

REPORT ON:

VALUATION APPROACH AND METHODOLOGY

**FOR SPECIALISED AIRFIELD ASSETS
(RUNWAY, TAXIWAYS AND APRONS)**

**WITH REFERENCE TO THE COMMERCE COMMISSION DRAFT REPORT ON PRICE
CONTROL STUDY OF AIRFIELD ACTIVITIES. 3 JULY 2001, S: 7.33 TO 7.50.**

BY PROFESSOR TERRY BOYD

3 AUGUST 2001

Terry Boyd is the Professor of Property Economics at Queensland University of Technology in Brisbane, Australia. Prior to this position he was Professor of Property Studies at Lincoln University, New Zealand. He has a PhD in Property Valuation Methodology, and practises, inter alia, as a valuer. He is currently active as a Consultant to both the private and public sector in New Zealand and Australia. He is also Program Leader of a Cooperative Research Centre on Built Asset Management and Adaptability, funded by the Australian Federal Government.

He holds shares in Auckland International Airport Ltd.

EXECUTIVE SUMMARY

- i. The approach and methodology for the valuation of property assets, including specialised infrastructure assets, is well established. When valuing an airport for performance or pricing purposes, the valuation required is an **existing use** valuation provided this use is the **highest and best** use for the property.
- ii. The **opportunity cost approach** is not appropriate for property assets of an airport because of its emphasis on consideration of alternative usages of the assets. In the current exercise the opportunity cost approach should apply only to returns on capital employed and not property assets.
- iii. The Current Existing Use Value considers the value today as an airport and requires the summation of the various specialised property components. The internationally accepted approach to the valuation of specialised infrastructure assets for existing use purposes is the **Depreciated Replacement Cost method**.
- iv. **Historical costs** can only be considered as proxies for current costs provided the historical figures are indexed to present day figures and depreciated for condition. Furthermore, if adjusted historic costs are used, they should be applied consistently across all property asset types.
- v. **Optimisation** is accepted as a sound practice where asset utility is being valued. However the extension of this concept to exclude all assets that are not “used or useful” from a valuation exercise is too prescriptive and does not take account of the fact that asset demand is continuously changing.
- vi. If the **opportunity cost** approach is adopted for specialised assets then the existing specialised infrastructure has no value. This means that the value of an oil refinery would be the land value only and the value of a sports stadium excludes the value of the stands.

VALUATION APPROACHES

1. Property (real estate) assets differ from most other assets because of their physical, legal and financial characteristics. The unique nature of property assets has resulted in a specific and well developed body of knowledge on valuation approaches and methodology. Graaskamp's illustration of the basic structure of the valuation approach has received international acceptance and is illustrated as Annexure 1 together with the writer's comments on its application. (Graaskamp, 1977).
2. Prior to selecting the valuation methodology it is necessary to consider the valuation problem and the type of value required. Thereafter an examination of the property will result in the selection of its most probable use. Once the value definition and the probable (highest and best) use have been determined, the appropriate methodology is applied to arrive at the value.
3. In this particular case, the valuation is required as a basis for assessing charges for airport services and consequently it is logical to restrict consideration of use to that of an airport and to value the property assets as part of an airport operation. This is referred to as an *existing use* or *in-use* valuation.
4. In addition, the substantial infrastructure assets of a functional international airport, which are possibly worth more than the land value, mean that the highest and best use is the continuation of the existing use. This confirms the requirement of a current value based on its existing usage.
5. Consequently any valuation methodology must focus on the valuation of a developed airport as its current and most probable usage. Accordingly the valuation approach required for this exercise is the **Current Existing Use Value**.

EXISTING USE VALUATION APPROACH

6. The Existing Use Valuation Approach is a market based approach but the most probable purchaser is considered to be a body that will continue the use of the property as an airport. Hence it is inappropriate to consider the value of alternative uses within the valuation exercise. As alternative uses are not considered, the opportunity cost approach is not a valid approach; this is confirmed by the need to exclude the valuation of sunk assets within the opportunity cost approach. Obviously the exclusion of the sunk improvements from an airport's value (or other infrastructure assets such as oil refineries, rail corridors, sewerage treatment works or sports stadiums) is unthinkable.

7. In fact the infrastructure assets should be valued on an 'in-use' basis provided they are effectively performing the purpose for which they were constructed. Because of the specialised nature of these property assets there is no open market for these properties and no comparable sales to form the basis for an exchange value.

THE VALUATION OF SPECIALISED ASSETS OF AN AIRFIELD

8. There are three core valuation methodologies for property being the Comparative (Market), Cost and Investment techniques. Because there is no open market for airport properties and the investment method results in a circular exercise, the logical approach is the cost method.
9. Valuation Standards in most developed countries of the world emphasise that the preferred approach for the valuation of infrastructure assets is the cost approach. In the USA the Appraisal Manual of the Appraisal Institute states:

The cost approach is used to estimate the market value of proposed construction, special-purpose or speciality properties, and other properties that are not frequently exchanged in the market. Buyers of these properties often measure the price they will pay for an existing building against the cost to build a replacement, minus depreciation, or the cost to purchase an existing structure and make the necessary modifications. (Appraisal Institute, 1996, p.338)

10. The cost approach requires a summation of the land and improvement values. While the land is valued, whenever possible, in relation to comparative market evidence, the improvements are assessed at their current value.
11. The Valuation Standard 3 of the New Zealand Institute of Valuers (now New Zealand Property Institute) states:

All specialised owner-occupied properties and other specialised property shall be valued on the Depreciated Replacement Cost basis except when Market Value methods can be applied.

12. It is not surprising that a recent survey of practising valuers in New Zealand showed that 100% of the responding valuers used a replacement cost approach when undertaking the valuation of infrastructure assets (Bond, 1996). This response demonstrates the pivotal role that replacement cost of improvements plays within the cost approach.

REPLACEMENT COST METHOD FOR IMPROVEMENTS

13. **Current cost** is defined in the API Professional Practice Manual (2000, p.157) as:

the cost of an asset measured by reference to the lowest cost at which the gross service potential of that asset could currently be obtained in the normal course of business. For depreciable assets, this amount will be the lower of the replacement cost and reproduction cost of the service potential remaining in the asset.

14. **Depreciated replacement cost** is defined in the NZIV Valuation Standard 3 (3.4.1) as:

Depreciated replacement cost is based on an estimate of the current market value of land for its existing use plus the current gross replacement (or reproduction) costs of improvements less allowances for physical deterioration and all relevant forms of obsolescence and optimisation.

15. The current value of the improvements is usually assessed using a depreciated replacement cost approach. This depreciated (and possibly optimised) replacement cost approach is the standard that is conveyed to valuers, throughout the world, as the most appropriate method to assess the current value of improvements. The depreciation function may incorporate optimisation while taking account of functional obsolescence.

16. The writer has found little evidence in the valuation literature for the recommendation that adjusted historic cost can result in a more equitable or accurate “current value” than adjusted replacement cost. The API Professional Practice Manual 2000 states:

GN9:12.22 Where there does not exist an identical asset or an asset with equivalent service potential, the current cost would be:

- *the reproduction cost of an identical asset; or*
- *the replacement cost of a modern equivalent asset prorated for any differences between the practical capacity of the existing asset and reference asset*

with the appropriate amount selected on the basis of which amount reflects the lower cost per unit of service potential.

GN9:12.24 Where GN9:12.22 applies but the current price of the asset or modern equivalent asset cannot be ascertained reliably, current cost is determined by

application of suitable indexes to historic cost or previously revalued amount, calculated to reflect changes in specific prices of the assets, provided the amount gives a realistic approximation of current cost.

17. The major concern with the usage of adjusted historic costs is the inability to determine an equitable comparison between different properties. This point was considered by the ACCC when they discussed the economic efficiency of the ODRC (optimised depreciated replacement cost) method and an adjusted historic cost method (ACCC, 1998 cited in ACCC, 2001, p.102 &103). They emphasised that the four major advantages of the ODRC method are ‘it helps replicate the desirable outcomes of a competitive market, maintains market based value movement, restricts overvaluation and permits optimisation’ (comments abbreviated).

HISTORIC COST OF IMPROVEMENTS

18. If historic costs are considered as part of a valuation exercise there is always reference to the need to index the historic cost to current cost. However it is noted the draft Commerce Commission report recommends that the historic cost be used without indexation. The reason for excluding historic cost indexation is given as the incorporation of the inflation rate in the discount rate. However this does not equate to the use of current values, which, in the opinion of the writer, is the only basis for fair comparison.
19. The writer has not found support in the valuation literature for using an unadjusted historic cost within a current value exercise. If the historic cost figures are not adjusted they are incapable of realistic comparison to assets of other properties. The effect of using an unadjusted historic cost figure for improvement values is that the values, and therefore the charges, will be based on age or date of acquisition rather than on quality of facilities.
20. Furthermore if historic costs are considered to be a good measure of current cost then there appears no reason to exclude the land valuation component from this exercise. Put simply, the writer does not consider that this approach should be used either for the value of the land or the improvements. As a valuation exercise, an historic cost can be used as a check on the current cost figure provided it is correctly adjusted for the change in cost over the intervening time period – this should then relate to the replacement cost.
21. The writer strongly recommends that the Commerce Commission give further consideration to its use of historic cost figures in the valuation exercises. The writer endorses the wording of the ACCC when they stated: “the Commission will not consider historic cost as an asset valuation methodology”. (ACCC, 1998, p. 41-42.)

OPTIMISATION

22. Optimisation is accepted as a sound practice where asset utility is being valued. The use of optimisation as “the adjustment of replacement cost to reflect changes in the required deployment or scale of the assets to achieve the same level of services” (CC, 2001, p. 100) is acknowledged as appropriate. However the extension of this concept to exclude all assets that are not “used or useful” from a valuation exercise is too prescriptive and does not take account of the fact that asset demand is continuously changing.
23. The justification of optimisation in the Commerce Commission draft report is to “prevent moral hazards (lack of responsibility) emerging for poor investment decisions” (CC, 2001, p. 100). However forward planning cannot be considered as a poor investment decision. Major construction developments take several years to complete and are extremely disruptive. Astute decision makers will anticipate demand and hence plan for expansion. It is noted that CIAL has a master plan that encompasses the next twenty years.
24. The writer considers that the words “used and useful” are too restrictive and recommends that optimisation should only exclude assets that, based on reasoned assumptions, will not be used or useful over the short to medium term future, say five years.

OPPORTUNITY COST APPROACH

25. By definition opportunity cost examines “the highest alternative use value”. It has been shown above that the valuation approach for specialised airfield assets should not consider the alternative use of these assets as an existing use value is required.
26. If the opportunity cost approach is adopted for specialised assets then the existing specialised infrastructure has no value. This means that the value of an oil refinery is the land value only and the value of a sports stadium excludes the value of the stands. Using this approach, there is no justification for charging more for a box seat at a rugby stadium than standing room on the bank.
27. While investment funds may well be evaluated on an opportunity cost approach, this is not appropriate for specialised property assets. The inappropriateness of applying opportunity cost to these assets has resulted in the following discrepancies in the Commerce Commission Draft Report:

Para. 7.33: Costs of initial land development (getting the land to airport usage) are not included in the land value **or** the improvement value. Clearly these costs must form part of the property asset base.

Para. 7.38: Specialised assets have not been treated as sunk assets and given a nil value. Hence the Commerce Commission proposals have not used the opportunity cost approach in valuing a major part of the property asset base.

CONCLUDING COMMENTS

28. Pricing should be based on current fair valuations. It has been shown that the appropriate valuation required in this exercise is the Current Existing Use Value. There is substantial evidence from the valuation literature that specialist properties, such as airports, should be valued on a cost based methodology; particularly when an existing use valuation is being undertaken. The cost method applied to the improvements relies primarily on the calculation of the optimised depreciated replacement cost of the improvements.
29. While the Commerce Commission's draft report acknowledges accepted property valuation methodology, their approach differs from accepted methodology and is confused by reliance on the opportunity cost approach. The writer believes that the focus on opportunity cost is definitely not appropriate for specialist property assets.
30. Valuers should be permitted to follow logical valuation methodology and not be required to substitute historic costs for reasonable current costs, or have their valuation figures arbitrarily amended. In addition the use of optimisation should take account of anticipated growth in the medium term and not be confined to currently used and useful assets.

REFERENCES

Appraisal Institute, 1996, *The Appraisal Of Real Estate*, 11th edition, Appraisal Institute, Illinois, USA.

Australian Competition and Consumer Commission, 2001, *Sydney Airports Corporation Ltd: Aeronautical pricing Proposal Decision*, May, ACCC.(online)

Australian Property Institute, 2000, *Professional Practice 2000*, 2nd edition, API, Deakin, Australia.

Bond, S., 1996, *The Valuation of Local Authority Assets: Identifying the Appropriate Methodology*, NZ Valuers Journal, November, pp.49-63.

Byrne, R., 1999, *Completing Valuations of Infrastructure Assets Effectively*, Australian Property Journal, November, pp.641-646.

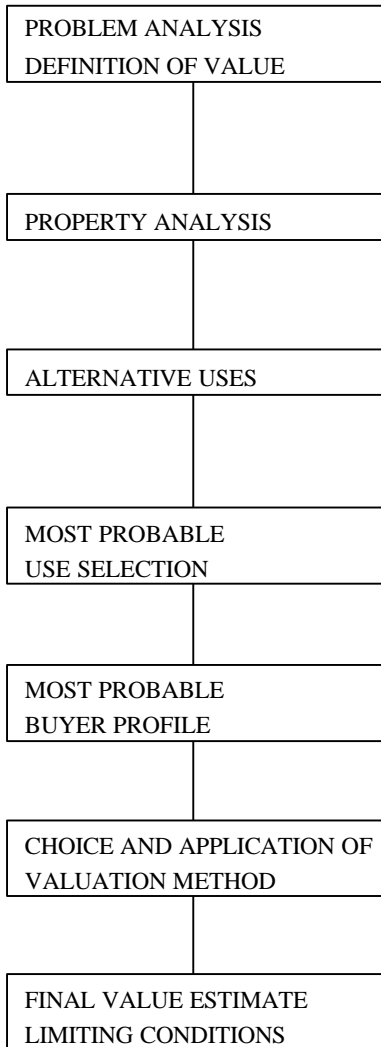
Graaskamp, J.A., 1977, *Appraisal of 25 North Pickney*, Landmark Research, Madison, USA.

ANNEXURE 1

STANDARDISED VALUATION PROCESS

(ADAPTED FROM GRAASKAMP (1977), CITED INTERNATIONALLY)

PROCESS



RECOMMENDED APPLICATION

- TO DETERMINE FAIR EARNINGS
- CURRENT EXISTING USE VALUATION OF AIRPORT PROPERTY

- IDENTIFY AND CATEGORISE PROPERTY COMPONENTS

- NO PRACTICAL, EQUIVALENT ALTERNATIVE USE

- MAJOR AIRPORT

- AIRPORT OWNER

- COST (SUMMATION) METHOD LAND AND IMPROVEMENTS