

**THE READINESS OF TRANSIT ORIENTED DEVELOPMENT
IN NUSAJAYA, JOHOR**

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Praise to Allah,
and to my beloved wife and kids,
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ABSTRACT

The current rapid development activities has resulted in the increase to the needs and dependency on motor vehicles. Uncontrolled development and urban sprawl have caused the inability of public transportation systems. This study is to look at the requirements of the appropriate type of land use with a suitable density to ensure that TOD can be planned and developed properly. This study will be based on greenfield development in Nusajaya Johor to compare with the other existing successful TOD in Malaysia. At the end of this study, we will propose the minimum outline of appropriate land use criteria for TOD development. TOD concept is a new development approach in Malaysia. Currently, there is no specific transit oriented development guidelines in Malaysia. Some developers claimed that their development is transit friendly and in compliance with TOD standard. But, how far does this development fulfil the TOD standard and criteria. Four (4) main objectives have been outlined in this study in order to understand the standard and criteria of TOD, to formulate the assessment indicator, to assess current and future land use development and to propose and advocate the mitigation measure for future improvements. This study will mainly be based on secondary data. Digital land use data will be analyzed using the Geographical Information System (GIS) software. Analyzing of land use plan will be made to identify the characteristics and patterns of the study area. All these relevant characteristics will be assessed with the formulated indicator. Based on the analysis, it was found that the study area did not fulfil the characteristics of TOD concept. This is caused by low proportion of development land compared to the other use. The low density development will affect the number of public transport ridership. This study mainly assesses the land use factor of the development criteria. This study will not cover any other detailed technical design such as the type of trees and materials to be used in the construction. This study will also not take the consideration on a number of ridership for existing public transportation users and their efficiencies.

ABSTRAK

Perkembangan pesat masa kini telah menyebabkan peningkatan keperluan dan kebergantungan kepada kenderaan bermotor. Pembangunan yang tidak terkawal dan serakan bandar merupakan punca kepada ketidakupayaan sistem pengangkutan awam. Kajian ini adalah untuk melihat keperluan jenis yang sesuai bagi penggunaan tanah dengan kepadatan penduduk yang sesuai untuk memastikan bahawa TOD boleh dirancang dan dibangunkan dengan betul. Kajian ini akan dijalankan kawasan pembangunan di Nusajaya Johor. Kajian ini akan membuat perbandingan dengan lain-lain pembangunan TOD yang telah Berjaya dilaksanakan. Pada akhir kajian, cadangan garis panduan minimum bagi kriteria yang sesuai bagi pembangunan tanah untuk pembangunan TOD akan dicadangkan. TOD adalah konsep pembangunan baru yang mula bertapak Malaysia. Pada masa ini, tidak terdapat garis panduan pembangunan khusus bagi pembangunan berorientasikan transit di Malaysia. Namun demikian, terdapat beberapa pembangunan yang mendakwa bahawa pembangunan mereka adalah mesra transit dan mematuhi standard TOD. Akan tetapi sejauh manakah pembangunan ini memenuhi standard dan kriteria TOD. Empat (4) objektif utama telah digariskan dalam kajian ini adalah untuk memahami standard dan kriteria TOD, merumuskan penunjuk penilaian, menilai pembangunan guna tanah semasa dan masa depan dan untuk mencadangkan dan merumuskan langkah mitigasi untuk penambahbaikan masa hadapan. Kajian ini akan berdasarkan data sekunder. Data digitl guna tanah akan digunakan dan dianalisis menggunakan perisn Sistem Maklumat Geografi (GIS). Analisis pelan guna tanah akan dibuat untuk mengenal pasti ciri-ciri dan corak pembangunan kawasan kajian. Semua ciri-ciri yang berkaitan akan dinilai dengan penunjuk yang telah digubal. Berdasarkan analisis, didapati bahawa kawasan kajian tidak memenuhi ciri dan kriterian konsep TOD. Ini adalah disebabkan oleh nisbah tanah pembangunan yang rendah berbanding penggunaan lain. Kepadatan pembangunan yang rendah akan menjejaskan jumlah bilangan pengguna pengangkutan awam. Kajian ini hanya menilai faktor gunatanah berdasarkan kriteria pembangunan. Kajian ini tidak akan menilai aspek reka bentuk terperinci seperti jenis spesies pokok dan bahan yang akan digunakan dalam pembinaan. Kajian ini juga tidak mengambil pertimbangan kepada bilangan penumpang yang sedia ada dan tahap kecekapan pengurusan pengangkutan awam.

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CHAPTER 1 : INTRODUCTION

CHAPTER 1

INTRODUCTION

The current rapid development activities have resulted in the increase of the needs and dependencies on motor vehicles. Uncontrolled development and urban sprawl have caused the ineffectiveness of the public transportation systems. It is a relation between land use and the fundamentals in transportation. They interact and relate to many other issues that are important to the communities (Hanson, 1995). For example, this development has resulted in urban problems such as traffic congestion, lack of affordable housing provision due to the rising costs of living and air pollution. These entire urban problems have decreased the quality of life in urban areas.

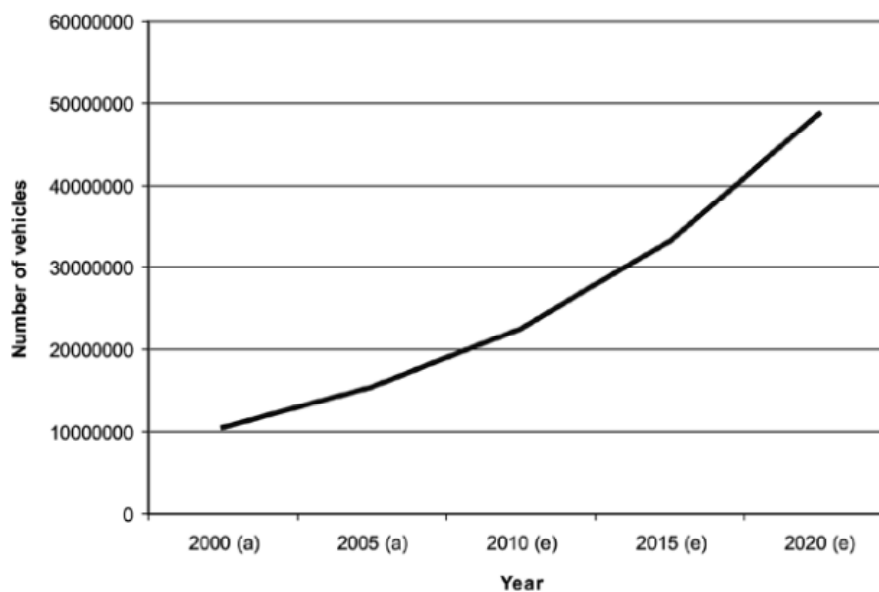
For example, the current development in Johor Bahru City has been growing by 5.52 per cent per year in the past 20 years. This has multiplied by more than three times from 10 thousand hectares in 1980 to 32 thousand hectares in 2000. (TCPD: Johor Structure Plan, 2000) This involves the development of an area within the 15 kilometre radius to a 30 kilometre radius from the town centre. Uncontrolled urban sprawl development has resulted in the increase of traffic flow on major roads leading to the town centre.

Nowadays, TOD has gained popularity as a means of redressing a number of urban problems, including traffic congestions, shortage in affordable housing, air pollution and incessant sprawl. (*Cervero, Ferrel and Murphy, 2002*). TOD is also a part of the sustainable development process.

TOD generally has a finite size of about 200 hectares, which is often diagrammatically represented by an area of 800 meter radius around the transit station. This may be considered as the board 'walk able catchment' which is the equivalent to about 10 minutes-walk from the transit station to the edge of the development area (R. Falconer and E. Richardson, 2010). TOD is a part of land development concept known as "Smart Growth" and "New Urbanism",

This study is about looking at the requirements of the appropriate type of land use with a suitable density to ensure that TOD can be properly planned and developed. This study will be based on Greenfield development in Nusajaya, Johor to compare with the other existing successful TOD in Malaysia. At the end of this, the study will propose the minimum outline of appropriate land use criteria for TOD development

The rapid growth in the development of the automotive industry in Malaysia has increased the motor vehicle ownership. According to the Ministry of Transport, statistics show that by the year of 2010, 21.2 million vehicles were registered. This has been increasing from year to year. In the year 2009, the number has increased by 11.7 percent and in 2010, it has increased by 13.7 percent. The growth rate is higher than the population average growth rate of 2.7 percent per year. Based on this scenario, it is estimated that the number of registered vehicles will increase to 50 million by the year 2020. (*Department of Statistics Malaysia 2006*).



Note: a = actual, e= estimated

Source: Abidin et al. (2004) and Department of Statistics Malaysia (2006)

Figure 1.1 : Vehicle Growth

This increase in car ownership has also been caused by the incentives offered by banking institutions, such as low interest rates of between 2.5 to 5 percent per annum and 100 percent loan facility. This has made an average of 3 private vehicles per household if compared to the current registered vehicle population. The number of households is 6.3 million.

Urban sprawl refers to the outgrowth of urban areas caused by uncontrolled, uncoordinated and unplanned urban growth. The inability to visualize such growth during planning, policies and decision making process has resulted in sprawl that is both unsustainable and inefficient. (*M. Rafee Majid & Hafizul Yahya*).

Urban sprawl will pose a problem to provide a centralized infrastructure development. Bigger development area would require a bigger allocation for infrastructure development. Urban sprawl would also cause difficulty for public transportation service to provide comprehensive services. This would cause ineffectiveness of the public transportation service to serve the overall area.

In major cities in Malaysia, for example; most of the people travel more than 45 minutes to the work place by choosing to live in the suburban areas. In Kuala Lumpur for instance, urban sprawl has been out of control, where development has been scattered up to 60 kilometre radius. As well as Johor Bahru, the development has sprawled to more than 30 kilometres radius.

Urban limit or urban growth boundary is the solution to advocating more-compact development for a city, but it is not going to curb its sprawl. Clear planning policies and sequential approach method need to be implemented to control development activities. Incentive and other facilities also need to be provided to the developer to encourage compact and smart growth development.

Government through the 10th Malaysian Plan (10thMP) has put emphasis on smart growth and compact city concept. In chapter 6: Building an environment that enhances quality of life, the 10thMP; the Government is committed to ensure a high quality life in urban and rural areas in line with Malaysia's aspiration to become a developed nation. To achieve this aspiration in enhancing the quality of life, related strategy had been outlined such as:

- a. **Building vibrant and attractive living spaces.** Influencing the form and character of living spaces to make them attractive places to live, work and play;
- b. **Developing a people-centric public transport system.** Restructuring the public transport sector and continuing to invest in infrastructure to make public transport the mode of choice;
- c. **Making streets and communities safer.** Reducing crime and improving people's sense of security.

From this outline strategy, it is expected that over 70 percent of Malaysia's population will reside in the urban areas by the year 2020. Therefore, emphasizing on making well-being, quality of life and liveability is the core of any urban project and the important factor in designing a new city centre. Mixed use concept to encourage living, working and leisure activities in the same areas can reduce trip generation.

1.1 Problem Statement

TOD concept is a new development approach in Malaysia. Currently, there is no specific transit oriented development guideline in Malaysia. Some developers claimed that their development is transit friendly and in compliance with the TOD standard. However, how far does this development project fulfil the TOD standard and criteria?. Nusajaya, being a newly developed area, is planned to be a transit oriented city. This study will assess the TOD standard and criteria for Nusajaya development to determine how far do its current and future developments comply with the standard and criteria.

1.2 Research Goal and Objectives

a) Study Goal

The goal of this study is *to assess the current and future land use development of Nusajaya, Johor in compliance with the TOD standard and criteria.*

b) Study Aim

The aim of this study is to **assess the** transit oriented development standard and criteria **based on the current and future land use development.**

c) Study Objective

To achieve this goal, four (4) main objectives have been outlined in this study. Several input and findings can be discovered from the study.

- i. To understand the standard and criteria of TOD concept in assessing the TOD development;
- ii. To formulate the assessment indicator for TOD planning;
- iii. To assess current and future land use development component of the study area; and
- iv. To propose and advocate the mitigation measure for future improvement in Nusajaya.

1.3 Research Questions

There are three questions identified to achieve the objectives outlined

- i. What are the standard and criteria of TOD?
- ii. What are the suitable TOD standard and criteria to be implemented in the study area?
- iii. Does the study area fulfil the concept of transit oriented development?

1.4 Scope of Research

The study will focus on the following aspect:

- i. The study area only consists of the Flagship B (Nusajaya), Iskandar Malaysia
- ii. The study will assess on current and future land use development planning based on TOD standard and criteria.
- iii. The study will be based on secondary data on the existing development plan of Nusajaya, Iskandar Malaysia.
- iv. The study will only assess current and future development plan until the year 2020.

1.5 Research Assumptions

The main source of information for this study is based on existing and proposed land use. This study also refers to the government proposal for a public transportation master plan in the study area. Hence, this study will be conducted under the assumption that there is no change in the pattern of significant land use. The research also presumes that there is no change in the current policy and public transportation master plan for the study area.

1.6 Limitations of Research

This study will be based only on the current and future land use planning until the year 2020. Land use is the most important element in determining the success of the TOD. Inventory of land use will cover an area of 2 km radius from the transit centre where it covers the pedestrian zone and feeder bus service zone.

This study will focus on the development of Flagship B (Nusajaya) of Iskandar Malaysia, Johor. The analysis of land use and projected demand and need is based on the proposed land uses planned. Nusajaya is a new development area which has not been proven to be on the level of success with respect to the implementation of TOD. Assumptions and projections based on land use plan is used as a model to calculate the demand requirements.

The study will not cover any other detailed technical designs such as the type of trees and materials to be used in the construction. This study will also not take into consideration the number of passengers for existing public transportation users and their efficiencies.

1.7 Expected Contributions

At the end of this research, we will identify the level of achievement in the implementation of the TOD concept. The study also will propose the suitable TOD standard and criteria to incorporate with the proposed land use planning.

1.8 Significance of Research

The aim of the research is to assess the achievement of the Nusajaya development in complying with the TOD standard and criteria based on their current and future land use planning. This research will reveal the standard and criteria to be attained in order to support transit oriented development implementation. The initiative for this study is find the best way that can support a number of factors including:

- i. Identifying the suitable land use proponents for the TOD concept in Malaysia;
- ii. Increasing the public transportation ridership especially in the new development area;
- iii. As a planning guidance to the planner, developer and government agency.

1.9 Research Design

This study will be conducted in four steps:

i. Research Issue

Formulating the research issue, objective and hypothesis is to ensure the research in the pipeline.

ii. Literature review

This study will be supported with an extensive literature in a related topic pertaining to the TOD concept. The source of the literature will be in the form of journals, reports, books, paper works and others. In this literature review, focus will also be put on case studies and lessons learnt from the other successful TOD in the region. Beside the TOD, literature also will include the study of the land use development concept and approach such as smart growth concept, new urbanism and sequential approach.

iii. Data collections and analysis

Secondary data will be mainly used in this study. The proposed land use planning by the developer and planning authority together with the public transportation planning to propose for the study area will be analysed.

Primary data in the form of site observations and oral interviews will be used to support the secondary data.

iv. Findings

At the end of the study, conclusion and finding will be formulated based on data analysis to support the hypothesis. Standard planning guidance will be proposed as a guide to the developer and the authority to get the suitable land use proponents for the TOD implementation.

1.10 Thesis Outlines

This thesis will be written in five chapters:

i. Chapter 1 : Introduction

This chapter will address the underlying research background, problem statement, scope of study and limitation.

ii. Chapter 2 : Literature Review

This chapter will review the empirical studies of the reports, journals, books and other sources related to the TOD and land use development.

iii. Chapter 3 : Research Methodology

This chapter will outline a step by step process of the research from the formulation of the issue, data collections, analytical method and findings.

iv. Chapter 4 : Analysis and Findings

This chapter will provide the result of analysis including maps, sketches and graphics showing the existing and proposed land use proponents based on the data collected. Land use characteristics and TOD concept will be tested based on outlined hypothesis.

v. Chapter 5 : Recommendations

Based on analysis done in the earlier chapter, recommendations and proposals on the planning guidance for the land use availability for

TOD concept will be formulated. Potential for further study and limitation of this study will also be proposed.

1.11 Summary

As a whole, this chapter has described the overall research flow together with the aim and expected findings at the end of the research. The issue described earlier as a guide to the researcher to find the answer based on the outlined objectives and research questions. In the next chapter, researchers will describe in detail about the existing and the theories of TOD and compare with the land use concept and approach.

BIBLIOGRAPHY

Avishai Ceder, (2007), *Public Transit Planning And Operation: Theory, Modelling And Practice*, Butterworth-Heinemann (Elsevier Ltd) Oxford.

Adams, W.M., (2006) The future of sustainability - Rethinking environment and development in the twenty-first century. Report of the IUCN Renowned Thinkers Meeting.

Calthorpe Associates, (1993), *Transit-Oriented Development Design Guidelines*, City of San Diego.

Chalifour, N.J. 2007. *Ecological economics, sustainable land use, and policy choices*. In: N.J.Chalifour, P. Kameri-Mbote, L. Heng Lye and J.R. Nolon, Eds. *Land Use Law for Sustainable Development. IUCN Academy of Environmental Law Research Studies*. Cambridge University Press: New York.

Chris Hale and Professor Phil Charles, 2007, *A Step-by-Step Approach to Transit Oriented Development Project Delivery*, Centre for Transport Strategy University of Queensland, Brisbane, Australia

CIP (Canadian Institute of Planners). 2000. *About Planning: What Planners Do.*

Available at:<http://www.cip-icu.ca/english/aboutplan/what.htm>

Cervero R, Christopher Ferrel, Steven Murphy, (2002), *Transit-Oriented Development and joint Development in United States: A Literature Review,* Institute of Urban and Regional Planning Development, University of California, USA.

Cervero, R. and K. Kockelman, (1997), Travel demand and the 3Ds: Density, diversity, and design. *Transportation Research Part D: Transport and Environment,*

Curtis, C., (2008), Evolution of the transit-oriented development model for low-density cities: A case study of perth's new railway corridor. *Planning Practice and Research.*

Comprehensive Development Plan (CDP) for Iskandar Development Region

Dick Nelson, John Niles and Aharon Hibshoosh, *A New Planning Template for Transit-Oriented Development, 2001, Mineta Transportation Institute College of Business San José State University*

Ditmarr, Hank, Ohland, Gloria; (2004), *"The New Transit Town: Best Practices in Transit-Oriented Development"; Island Press, Washington;*

Dittmar, H. and G. Ohland, (2003), *The New Transit Town: Best Practices In Transit-Oriented Development 1ed.*

Fostering Equitable and Sustainable Transit-Oriented Development, Center for Transit-Oriented Development, Living Cities and Boston College's Institute for Responsible Investment at the Ford Foundation

Greene, D.L. and M. Wegener, (1997), Sustainable transport. *Journal of Transport Geography*.

Hanson, S. (1995), *Getting There: Urban Transportation in Context*. In: *Hanson, S. The Geography of Urban Transportation, 2econd Edition*. New York, Guilford Publication Press

Ian Carlton, (2007), *Histories of Transit-Oriented Development: Perspectives on the Development of the TOD Concept Real Estate and Transit, Urban and Social Movements, Concept Protagonist*, Institute of Urban and Regional Development University of California, Berkeley

Jeyapalan Kasipillai & Pikkay Chan, (2008) *Travel Demand Management: Lessons for Malaysia*, Monash University Sunway Campus

John L. Renne, *Evaluating Transit-Oriented Development Using a Sustainability Framework: Lessons from Perth's Network City*

Julie Godwill, Sara J. Hendrick (2002), *Building Transit oriented development In Established Communities*, Center For Urban Transportation Research, University of South Florida, USA.

L.R. Kadiyali, (1978), *Traffic Engineering And Transport Planning*, Khanna Publisers, Delhi.

M. Rafee Majid & Hafizul Yahya, *Sprawling Of A Malaysian City: What Type And What Solutions?*, Department of Urban & Regional Planning Universiti Teknologi Malaysia

Nancy Kete, PhD, *Sustainable Transport Oriented Development*, EMBARQ, The WRI Center for Sustainable Transport

Peter Newman and Jeffrey Kenworthy, (2009), *Sustainability and Cities : Overcoming Automobile Dependency*, Island Press USA

Preliminary Count Report 2010, *Population And Housing Census Of Malaysia 2010*, Population And Housing Census Of Malaysia

Newman, P.W.G. and J.R. Kenworthy, (1996), *The land use-transport connection: An overview*. Land Use Policy.

UEM Land Holdings Berhad & Iskandar Investment Berhad, (2009), *Nusajaya Formulation of Public Transportation Master Plan*

Peter Song, (2006) *Sustainability and the Built Environment*, UC Davis Extension.

R.I. Statewide Planning Program, (2003), *R.I. Greenhouse Gas Action Plan Stakeholders Group Inter-agency Working Group on Transit - Oriented Development*

Ryan Falconer and Emmerson Richardson, (2010), *Rethinking Urban Land Use and Transport Planning – Opportunities for Transit Oriented Development in Australian Cities Case Study Perth*, Australian Planner Vol. 47, No. 1, March 2010, 1-13.

Wallace Roberts & Todd, (2006), PATCO Transit-Oriented Development Master Plans Study, Delaware River Port Authority and Port Authority Transit Corporation

Wells, J. S. and Renne, J. (2003) Transit Villages in New Jersey: Recommendations for Assessment and Accountability, Alan M. Voorhees Transportation Center, New Brunswick, New Jersey, Rutgers University