER NUMBER	ALLOTMENT NUMBER	BROKER CODE
_____	_____	_____	_____

QBC0892 SMH 18

DIAGRAM 14

EVIDENCE OF "RISKLESS RATES"

What sort of investment returns
7.5%
p.a.
fixed for 4 years?

Adelaide Bank's Monthly Interest Term Deposit Account. 7.5%p.a. fixed for 4 years with a minimum deposit of \$5,000 - interest calculated daily and paid monthly. What's more we do not pass on any FID charges. For shorter terms our rates are still very, very competitive.

1 YEAR (12 months)	2 YEARS (24 months)	3 YEARS (36 months)	4 YEARS (48 months)
5.25%p.a.	6.25%p.a.	7.00%p.a.	7.50%p.a.

Don't delay ring 13 22 20 now or visit your nearest Adelaide Bank!

Phones are open 8.30am to 6pm and on Saturday or Sunday between 12 noon and 6pm.



Your sort of bank.

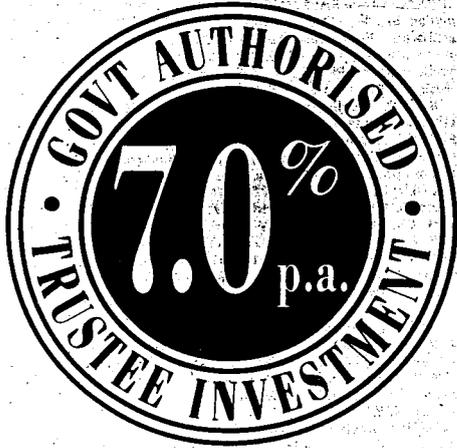


KWP/ABL119

DIAGRAM 14

EVIDENCE OF "RISKLESS RATES"

\$20,000 to \$250,000 INVESTMENT RATES



Fixed for 2 years.

QIDC is Queensland Government owned and offers AAA security rating. You can choose to invest in Income Bonds (interest paid regularly as shown below) or Growth Bonds (interest compounds at the annual rate shown below). Rates are fixed from lodgement of funds.

	Monthly Rate p.a.	Quarterly Rate p.a.	Annual Rate p.a.
1 year	5.35% p.a.	5.40% p.a.	5.50% p.a.
2 years	6.75% p.a.	6.80% p.a.	7.00% p.a.
3 years	7.00% p.a.	7.05% p.a.	7.25% p.a.
4 years	7.25% p.a.	7.30% p.a.	7.50% p.a.
5 years	7.50% p.a.	7.55% p.a.	7.75% p.a.

For more information call
1800 805 767



Rates are applicable from 14/6/94 and are calculated per annum. Rates for over \$250,000 are quoted daily and with terms and conditions are available upon request. Complete money market services available. All rates for new investments are subject to change without notice. QID 9868

Queensland Industry Development Corporation

Help yourself to a better Queensland.

Queensland Industry Development Corporation

Three good reasons to invest with QIDC

1. Highly Competitive Rates
2. AAA/A1+ rating
3. Queensland Government established and funds are used to finance Queensland Industry



For more information call
1800 805 767

Queensland Industry Development Corporation

Help yourself to a better Queensland.

ANALYSES AND SENSITIVITY

FORECASTING ECONOMIC TRENDS

Feasibility studies are a prediction in the future. The valuer should be very careful about making "off the cuff" predictions about the future of some real estate submarket. It is much better to allow somebody else to make the predictions. Fortunately, there are no shortage of such bodies and a number of academic "think tanks", the ABS and government bodies make predictions about certain real estate markets.

The feasibility report should include comment from these bodies. Not only does this add professionalism to your report but it lets you "off the hook" as the prediction of real estate markets is extremely difficult and requires resource to the research of other bodies in any case. For example, a key factor is the State Domestic Product (SDP) which is predicted by the ABS. There are other more specialist bodies such as the Indicative Planning Council's reports. These reports are compulsory reading for the valuer of residential "in globo" land. A copy of relevant extracts are attached to the end of this part.

8^{UP TO}
8.75
% P.A.

Whatever your destination, the important thing is that you have the money to get there.

So consider a quality investment like Telecom Bonds.

With a competitive, fixed rate of interest, you can choose a two, five, seven or ten-year term. And no management charges or account-keeping fees means every dollar invested earns interest which can be paid quarterly, half-yearly,

or left to compound till maturity.

Your careful attention to financial matters now can allow you to enjoy the benefits of your investment in the future.

Issue 54 of Telecom Bonds is now open, but we suggest you read the prospectus first and seek independent advice. The prospectus is available at Westpac Banks, or ring the Freecall number.

008 80 50 50

Telecom Bonds

A Quality Investment

Telecom
AUSTRALIA

THIS IS AUSTRALIA CALLING

TELECOM BONDS ARE FIXED-TERM UNSECURED NOTES OF TELSTRA CORPORATION LIMITED ACN 051 775 556. (TRADING IN AUSTRALIA AS TELECOM AUSTRALIA). TELECOM BONDS ARE BEING SOLD TO YOU BY TELECOM FINANCIAL LIMITED ACN 055 004 978. YOU CAN ONLY BUY TELECOM BONDS BY COMPLETING THE CURRENT APPLICATION FORM WHICH ACCOMPANIES THE PROSPECTUS DATED 3 DECEMBER, 1993, AND THE SUPPLEMENTARY PROSPECTUS DATED 11 MAY, 1994. COPIES OF THE PROSPECTUS DOCUMENTS HAVE BEEN LODGED WITH THE ASC AND ARE AVAILABLE BY CALLING 008 80 50 50. TM TRADE MARK OF TELSTRA CORPORATION LIMITED. DDB NEEDHAM TAL 0929

36 SUNDAY MAIL, June 26, 1994

ANALYSES AND SENSITIVITY

INTEREST RATES

	June 2	June 9		June 2	June 9
Official Call , average rate.....	4.70pc	4.65pc	Bank T.C.Ds. (Source: Westpac):		
Unofficial Overnight , average rate.....	4.80pc	4.70pc	October 1995.....	5.61pc	5.58pc
Fixed Bank Bill Lending Indicator Rate.			London Inter Bank Offered Rates: \$US		
(Quarterly - Source: CBA):			3 months.....	4.62pc	4.56pc
1 year, Rate per annum.....	6.19pc	6.35pc	6 months.....	5.00pc	4.88pc
2 years, Rate per annum.....	7.38pc	7.52pc	US Treasury Bonds:		
Domestic Rates:			US 10 year Treasury Bond yield.....	7.12pc	6.96pc
90 day dealers bill rate.....	4.86pc	4.87pc	US 30 year Treasury Bond yield.....	7.39pc	7.28pc
180 day dealers bill rate.....	5.12pc	5.15pc	US Federal Funds , rate per annum.....	4.38pc	3.75pc
5 year Bond Yield.....	8.27pc	8.18pc	US Bank Acceptances:		
10 year Bond Yield.....	8.84pc	8.85pc	1 month bank buy.....	4.29pc	4.25pc
Bank Bill-Swap Reference Rate:			3 months bank buy.....	4.42pc	4.39pc
30 days.....	4.80pc	4.78pc	6 months bank buy.....	4.76pc	4.64pc
60 days.....	4.84pc	4.82pc	German 10yr Govt Bond	7.06pc	6.91pc
90 days.....	4.86pc	4.87pc	Japan , benchmark 4.5pc No 157 2003 yield.....	4.06pc	4.18pc
180 days.....	5.11pc	5.11pc	SBC BOND INDICES:		
AUD Forward Rate Agreements (Source: Macquarie Bank):			Govt Bond Index: 0 + yrs	2117.88	2123.04
1/4.....	5.02pc	5.05pc	0 - 5 yrs.....	2027.10	2034.40
3/8.....	5.40pc	5.43pc	5 - 10 yrs.....	2247.98	2252.05
6/9.....	6.26pc	6.22pc	Semi-Govt Bond Index: 0 + yrs	2154.25	2160.13
Swap Rates , Quarterly in arrears versus mean Bank Bill.			0 - 5 yrs.....	2081.23	2088.58
(Source: CBA):			5 - 10 yrs.....	2283.70	2285.45
1 year.....	5.94pc	5.92pc	Corporate Bond Index: 0 + yrs	1945.38	1949.09
3 years.....	7.92pc	7.79pc	Asset Backed Bond Index: 0 + yrs	1625.20	1628.96
5 years.....	8.60pc	8.49pc	Composite Bond Index: 0 + yrs	1950.31	1955.40
Interest Rate Caps (Source: Macquarie Bank):			0 - 5 yrs.....	1699.32	1705.00
Strike = prevailing swap rate: \$ per million.			5 - 10 yrs.....	1945.40	1949.28
1 year.....	\$5,100	\$5,061	Inflation Linked Bond Index: 0 + yrs	1360.76	1362.28
3 year.....	\$34,198	\$33,154	Supranational & Sovereign:		
5 year.....	\$67,452	\$66,348	Bank Bill Index.....	2798.12	2800.72
Commonwealth Bonds (Source: Australian Gilt Securities Ltd)					
3 year Indicator Rate - Index.....	7.58pc	7.44pc			
10 year Indicator Rate - Index.....	8.85pc	8.87pc			

ANALYSES AND SENSITIVITY

DIAGRAM 10

**PIONEER LAND USE - WHEN OLD OFFICE BLOCKS WERE FIRSTLY CONVERTED IN
UPMARKET RESIDENTIAL**

