

THE PROPERTY MANAGER'S PERCEPTION OF TREE PLANTING WITHIN THE BUILT ENVIRONMENT

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ABSTRACT

Environmental problems begin with man as cause and end with man as victim. Hence, to maintain some ecological balance, man has realized his need to preserve some plant life within the built environment. The property manager is however, often confronted with issues that relate to indiscriminate choice of tree plants and spacing with little reflection on their cost-benefit implications. This paper reviews the growing clamour for tree planting, focusing on dangers posed to buildings, roads and even human life. It concludes by identifying the framework within which tree planting can be harmonized into the built up areas of our cities for an efficient and sustainable man-environment relationship in this new century.

Key Words: Tree Plants, Built environment, Property Management, Benefits and Dangers

INTRODUCTION

A working definition of the environment of interest to the environmentalists was expressed in the 6th edition of Oxford Advanced Learner's Dictionary as the natural world in which people, animals and plant live. Since man is just one of the three categories of living creatures, he cannot be solely held responsible for the dynamic forces being experienced by nature. However, the biblical account of creation clearly justifies the focus of attention on man as the main engine of environmental change. He was the last creature to be made and yet, was endowed with authority to exercise dominion over all other creatures, to replenish the earth and subdue it (Holy Bible). Without doubt of course, man has since remained the greatest threat to the environment and

ironically, as observed by Hillary (1984), he has also ended up as its worst victim.

As against the natural environment, the quest for shelter and with time, organized and improved living by man has brought up the concept of the 'built environment'. This simply refers to the artificial environment created by the activities of exploitation and construction including roads, bridges, buildings, towers, mines e.t.c. Thus, the built environment is more of the antithesis of the natural environment. But man is by constitution, a product of nature and can not be totally estranged from this original habitat (nature). Hence, there has been the increasing challenge to maintain minimum ecological balance in the built environment.

THE PROBLEM

The conflict between the built and the natural environment is fundamental. As human population and affluence grow, so does the variety of uses to which land must be put- from mere agriculture to including residential, and thereafter came industrial and commercial land uses. Nowadays, perhaps we can separately identify technological and chemical land uses. This land however, being the physical aspect of the earth's surface around which the totality of natural environment revolves, is fixed in supply and the choice on it is always between use and preservation. The more of it man use up the less the natural environment preserved. Apart from direct transformation of specific portions of earth surface, there are a host of other influences exerted by the use of built up areas on the larger environment. In particular, the built environment is associated with the following:

- i) conversion of natural greenery into asphalt and concrete surfaces in terms of roads, buildings and other engineering structures;
- ii) felling of trees for construction activities; and
- iii) degrading of environmental qualities resulting from deforestation, desert encroachment, soil erosion and various forms of pollution (air, water and land) which are by-products of the built environment.

Perhaps, the last of effect of the built environment mentioned above appears to have drawn attention most. According to

Karpagam (2003), the world's leading cities are now par excellence overloading the environment with noxious substances contained in our daily consumption and production activities.

POSITION OF TREE PLANTS

The fact remains that in spite his modifying activities, modern urban dweller still values nature and sustainable physical development is actually being hinged on greenery of the urban landscape (Overbeke, 2008). Since the days of industrial revolution, the hitherto clear and natural atmosphere has been invaded by what has been termed 'greenhouse gases' (carbon IV oxide, methane, nitrous oxide e.t.c.). The gases are known to act as insulating blanket trapping heat from the sun thereby leading to increased average surface temperature of the earth (global warming). Global warming is expectedly, a global concern and several strategies are being devised to mitigate its effect. At the domestic level, some opt for energy saving compact fluorescent light bulbs and in terms of automobiles, hybrid cars are being developed. These efforts are lopsided, which may reduce the amount of carbon released but would not effectively restore quality to the environment. In any case, they are expensive remedial measures. Rather, tree planting has become a more universally accepted alternative.

Tree planting campaign is spreading fast either to fight desertification and erosion at the national or regional level, to restore some future to the rapidly depleting forest resources, to address global warming or to

regulate the temperature in an urban environment. In fact, tree planting has become so pervasive a practice and its benefits eulogized that its adverse effects have been substantially underplayed. But why trees?

Within the built environment either along driveways, walkways or around and within walled premises; tree plants are renowned for their catalogue of benefits. These often include, inter alia:

- i) removal of greenhouse gases from the atmosphere. Carbon IV oxide are absorbed by trees and transformed into living matter-roots, trunks, branches, leaves and flowers (Vargas, 2008);
- ii) release of vital oxygen into the atmosphere in exchange for their carbon IV oxide intake;
- iii) trees help to regulate air temperature affording a more natural cooling effect than can be achieved by air conditioning in spite of the amount of fossil fuel that must be burnt for this latter artificial approach;
- iv) roots and leaves of trees help filter storm water thereby enhancing water quality in the environment;
- v) along driveways, trees have been known to encourage motorists to drive slower, perhaps due to the consciousness to avoid head-on collision with the trees and the relaxed environment that trees represent;
- vi) trees act as break to wind and sometimes, even sound waves;
- vii) they can hold storm water in soil

- viii) Thereby reducing incidents of soil erosion;
- ix) trees produce habitat for local wildlife like birds, thus enhancing naturalness of the environment; the shade of trees have been claimed to contribute to durability of asphalt and concrete surfaces of the built environment (McPherson, 2008);
- x) trees have scenery quality that may outweigh the more expensive ornamental additions to structures;
- xi) studies have confirmed that the presence of tree plants within and around premises actually enhance property values (McPherson, 2008); and
- xii) trees act as boundary markers.

Of course, the list is inexhaustible. What, then, is the concern of property managers?

PROPERTY MANAGEMENT FUNCTIONS AND CHALLENGES FROM GREENERY

The built environment is a composite of several land uses - circulation, residential, commercial and industrial all of which must interrelate efficiently and effectively without compromising the larger environment. Various professionals are usually engaged in the birth of the built environment ranging from the Planner, the Architect, retinue of Surveyors and Engineers. However, while some find relevance at conception, others during the pre-natal and yet others at the birth stage. The Property Management Surveyor (or, in contemporary term, Facility Manager)

acts as the nursing mother who must nurture the development not just to adolescent but ultimate old age. The Property or Facility Manager is essentially, an agent acting on behalf of the property developer/investor and saddled with professional responsibilities which include, among others:

- i) preserving the value of his principal's investment;
- ii) striving for economy in property running costs including maintenance needs; and
- iii) protecting the health and welfare of occupants, environment of the property and of adjoining premises.

The last four of the benefits of tree plants outlined earlier tend to be of particular interest to property managers. It has nevertheless been observed that indiscriminate tree planting within the built environment can constitute a menace to effective management in the following circumstances:

- i) tree plants not suitable to the particular environment in terms of type/specie, size, height and other characteristics; and
- ii) wrong site selection for planting.

The possible dangers are as follows:

- i) where the tree height and building distance relationship is not accounted for, tree roots may be restricted by foundation works thereby leading to non-uniform root system and eventual instability of tress which become susceptible to strong wind.

- ii) Extensive damage to structures, vehicles and other properties may result from subsequent fallen tree plants within the built environment;
- iii) in clay soils, if building foundation is not deep enough, roots of nearby trees can extend under and absorb moisture forcing the soil to shrink and eventually, building settlement occurs leading to foundation and wall cracks. The cost of underpinning, where practicable, may prove prohibitive, in a bid to correct such structural defect;
- iv) roots of tree plants are potentially dangerous to the durability of sub-structural works like inspection chambers, septic tanks and soak-away pits;
- v) a research note by Lodge (1998) has established that during the wet season, all trees do have appreciable effect in deflecting television reception. Perhaps, similar experience may occur in respect of signals for mobile communication;
- vi) additional maintenance cost of significant proportion may result from the need to prune tree plants and to regularly clear fallen leaves and messy fruits;
- vii) another dangerous aspect of tree plants to look up to could be their ability to harbour reptiles and to produce poisonous seeds;
- viii) obstruction to road signs has also been observed as possible outcome in instances of poor tree

- Selection and siting along roadways (Gilman and Sadowski, 2007); and
- viii) obstruction to overhead wires and street/security light. Not only would tree plants touching electricity lines hinder proper service delivery, there are occasions when fatal accidents by way of electrocution have occurred in an attempt to prune such trees.

In summary therefore, the property manager is concerned with the effect on marketability by way of letting, and performance in terms of net rental income, of a given property under his care arising from the presence of tree plants within the premises. Where maintenance cost rises significantly, perhaps by way of necessitated cleaning programme, regular overheads on pruning and pronounced threat to structural stability, the original investment goal has been injured. Thus, attractiveness of tree plants within the built environment especially at the level of individual urban premises would be a function of their quantified costs and benefits. In effect, empirical analysis would be required to ascertain the increase in property value attributable to greenery vis-à-vis the attendant rise in outgoings.

THE WAY FORWARD

To achieve a desired integration of greenery into the built environment of our urban centres without endangering life and property nor constituting astronomical cost burden, the following suggested guidelines are germane:

- i) soil test should be carried out to ascertain the appropriateness of tree plant at a given site. Site having clay soil are known to be dangerous for tree growth near building foundations and concrete/asphalt pavements. However, sandy and less clayey soil are less prone to shrinkage even if tree roots should penetrate under building foundations on them and are accordingly, to be preferred;
- ii) a tree should ideally, be as far from a building as its matured height to enable its root system in the ground to be uniform so as to afford the trunk's stability against windstorm. One is hereby required to also have a foreknowledge of the matured height of each tree to be planted;
- iii) foundation should, ordinarily, have a minimum depth of 900mm but this must increase proportionately if tree plants must be located nearby. As an illustration, Table 1 typifies the recommended distance and foundation depth relationship for selected trees in the United Kingdom. It is observable that for the popular lime tree to be as close as 5 metres to a building foundation must be as deep as 1.5 metres otherwise at the minimum foundation depth of 900mm, this tree should be at least, 14 metres away.

Table 1: Typical Recommended Tree Distance and Foundation Depth

Tree Specie	Matured Height	Foundation Depth			
		1.5m	1.3m	1.1m	0.9m
Oak	16-24m	19m	22m	25m	27m
Lime	22m	5m	8m	11m	14m
Cherry	9-17m	4m	6m	8m	10m
Apple	9m	2m	4m	5m	6m

Source: Adapted from Building Control Section, Stockton-on-Tees, Borough Council (2008)

- iv) large trees with longer lifespan are to be preferred to smaller and shorter-life types where the space is available. This is because the former are able to store more carbon and for longer periods since the stored carbon in trees often get released back into the environment as the dead tree begins to decay.

REFERENCES

Building Control Section (2008)
Foundations Close to Trees,
Stockton-on Tees, Borough
Council

Gilman E. F. & Sadowski L. (2007)
Choosing Suitable Trees for
Urban and Suburban Sites: Site
Evaluation and Species Selection,
*Urban Forest Hurricane
Recovery Series*, ENH 1057,
University of Florida, September

Hillary E. (1984) *Ecology 2000-The
Changing Face of Earth*, London:
Michael Joseph

Holy Bible (2004) *King James Version*,
Texas: Jet Move International

Limited, Genesis 1:26,28

Imohiosen S. (2008) Tree Planting:
Antidote to Global Warming,
Daily Triumph, Monday,
September 29

Karpagam M. (2003) *Environmental
Economics: A Textbook*, New
Delhi: Sterling Publishers Private
Limited

Lodge A. H. (1998) The Effect of Trees on
Television Reception,
Arboriculture Research Note,
BBC & ITC Engineering
Information Departments

McPherson G. (2008) Benefits of Trees
in Urban Areas, USDA Forest
Service PSW, University of
California

Overbeke C. (2008) Do Trees Really
Cause Damage to Property?
Journal of Building Appraisal,
3 (4), 247-258

Vargas K. (2008) Planting Trees to Fight
Climate Change, *California
Releaf*, 17 (2), Spring