Introduction

Perhaps the most misunderstood, yet most important concept applicable to real estate analysis is that of highest and best use. It appears to be misunderstood because many appraisers seem to treat it superficially, stating an opinion of highest and best use with little or no analytical support contained in their reports.

Granted, in many cases, the highest and best use of a property is obvious. However, in other cases, what would appear obvious on the surface is, in fact, hiding a more complicated truth. Not easily apparent questions must be addressed. For example, “Is the neighbourhood in a state of transition?”; “What can legally be built?”; “What is the supply and demand picture like for various uses?”; and “What is the capacity of municipal services?”

Highest and best use is described as being both a principle and a concept. As a principle, it represents “a fundamental truth” as defined in the Oxford Dictionary. As a fundamental truth, man will usually attempt to use any given commodity to its most productive, hence profitable, use in order to optimize the benefits of the asset’s use. As a concept, highest and best use is a philosophical representation of an idea. Due to its nature of being both a principle and a concept, it becomes difficult to define. However, by studying various attempts to do so, an understanding of the concept can be achieved.

The purpose of this article is to analyze the principle and concept of highest and best use from both a theoretical and a practical point of view. From a theoretical point of view, the various elements and implications of the definition of the term will be analyzed. From a practical point of view, a format for a highest and best use analysis/report will be presented.

Theory

Definition

Various attempts have been made over the past decades to define highest and best use. Due to its characteristics as a concept, there cannot be one absolutely correct, complete and appropriate definition. However, from a study of definitions as they have evolved over time, the essential components which have appeared can be abstracted and analyzed to facilitate an understanding of the concept.

The following six definitions of highest and best use have been selected from the many which were found to illustrate the nature of this term. It should be noted that these definitions tend to relate more to vacant land than to improved sites. The highest and best use of improved sites will be addressed later. These definitions are shown in an historical sequence demonstrating a refinement in later years.

1. “That available use and program of future utilization of a parcel of land which produces the highest present land value.”¹ (1932)

2. “A designated use of a spatial unit which will allegedly produce the largest net income over a given period of time.”² (1954)

3. “The use of land which may reasonably be expected to produce the greatest net return to land over a given period of time — that legal use which will yield to land the highest present value, sometimes called optimum use.”³ (1967)


4. “That use of land resources which will provide the optimum return to their operators or to society — this return may be measured in strictly monetary terms, in intangible and social values, or in some combination of these values.”\(^4\) (1972)

5. “The logical, legal and most probable use that will produce the highest net return to the investor over a sustained period of time. It is also the available use or program of probable future utilization that produces the highest present land value.”\(^5\) (1979)

One definition widely recognized today is found in the book: Real Estate Appraisal Terminology, compiled and edited by Byrl N. Boyce. It reads as follows:

6. “that reasonable and probable use that will support the highest present value, as defined, as of the effective date of the (analysis).

“Alternatively, that use, from among reasonably probable and legal alternative uses, found to be physically possible, appropriately supported, financially feasible and which results in highest land value.

“This definition applies specifically to the highest and best use of land. It is to be recognized that, in cases where a site has existing improvements on it, the highest and best use may very well be determined to be different from the existing use. The existing use will continue, however, unless and until land value in its highest and best use exceeds the total value of property in its existing use.

“Implied within these definitions is recognition of the contribution of that specific use to community environment or to community development goals in addition to wealth maximization of individual property owners.

“It is implied that the determination of highest and best use results from the appraiser’s judgement and analytical skill, i.e., that the use determined from analysis represents an opinion, not a fact to be found. In appraisal practice, the concept of highest and best use represents the premise upon which value is based. In the context of most probable selling price (market value), another appropriate term to reflect highest and best use would be most probable use. In the context of investment value, an alternative then would be most profitable use.”

From these definitions, it is apparent that the highest and best use of a site must be physically possible, legal, probable, marketable and profitable, and that only the most profitable use can be considered the highest and best use. For purposes of the following discussion, most profitable use will be considered as referring to monetary benefits only. The implication of other, less tangible benefits will be addressed in a general context only.

**Physically Possible Use and Legal Use**

In order for a use to be considered as the highest and best use, the first test it must withstand is that of possibility. The use must be physically possible for the site. Thus, factors such as shape and size of the site, soil bearing capacity, topography and soil strata composition become essential concerns. Furthermore, the infrastructure of the neighbourhood — water, sanitary sewer, storm sewer, natural gas, hydro, telephone and other essential community services — must be capable of supporting the proposed use or through reasonable modification or expansion be made to accommodate the proposed use(s).


Related to possible use is the analysis of legal use. Ideally, the use should conform to all zoning restrictions, land use regulations, other existing land use controls and any titular restrictions which may exist. Any pollution or other environmental controls which may be in effect must also be considered. It should be kept in mind that zoning by-laws are dynamic tools and can be out of step with contemporary standards and/or the market-place. The legal use, therefore, should not be seen as an absolute, since zoning by-laws and other land use controls may be amended.

In analyzing physically possible and legal uses, the principle of change must be recognized. It is essential that the probability of change to existing conditions be clearly established.

**Probability of Change**

Probability of use is not a separate criterion, but a modifier of both physically possible use and legal use. Many physical and legal use limitations can be resolved with money and/or time, which require an analysis of probability of change.

Criteria to be checked in order to indicate the physical and legal possibility of use are readily available and are objectively measured. Either a use will or will not satisfy the requirement of being possible and legal. Probability of use is more subjective and more difficult to evaluate.

When analyzing for the possibility of use, it may be apparent that perhaps there is a physical defect which may or may not make a proposed use possible. For example, in downtown Edmonton, the north side of the North Saskatchewan River is dotted with underground mine tunnels and shafts. Thus, for a particular site, the bearing capacity may be negatively affected by the presence of a mine shaft. The presence of the shaft may or may not prove to be a limiting factor on certain uses depending upon the economics of correcting the problem and the probability of this happening. Thus, trends in the area, financial analysis involving corrective expenses and other factors must be analyzed to indicate the probability of resolving such a physical defect.

Furthermore, probability of use must also be considered with respect to legality of use. Proposed uses must be evaluated not only in relationship to existing restrictions on use, but also in relationship to a proposed rezoning or amendment, potential changes to land use regulations and possible amendments to titular restrictions. In such instances, it is imperative that not only the possibility of such a change be established, but the probability of such an occurrence must also be well documented and supported. Consideration must be given to such factors as history of local authorities in amending regulations, local attitudes and medium- to long-range planning considerations.

The following often-quoted excerpt from the reasons for judgement related to Kramer et al v. Wascana Centre Authority (1967) S.C.R 237 explains this concept of probability: “... the highest and best use must be based on something more than a possibility of rezoning. There must be a probability or a reasonable expectation that such rezoning will take place. It is not enough that the lands have the capability of rezoning. In my opinion, probability connotes something higher than a 50 percent possibility.” (21 LCR 1981 P. 274)

Another critical factor bearing on probability of use is the time factor. When analyzing the probability factor, the time element is critical. Imminent changes in zoning are given considerably more credibility in deciding upon potential uses, as opposed to vague references to timing years in the future. Thus, the closer the likelihood of the proposed use to the date of the highest and best use analysis, the greater the probability of its occurrence.

The temporal and financial considerations arising out of the analysis of probability of change will be essential elements of the subsequent financial analysis which will indicate the feasibility of the use being analyzed.
Marketability of Use

In order for a use to be the highest and best use, there must be a market for it. The market need not be immediate, but it must be foreseeable. There must be a demand for the use. Such data as demographic statistics, building permit data, vacancy rates and absorption rates relevant to the use must be carefully analyzed, as well as an awareness of planned and proposed developments for the community and region.

The marketability analysis must address qualitative data such as value, price and rent; quantitative data such as absorption period and lease-up schedules; and special amenities such as railroad trackage for industrial use or recreational facilities for residential use. A supply and demand analysis is essential.

Profitability of Use

The highest and best use of a site must not only be profitable, it must represent the most profitable use to which the property can be put. Before a use can be evaluated as being most profitable, it must be analyzed as to its feasibility. Each use alternative which has satisfied the tests of possibility, legality, probability and marketability must be evaluated as to its feasibility. Thus, data such as income and expenses, vacancy rates, absorption period, construction period, construction costs, lease-up period, etc. must be gathered, projected to occur over a defined investment horizon or holding period for the proposed use, and normally discounted using an appropriate rate to indicate the net present value in terms of current dollars for the site for the proposed use. That use which normally indicates the highest net present value of the subject site and produces the greatest return will be its highest and best use. This is not an easy step in the analysis as it will involve projecting income, expenses and other data into the future and determining an appropriate rate. Any analysis involving projections into the future must be based on a sound analysis of past trends and current data to optimize the accuracy of the projected information. A well-documented feasibility analysis based upon projecting and discounting future income and expense streams provides excellent professional support for the highest and best use conclusion.

Time

One of the main principles everyone is aware of is change. Zoning regulations and land use patterns change, neighbourhoods change and the highest and best use of a particular site can change over time. Therefore, it is imperative that any highest and best use analysis be defined at a specific point in time. All relevant data and supporting analyses must be of the identical date in order to effectively reflect the highest and best use of the property at that particular date. Often, the analysis is of the current date, but this must be clearly stated. When Discounted Cash Flow (DCF) is employed to evaluate the feasibility of a proposed use, time is critical. The effective date of the highest and best use analysis will be the key date for comparison of the net present values generated for alternative uses. Time is again involved in DCF in establishing the analysis horizon or holding period during which income and expense streams are projected, and at the end of which a reversionary value is estimated. Thus, the concept of time is of double importance for the feasibility analysis of potential uses.

Most Probable Use

The current definition of highest and best use equates this term to most probable use. Some theorists argue that there is a definite distinction between these two terms. If a difference exists, it lies in the argument that most probable use does not necessarily infer the maximization of use. The same inference, it might be noted, arises for real estate appraisers in distinguishing between definitions of market value such as the most probable selling price compared to the highest price estimated in terms of money.

If it is considered that highest and best use incorporates an analysis of probability of re-use, it may be seen to equate to most probable use. However, if the deciding criterion of highest and best use is that use indicating
the maximum return to the land while the most probable use is based on probability analysis, the two terms may be seen as different unless the most probable use is felt to be that which maximizes return to land.

In any event, for most practical applications, these terms are considered synonymous and do not pose a major problem for most practitioners.

**Most Profitable Use**

Again referring to the current definition of highest and best use, it is said to equate to most profitable use in the context of investment value. When analyzing property as an investment, the investor’s primary concern is to maximize profits or returns and is thus clearly concerned with the maximum value of the site for various use alternatives. Thus, purely from an investment point of view, highest and best use is also synonymous with most profitable use.

**Social Factors**

Both the current definition of highest and best use and that proposed in 1972 by Mr. Barlowe indicate that the use may contribute to society, to community environment or to community development goals in addition to the wealth maximization of individual property owners or investors.

It is very difficult, if not impossible, to place a monetary value on such societal contributions in analyzing the feasibility of alternative uses. If objective data is available so that such impacts can be reflected in monetary terms, an analysis of this data could form part of the feasibility analysis. However, such data is rarely, if ever available.

If two uses are equally feasible and indicate the same net present value for the property, such social factors may be relevant in deciding between the two uses if such a decision were required. However, any analysis of these factors is usually in narrative format due to their subjective nature and due to the inherent difficulty in gauging their monetary impact.

Normally, when one wants to evaluate the social factors, a cost/benefit study is completed, not a highest and best use study.

**Improved Sites**

Once a site has been improved with permanent structures, the concept of highest and best use takes on an entirely different perspective, due to the fact that the buildings become wedded to the land until such time as they are razed or expire through natural causes. The land and the improvements become a singular productive entity and, as such, the question of highest and best use should relate to the optimum use which can be made of the package.

When a site is improved, two separate highest and best use analyses should be carried out: the first as if the site was vacant (unimproved) and the second as if improved. The first analysis would be done in exactly the same way as for a vacant parcel of land. The second analysis is more complicated.

When a site is improved, the contributory nature of the improvements to the site must be evaluated in relation to the highest and best use of the site as if it was vacant. If the structures add income to the property in excess of the income required to provide an acceptable rate of return to the investment in land, it may be argued that

---


the site-as-improved may represent the highest and best use of the property (land and buildings). In such a case, the existing building may not develop the site to its maximum permissible density, nor may it have a structure capable of permitting additional construction to achieve maximum density. In this instance, the building representing an under-improvement to the site-as-if-vacant may have a significant remaining economic life and be generating sufficient income that a prudent purchaser would not raze the structure to erect a layer or other type of In such a circumstance, the existing use as improved may represent the highest and best use of the property, but not of the site-as-if-vacant.

The existence of improvements necessitates a separate and distinct feasibility analysis or analyses depending on re-use capabilities. The analyst must consider such factors as remaining economic life; structural capability for addition of floors; costs of demolition; revenue generating capability; opportunities, costs and time frames for re-use conversions; and operating, maintenance and modernization costs and horizons. The situation can be further complicated for sites with buildings declared heritage or historic wherein the impact of legislation affecting the designation of the building must be evaluated for the alternatives, costs and value. In any event, the existence of structures on a site being evaluated as to its highest and best use requires additional data and careful analysis prior to the determination of the property’s highest and best use.

**Highest and Best Use Conclusion**

In stating highest and best use, it is imperative that the conclusion be stated as specifically as possible. Not only must the conclusion be as detailed as possible, but each use must pass a detailed marketability and feasibility test.

In some cases, the use can be described by stating the zoning, likely density and type of development. In other cases, it may be necessary to include details such as floor area, number of storeys, efficiency, likely occupant, rents, site coverage, parking and financing.

Consideration should also be given to the market exposure period should the ultimate function of the highest and best use analysis be for an offering of the property for sale.

**Practice Suggested Format**

The following provides a framework for a highest and best use report, highlighting the process to be followed. A narrative discussion of each component is provided. Although it is acknowledged that every property is unique, the framework as suggested is broad enough in scope to encompass most, if not all, real estate scenarios. The report should reflect the process and provide the data and analysis upon which the highest and best use conclusion is based in a clear and concise manner. Exhibit I provides the Table of Contents and essential elements of such a report.

**Introduction**

The introduction provides a statement as to the purpose of the study, namely to estimate the highest and best use of the subject property. The term highest and best use is defined for the reader and a brief discussion of the economic and real estate principles involved should be presented. The property under study is identified, with the aid of photographs if needed to assist the reader in visualizing the property. Since they often vary, the effective date of the analysis must be clearly stated as well as the date the study was undertaken.

**Site and Perimeter Analysis**

Under site and perimeter analysis, the analyst provides detailed descriptive data, as listed in Exhibit I, relevant to the subject property. All data is purely objective in nature in this section of the report, with the possible exception of the estimate of remaining economic life of the buildings. Plot and site plans should be provided
to assist the reader in visualizing the property. It may be necessary to obtain specific expertise at this point in such areas as the legal land survey section.

The important characteristics which must be commented upon include all data which provide constraints on the use or re-use of the subject property. Not only must the limitations imposed be commented upon, but the possibility and probability of change to constraining data such as zoning restrictions, limiting physical features and insufficient services, as well as opportunities to facilitate development or redevelopment must be discussed to establish a foundation for subsequent detailed analysis as part of the feasibility analysis.

Setting

The relationship between the subject property and its neighbourhood and municipality is described under setting. Again, the emphasis of the objective descriptive data included must be to highlight the constraints to and opportunities for development. Relevant data should be provided on supply, demand and competitive areas to provide a basis for the marketability analysis of potential uses to be completed in the next section of the report. A location map should be included to illustrate the subject’s setting with respect to adjacent properties, access routes and other pertinent data discussed in the narrative.

Determination of Uses

The first major analytical section in the highest and best use process is the determination of uses. The initial step is to determine all possible uses which are legal, physically possible and supported by the community infrastructure. All possible uses should be generated, somewhat akin to a brainstorming session. Principal property types to be analyzed include residential, hotel/motel, retail, office building, parking and industrial use. If none of these uses are imminent, interim use should also be addressed.

At this stage, consideration must be given to the possibility and probability of rezoning and/or other changes, such as services upgrading, which would affect the existing status of the subject, hence its use. Not only must the possibility of change be considered, but the probability of change must be supported with evidence.

To establish the probability of change, interviews must be conducted with the bodies responsible for approving the change and research must be carried out to locate precedents of similar changes which had previously been approved. In some instances, private companies have even conducted neighbourhood surveys to determine community acceptance of the proposed change. In any event, both the possibility and the probability of any potential change affecting the use of the property must be identified and documented. Any uses which do not meet the criteria of being legally and physically possible and probable, and supported by the community infrastructure, are normally rejected at this point.

Furthermore, the social acceptability of the proposed uses must also be considered. Communities are taking an ever-increasing role in the determination of land uses and redevelopment alternatives which will impact upon their neighbourhoods. This factor must be recognized and community reaction to proposed uses must be evaluated. Negative community opinion will impact the timing, marketing and feasibility of the proposal and must be addressed.

It is important at this stage that each possible use considered be the subject of further analysis. Such analysis is to be stated as specifically as possible. The density or intensity of use should be defined. For example, for a proposed office building use, general data such as floor area (net and gross), number of storeys, class of space and ancillary features (parking, elevators) should be stated. In some cases, an indication of likely zoning would suffice. A large development tract could be identified as 60 percent single family residential, 20 percent apartment and 20 percent office/commercial. Such detail is necessary so that both a marketability and a feasibility study can be undertaken for each proposed use.
Marketability

The next test each use must successfully pass is that of marketability. Uses that are not marketable cannot be considered as representing the highest and best use. The depth to which a market study must be completed would vary with the circumstances of each use and with each property. The intent is to reasonably establish that the proposed use is marketable.

A detailed study would involve an analysis of demographic and population trends, growth rates, household and income characteristics; supply data including construction starts, building permits, sale statistics, and comparable competitive properties; demand data including vacancy rates, absorption rates and incentives; risk data including expected ease of marketing, delays due to planning approvals and processes, further assessment of probability of rezoning or other changes, problems and opportunities; and forecasts of other data appropriate to the analysis at hand. The market study should identify ancillary uses which would enhance the proposed use, such as parking for office and retail use, loading and tracking requirements for industrial use, and amenities for apartment/condominium use. Sufficient analysis must be completed to convince the reader that the potential uses have been narrowed down to the few that are marketable.

Socio-Economic and Environmental Factors

Any expected socioeconomic and environmental impacts of the potential uses should be evaluated. Depending upon the degree of impact, a cost/benefit study may be required on these aspects alone. The results of the study could either be incorporated into the subsequent feasibility analysis of each potential highest and best use or be appended to the results obtained without incorporating the information. In any event, socioeconomic and environmental impacts should be addressed in the study. The costs of remedial/mitigational work must be appreciated and incorporated into the financial feasibility.

Improved Sites

If the subject site is improved with substantial buildings, two separate analyses along the preceding guidelines are required: the first of the site-as-if-vacant and the second of the site taking the existing buildings into account. In considering existing improvements, their ability for expansion, modernization, renovation, remodelling and rehabilitation must be considered in accordance with the previously discussed prerequisites.

At this point of the analysis, a short list of potential uses remains which satisfy the criteria of legality, physical possibility, supportability by community infrastructure and marketability. If the list is too long, further research into market conditions should provide sufficient data to reduce the list. A site sketch should be provided for each land use to assist the reader in visualizing them. The use of an urban designer would be helpful for this aspect of the study.

Financial Analysis

The heart of the highest and best use analysis is the financial analysis. The highest and best use must be feasible, i.e., it must produce a positive net return to the land. The highest and best use will be that use producing the greatest net return to the land. By extension, after all cash flows are taken into account, any negative figure indicates that development of continued operation is uneconomical. Nonetheless, depending on the time horizon, a negative Net Present Value (NPV) in special circumstances might be tolerated.

For each use, the project scale must be established. Usually, this has already been done prior to and during the market study wherein general descriptive data concerning the proposed use as well as ancillary uses has been defined. Next, the projected improvements/alterations (construction) costs are estimated. Both hard and soft costs must be included, as well as carrying charges. The period for obtaining development permits, surveys and other approvals must be projected.
It is important to define the analysis horizon including the period of time required for pre-construction approvals, construction itself, and the absorption rate of the property. The analysis horizon would likely begin at the effective date of the analysis and end with the potential sale of the last developed piece of land, the sale of the building or at some other point of time which could be considered an industry norm. A 15-year investment horizon is often considered reasonable.

In estimating the absorption rate, care must be taken to ensure that the estimate is logically supported. An analysis of absorption rates in competitive developments and/or other demand indicators from the market study is normally required.

For each probable use, income, vacancy and expense schedules must be estimated overtime. All should be based upon an analysis of comparable properties, or other data usually arising from the market study.

It is essential that the analysis horizon is defined as accurately as possible so that costs and expenses can be projected for each year of the horizon. This is especially important to ensure that escalations are correctly applied, beginning at the effective date of analysis, for each income and expense item. Statistics Canada provides construction cost indexes for most major centres in the country. Also, cost manuals such as Boeckh or Marshall and Swift provide construction escalation factors. Property management offices, municipalities and utility companies can provide the bases for expense item escalation rates, and real estate companies, the local real estate board and property management firms have statistics upon which income escalation rates can be determined.

The Bank of Canada and the Conference Board of Canada can also provide statistical data and escalation rates used in their projections and economic analyses. In the financial analysis, income refers to all cash developed or otherwise. Expenses refer to all cash outflows required to provide the income stream. Included are such items as the cost of improvements, roads, the cost of servicing for development land, hydro, heat and water for buildings, financing costs and property taxes. As a general rule, developers deal in a before-tax environment and it is suggested that this be applied for most highest and best use reports.

### Land Residual Analysis

Once all income and expense data has been gathered and projected throughout the analysis horizon, it is necessary to analyze that data to indicate the net return. Normally, highest and best use will be simulated for three types of situations:

1. vacant land;
2. land improved with a structure which has a remaining economic life; and
3. land improved with a structure which clearly has no remaining economic life.

For each, a different financial approach is to be applied. For vacant land, a DCF analysis should be applied to a residual land value technique. For the second situation, one would iterate various options comparing the status quo to modified status quo with options to rebuild, expand, rehabilitate or modernize. The third situation is similar to the second except that only the rebuild scenarios would be entertained.

### Static Approach

In many situations, return to land can be calculated using what appraisers term the land residual technique. This approach requires estimating the total projected income from the proposed use and then subtracting income required to justify the cost of improvements (labour, capital and management) to indicate income solely attributed to land which could then be capitalized.

The example in Exhibit II illustrates this process.
In Exhibit II, the annual stabilized income arising from the potential development is estimated at $470,000. Based upon a projected building construction cost of $3,500,000 and a rate of return of 12 percent, the income attributable to the building is calculated to be $420,000. The rate of return appropriate to the building must reflect both the discount rate appropriate to a non-depreciating real estate investment and a rate to reflect the depreciating nature of the building. In this case, the discount rate is 10 percent and the depreciation rate is two percent based upon a 50-year economic life and assuming straight-line depreciation. The building depreciates 1/50 each year or two percent a year.

By subtraction, the residual income to the land is calculated to be $50,000 which, when capitalized at the discount rate of 10 percent (the same 10 percent component applied to the building), indicates an NPV of $500,000.

As can be seen, the analysis is quite static. Annual income is stabilized and projected to occur indefinitely without change.

The advantage of this approach is its simplicity. Limited data is required and calculations are quite straightforward. However, the disadvantage also lies in the simplistic approach. No allowance is made for the construction period when no income is forthcoming, nor are the details of the investment horizon or the staging and escalation of income and expenses presented. When these latter factors are of relevance, the land residual technique should not be employed. Instead, a DCF analysis should be undertaken.

**Dynamic Approach**

In the application of DCF, the time-value nature of money is taken into account by discounting future cash flows over the analysis horizon to indicate the NPV of the land for the proposed use.

For each year of the analysis horizon, incomes and expenses (including escalations) are projected and the cash flow calculated. Then, by applying an appropriate discount rate, the NPV of those cash flows can be derived. This amount would represent the maximum amount of money an investor could pay for the land under the analysis horizon depicted. The important aspect is to select a discount rate appropriate to the use being analyzed, one which would properly reflect the associated risks and profit requirements of the likely purchaser/investor/developer. Those uses with a positive NPV would be feasible, and the use with the greatest positive NPV would be the highest and best use.

Exhibit III provides an example of a development tract of land with potential use for single family residences. It provides an example of DCF done by using a handheld calculator. Revenues and expenses have been projected over each year of a five-year analysis horizon. Most development costs are incurred in years one and two; all revenues occur in years three to five with some expenses occurring those years as well. Cash flows are negative for years one and two, then positive. The five-year cash flow was discounted at 20 percent to give an NPV indication of $494,000. The discount rate represents anticipated return, or profit, to the owner/developer. Hence, the capital, labour and management agents in production are accounted for, leaving an NPV of $494,000 which could be attributable to the land.

Even this analysis can be considered somewhat static as all revenues and expenses are projected in current dollars. By introducing escalation factors, this analysis takes on a truly dynamic form as illustrated in Exhibit IV.

In Exhibit IV, revenues were escalated four percent per year and expenses five percent per year. In actual practice, escalation rates must be supported by trend analysis or from relevant statistical sources. As can be seen, incorporating escalation rates significantly affects the result of the analysis. The important consideration is to be consistent and to apply the same analytical technique to all uses being analyzed.
To assist in more complex analyses, computer software is available. Such software packages are capable of providing detailed before-and after-tax DCF analyses with a maximum 25-year or longer analysis horizon. Systems provide for maximum flexibility and are excellent analytical tools. Decision making criteria usually include internal rate of return, cash on cash analysis, NPV and financial management rate of return. Manuals are available to guide the user through the input and report generating stages of the programs.

The other main advantage to using a computer package to perform a DCF analysis is that it can easily perform sensitivity analyses. Thus, the computer can easily re-run the analysis, for say a 15 percent discount rate instead of 20 percent, and quickly and accurately provide the resultant effect on the NPV. Any input item or items can be altered and the program re-run to provide the impact of the iteration.

Once a feasibility analysis has been performed for each use being analyzed, the proposed uses and their resulting NPV’s should be listed in tabular form to provide a quick summary of the results.

**Conclusion**

The final conclusion of the report should be self-evident from the preceding analysis and tabular summary. The highest and best use will be the one which maximizes the NPV of the site or existing improved property. The conclusion should be stated as clearly and concisely as possible including the descriptive information used in its analysis.

As a final check on highest and best use, the conclusion should be reviewed to ensure that it has passed all necessary criteria. Rather than repeat the criteria in Paragraph 7.2 of Exhibit I, consider the following excerpts from the reasons for judgement, Minute Muffler Installations Ltd. v. the Queen in Right of Alberta 23 LCR 1982 p. 213:

- The use must be legal and must comply with land use classification or zoning regulations and with building regulations applicable to the land.
- The use must be probable within a reasonable period of time and not simply possible. While this criterion may be simple to state, it is difficult to apply and requires consideration of a number of factors.
- Highest and best use must always be determined relative to a particular point in time. Land use is frequently in a process of transition from a present use to some other use... To illustrate the effect of transition by way of example, let us consider a parcel of agricultural land which is adjacent to the boundary of an urban area. With respect to land use, that land may be said to be placed on a spectrum or scale which commences at the lower end with land which has an agricultural use only and arrives at the upper end of the scale with a use which is for urban residential, commercial or industrial use. Depending upon a large number of factors in the market-place, such land may move along the scale from lower to upper end; it may halt anywhere along the scale either temporarily or permanently; and such movement may be slow, fast or erratic. At either extreme of the scale, the task of determining highest and best use is reasonably straightforward, but there is a very grey area in the middle range of the scale where the task is very difficult, highly subjective and, in reality, not much more than an educated guess.
- There must be a demand for the use selected and economic conditions which make it probable that such use will take place.
- The use must be profitable and provide the highest net return to the owner of the land.”
Assumptions and Limiting Conditions

The report should be concluded with a statement of any and all assumptions and/or limiting conditions relevant to the analysis and the conclusion reached.

Summary

It is hoped that this article has provided a useful review of the theory of highest and best use, and that it has also suggested a practical guide for the completion of a highest and best use analysis and report. It is acknowledged that appraisers do not normally have the time to go into the depth of analysis suggested, nor do many situations require such an in-depth analysis. However, the basic process is applicable to all highest and best use situations and appraisers must, in their appraisal reports, explain and justify their highest and best use conclusions with a professional analysis. Clients are demanding this report and, as appraisers constantly strive to better their profession, ever improved standards demand more than just a cursory statement of highest and best use.

Note: A complete list of references is available from the author.

Gary K. Abson, AACI, is the appraisal manager for the Real Estate Sector of Public Works Canada. He is also active with the Appraisal Institute of Canada serving on the National Report Grading Committee and as a corresponding member of the National Publications Committee.
EXHIBIT 1
Highest and best use study
Suggested table of contents

1. Executive summary and recommendations

2. Introduction
2.1 Set out the purpose of the study which is to estimate the highest and best use of the property under study.
2.2 Define the term highest and best use. Include a brief discussion of the economic and real estate principles involved.
2.3 Briefly identify the property under study — name of building or site, address, municipality and province.
2.4 Include the effective date of the highest and best use analysis as well as the date of the study.

3. Site and perimeter analysis
3.1 Provide site data on physical, legal and financial aspects, services, structures and setting.
3.2 Physical features — topography, slope, drainage, soil, other limiting characteristics, dimensions, shape, area and access and egress (include a plot plan).
3.3 Legal constraints — zoning, easements, leases, surveys, deed restrictions, possibility of zoning change.
3.4 Existing financial assessment — cash flow, operating and maintenance costs, property taxes, revenues, operating problems, underutilizations, leases.
3.5 Services — water, sanitary and storm sewer, gas, hydro, telephone, etc. Include the capacities of services, especially for vacant sites. If deficiencies exist, discuss the pros and cons of providing the necessary services.
3.6 Structures — type, size, descriptions, construction, use, occupants, gross area, rentable area, condition, functional utility, lease potential, recent capital improvements, chronological age, effective age, remaining economic life, heritage aspect (include a site plan).

4. Setting
4.1 Place the site within its urban setting with a view to pointing out opportunities and constraints of the site.
4.2 Discuss the urban context — visibility, location in relation to core area and/or to other competitive, developing areas, surrounding land uses and trends. If it is important, include a location map outlining proximity to core and showing surrounding land uses.
4.3 Include legal factors — zoning of the surrounding area.
4.4 Analyze political factors — community and city plans, public sentiment. Include timing of plans and projects.
4.5 Describe the infrastructure and area services.
4.6 Describe the transportation facilities — public, automobile, pedestrian. Include expected changes, availability of service.
4.7 Include socio-economic factors of community — relationship with community, conflicts and compatibility.

5. Determination of uses
5.1 Determine all possible uses, i.e., uses which are legal, physically possible and supported by the community infrastructure (roads, services). The probability of changes to physical and legal constraints must also be analyzed. Look at each of the principal property types that might be permitted. These include residential, condominium, apartment, hotel/motel, retail, office building, parking, industrial and interim use.
5.2 Analyze each of these uses on the basis of market scan (trends in the area), supply (availability of similar properties, competition), demand (vacancy rates and other indicators), risk (expected ease of marketing, problems, opportunities) and forecasts. Account for ancillary needs such as parking, loading and railroad trackage. A detailed market study for specific obvious uses might be required. The marketability of each use must be clearly established and documented.
5.3 Note any expected socio-economic and environmental impacts (cost/benefit) of potential uses, or any constraints or support for the potential use.
5.4 If the site is already improved, consider both the site as it is, vacant and the site as improved in the analysis. Two separate analyses should be completed.
5.5 Prepare a list of the more probable uses or combinations of uses. Each use must be stated as specifically as possible to facilitate subsequent analysis. Include a mapping study at an appropriate scale to indicate probable site development, especially when more than one use is to be analyzed. Details such as land use, volume, access, landscaping, parking, floor usage, pedestrian movements, etc. must be included.

6. Financial analyses
6.1 For each probable use or combination of uses, complete a feasibility analysis.
6.2 Establish the project scale — not necessarily to maximize, but to optimize the investment return.
6.3 Cost projected improvements or alterations. Do not overlook carrying costs and time discounting. Consider the cost of demolition for a redevelopment scenario.
6.4 Establish an absorption rate and staging, discounting for the time involved. An approximate land allocation must be made in cases where a multiple land use is projected.
6.5 Estimate the income, vacancy and expense schedules for each of the probable uses over time.
6.6 Complete a residual analysis whereby the current or net present value of the land (or property) is estimated.
6.7 In most cases, a Discounted Cash Flow (DCF) analysis should be completed, and the net present value internal rate of return and/or other decision making criteria should be indicated.
6.8 Include sensitivity analyses wherein various iterations of data are shown along with the impact of the iterations on the decision making criteria.
6.9 Summarize the results of the feasibility analysis for all uses analyzed.

7. Conclusion
7.1 The highest and best use is normally that use which maximizes the net present value of the site or the existing improved property. Highest and best use is not a static phenomenon. DCF and the timing of development give it a dynamic quality.
7.2 The proposed highest and best use must pass the following checks:

- must be legally possible (and probable)
- must be physically possible
- must be supportable by the community infrastructure
- must be marketable
- must be economically feasible
- must be the most profitable use

7.3 The conclusion must be stated as specifically as possible, yet without a preoccupation for detail.
7.4 Include any socio-economic benefits and/or costs to be recommended highest and best use.
7.5 Include any assumptions and/or limiting conditions relevant to the analysis and conclusion reached.
EXHIBIT II
Land residual example

Annual income attributed to potential office development: $470,000

Income allocated to building:
Building cost: $5,000,000
Rate of return: 12 per cent

Residual income to land: $50,000
Discount rate: 10 per cent
Indicated Net Present Value ($50,000/10 per cent): $500,000

EXHIBIT III
Discounted Cash Flow example
No escalation (current dollars)

<table>
<thead>
<tr>
<th>Analysis Horizon</th>
<th>(All amounts in $000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 1</td>
</tr>
<tr>
<td><strong>Revenues</strong></td>
<td></td>
</tr>
<tr>
<td>Lot sales</td>
<td></td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
</tr>
<tr>
<td>Survey</td>
<td>25</td>
</tr>
<tr>
<td>Legal</td>
<td>10</td>
</tr>
<tr>
<td>Roads</td>
<td>20</td>
</tr>
<tr>
<td>Services</td>
<td>50</td>
</tr>
<tr>
<td>Sales costs and</td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td></td>
</tr>
<tr>
<td>Financing charge</td>
<td>15</td>
</tr>
<tr>
<td>Management</td>
<td>40</td>
</tr>
<tr>
<td>Taxes</td>
<td>5</td>
</tr>
<tr>
<td><strong>Cash flow</strong></td>
<td>(165)</td>
</tr>
<tr>
<td>Discount rate (20 per cent):</td>
<td></td>
</tr>
<tr>
<td>Net Present Value (NPV):</td>
<td>(138)</td>
</tr>
<tr>
<td><strong>Total NPV</strong></td>
<td>$494</td>
</tr>
</tbody>
</table>

EXHIBIT IV
Discounted Cash Flow example
With escalation (future dollars)

<table>
<thead>
<tr>
<th>Analysis horizon</th>
<th>(All amounts in $000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 1</td>
</tr>
<tr>
<td><strong>Revenues</strong></td>
<td></td>
</tr>
<tr>
<td>Lot sales</td>
<td></td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
</tr>
<tr>
<td>Survey</td>
<td>25</td>
</tr>
<tr>
<td>Legal</td>
<td>10</td>
</tr>
<tr>
<td>Roads</td>
<td>20</td>
</tr>
<tr>
<td>Services</td>
<td>50</td>
</tr>
<tr>
<td>Sales costs and</td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td></td>
</tr>
<tr>
<td>Financing charge</td>
<td>15</td>
</tr>
<tr>
<td>Management</td>
<td>40</td>
</tr>
<tr>
<td>Taxes</td>
<td>5</td>
</tr>
<tr>
<td><strong>Cash flow</strong></td>
<td>(165)</td>
</tr>
<tr>
<td>Discount rate (20 per cent):</td>
<td></td>
</tr>
<tr>
<td>Net Present Value (NPV):</td>
<td>(138)</td>
</tr>
<tr>
<td><strong>Total NPV</strong></td>
<td>$597</td>
</tr>
</tbody>
</table>